

9

NOISE AND SAFETY

The purpose of the Noise and Safety Element is to identify the natural and man-made public health and safety hazards that exist within the Planning Area, and to establish preventative and responsive objectives and policies and programs to mitigate their potential impacts. Specifically included are strategies to mitigate noise impacts from new development and direction for noise mitigation. Hazards that are addressed include geologic and seismic hazards, flooding, wildland fires, hazardous materials, and airport safety.

9.1 CONTEXT

The noise section of this element identifies existing noise sources within the Planning Area and establishes policies, standards and programs to mitigate potential impacts through design and performance measures. This element contains policies that guide the location of industrial land uses and transportation facilities, since they are common sources of excessive noise levels, as well as the location of noise sensitive uses, such as residences, schools, churches, and hospitals.

This element also addresses safety issues, including seismic and geologic hazards, flood hazards, wildfire hazards, hazardous materials, airport safety, emergency response, and safety services. It includes policies on natural hazards mitigation planning, which respond to the Federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's implementing regulations and support the County's Multi-Jurisdictional Local Hazard Mitigation Plan, which the City has adopted.

Relationship to General Plan Goals

The objectives and policies of this element support the following General Plan goals:

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.
Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.
16. Protect and improve public health and safety.

9.2 NOISE

California Government Code Section 65302(f) requires that general plans contain a Noise Element to identify and quantify potential noise problems and to provide effective policies for noise control and mitigation.

Noise Characteristics and Measurement

Noise is commonly defined as undesirable or unwanted sound. Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the fairly constant

noise generated by traffic on freeways. Three aspects of community noise are used in assessing the noise environment:

- *Level* (e.g., magnitude or loudness). Sound levels are measured and expressed in decibels (dB) with 10 dB roughly equal to the threshold of hearing. Figure NS-1 shows the decibel levels associated with different common sounds. Transient noise events may be described by their maximum A-weighted noise level (dBA).
- *Frequency* composition or spectrum. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz). The characterization of sound level magnitude with respect to frequency is the sound spectrum, often described in octave bands, which divide the audible human frequency range (e.g., from 20 to 20,000 Hz) into ten segments.
- *Variation* in sound level with time, measured as noise exposure. Most community noise is produced by many noise sources that change gradually throughout the day and produce a relatively steady background noise having no identifiable source. People may become habituated to moderate continuous transportation-generated noise, such as that generated by roadways. Identifiable events of brief duration, such as aircraft flyovers and the passage of freight trains, are more noticeable because they cause the community noise level to vary episodically instead of gradually. A single number called the equivalent sound level or “ L_{eq} ” describes the average noise exposure level over a period of time. Analysis of noise for planning purposes uses descriptors which emphasize the effect of night time noise, because during that time noise is perceived as more disruptive because background noise levels are generally lower than in the daytime, making outside noise intrusions more noticeable.

These weighted noise descriptors include:

- Community Noise Equivalent Level (CNEL) which reflects a 24-hour average of ambient sound but adds a five percent weighting factor for both evening (7 to 10 p.m.) and night-time (10 p.m. to 7 a.m.) sound; and
- Day-Night Average Level (L_{dn}) which reflects a 24-hour average of ambient sound but adds a 10 percent weighting factor for sound occurring during night-time hours (10 p.m. to 7 a.m.).

Both CNEL and L_{dn} reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors are roughly equivalent. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for the Noise Element under State planning law. The general practice is to identify noise contours around transportation facilities such as airports, rail lines, highways, and major streets, and to identify noise levels at property lines from stationary sources such as industrial equipment.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

- Except under special conditions, a change in sound level of 1 dB cannot be perceived;
- A 3 dB change is considered a just-noticeable difference;
- A 5 dB change is required before any noticeable change in community response would be expected. A 5 dB increase is often considered a significant impact; and
- A 10 dB increase is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Forty-five dBA is usually set as the limit on indoor noise detectable from outdoor sound sources. Sixty dBA is considered to be the sound level of normal conversation and levels within this range are often used as a limit on outdoor ambient noise levels for suburban residential areas. Outdoor ambient noise levels are permitted to be higher for urban areas and commercial sites, and higher still for industrial areas.

Noise Generation in Fresno

In the urban environment, noise generators, such as transportation corridors and industrial uses, occur in close proximity to sensitive noise receivers, such as residential uses. Some land uses potentially constitute both a noise generator and a simultaneous noise receiver, e.g., recreational sites. Fresno has special noise considerations because it has grown up around two major rail corridors, and many freight trains run through the heart of the city daily. Fresno contains three airports and has four State highways that traverse it, as well as major streets at half-mile and one-mile grid intervals, carrying large volumes of passenger vehicle and truck traffic. Industrial and public facilities in and around the city also generate noise from processing materials and from the operation of equipment such as large pumps and backup generators. Residential and commercial uses also contribute noise from smaller equipment, such as swimming pool pumps, air conditioning units, and compressors for refrigeration.



Industrial and public facilities in and around Fresno can generate noise, and the City requires enclosure, muffling, and/or extra setbacks for stationary noise sources so that nearby properties are not exposed to excessive noise levels.

Longstanding City policy for stationary sources has been to require enclosure, muffling, and/or greater setbacks so that adjacent properties are not exposed to excessive noise levels. Nuisance noise abatement has been accomplished through the City's Noise Ordinance. Noise from transportation facilities has been controlled primarily by State and federal standards but also by distancing sensitive uses from these facilities, and by use of sound-proofing construction measures, such as masonry walls and sealed buildings.

Title 24 of the California Building Code sets out energy conservation requirements, which have also greatly helped mitigate indoor noise levels by requiring dual-pane windows and additional insulation in buildings. Federal Aviation Administration regulations for airports have supported planning and zoning designations, which have kept sensitive uses away from the noise attendant upon flight paths. Each of the three airports in Fresno has its own noise policies and land use compatibility criteria, all of which are incorporated into this Plan.

Figure NS-1: Typical Sound Levels

Outdoor Sound Levels

Indoor Sound Levels



Existing Noise Levels

The existing noise conditions in the City were measured at nine locations from May 30 to June 1, 2012. Noise monitoring sites were selected to be representative of typical residential, commercial, and industrial sites within the Planning Area, as well as arterial roadways, elevated and below-grade freeways, and railroad crossings with and without train horn soundings. At each of the nine long-term 24-hour noise monitoring sites, day-night statistical noise level trends were recorded to develop L_{dn} values. Descriptions of each location and the measured noise levels are listed in Table 9-1.

TABLE 9-1: MEASURED EXISTING NOISE LEVELS ¹	
	Noise Level (dBA L_{dn})
Railroad crossing at Shields Ave.	84
Along Railroad near W. Barstow Ave.	74
SR 41 between W. Barstow & W. Shaw Ave.	76
SR 180 near N. Peach Ave.	76
E. Shaw Ave. near N. Cedar Ave.	72
N. Blackstone Ave. near E. Ashlan Ave.	70
S. Elm Ave. near E. Jensen Ave.	68
N. Valentine Ave. between W. Ashlan & W. Holland Ave.	67
S. Fruit Ave. north of Church Ave.	65

1. Values provided have been normalized to the reference distance of 100 feet.

Existing noise levels in the city are principally generated by transportation noise sources (refer to Figure NS-2: Existing Noise Contours). Vehicular traffic noise is the dominant source in most areas, but aircraft and rail activity are also significant sources of environmental noise in the local areas surrounding these operations. In several locations, industrial noise was clearly audible. However, overall average daily noise levels at existing nearby noise-sensitive receptors (e.g., residential areas) typically consist of traffic noise primarily and industrial noise secondarily. New noise-sensitive developments in close proximity to industrial land uses could be exposed to greater industrial noise levels.

Traffic Noise

The level of highway traffic noise depends on three factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Vehicle noise is a combination of the noises produced by the engine, exhaust, tires, and wind generated by taller vehicles. Other factors that affect the perception of traffic noise include: distance from the highway, terrain, vegetation, pavement type and condition, and natural and structural obstacles. While tire noise from autos is generally located at ground level, truck noise sources can be located as high as 10 to 15 feet above the roadbed due to tall exhaust stacks and higher engines.

Future noise exposure contours for Fresno's major roadways were modeled by applying the Federal Highway Administration's noise modeling procedure, using roadway, speed, and traffic mix data from the City and projected traffic volumes based on anticipated development under the General Plan.

In establishing noise contours for land use planning, it is customary to ignore noise attenuation afforded by buildings, roadway elevations, and depressions, and the barrier effect of natural terrain features. The result is a worst-case estimate of the existing and future (projected) noise environment. The assumption is that it is more desirable to overestimate the potential noise at a future noise-sensitive development site than to underestimate the noise environment and allow for potentially incompatible land-use development. The developed noise contours for the City are conservative, meaning that the contours are modeled with minimal noise attenuation by natural barriers, buildings, with the exception of significantly depressed sections of highways.

Future development within the Planning Area will result in increased traffic volumes, thus increasing noise levels in some areas (refer to Figure NS-3: Future Noise Contours). For example, future noise levels along highways are projected to increase by two to five decibels, while noise levels along most existing roadways are projected to increase by one to five decibels. New roadways, significantly expanded roadways, or sparsely populated areas where significant new development may also experience an increase in noise levels by more than five decibels. While there will be increases in some noise levels, efforts can be taken to help minimize such instances. For example, siting noise sensitive uses away from high-noise areas (e.g., major transportation routes) and buffering noise through design will help minimize future noise-related land use conflicts.

Railroad Operations Noise

Railroad activity in Fresno primarily occurs along two rail corridors, however there are also several spur lines. Warning horns generally are signaled within one-quarter mile of a grade crossing, although the area around the Community Regional Medical Center in downtown is designated as a quiet zone. Where grade crossings exist, and warning horns and crossing alarms are signaled, individual single event noise levels associated with a train generally reach 105 dBA to 110 dBA at a distance of 100 feet from the track centerline. Away from grade crossings, train pass-by noise levels are lower, typically 85 dBA to 90 dBA at a distance of 100 feet.

Airport Noise

There are two public airports in the Planning Area, Fresno-Yosemite International Airport and Fresno Chandler Executive Airport, and one private airport open to public use, Sierra Sky Park. In conjunction with Fresno-Yosemite International Airport, the Air National Guard maintains an airbase for military flight and training operations.

Each airport has its own City of Fresno airport land use plan designed to provide for public safety. In addition, the Fresno County Airport Land Use Commission (ALUC) must prepare an Airport Land Use Compatibility Plan (ALUCP) as required by the Caltrans Division of Aeronautics for each airport. ALUC and the Federal Aviation Administration (FAA) provide guidance to local jurisdictions on determining appropriate and compatible adjacent land uses through the detailed findings and policies of ALUCPs. Among other objectives, these airport plans strive to minimize the effects of aircraft noise on communities adjacent to airports and prevent uses incompatible with airport operations from locating near the airport. This General Plan and all other City land use plans must either be compatible with the adopted ALUCP or make a statement of overriding consideration justifying its incompatibility.

Figures NS-4 through 6 depict each airport's noise and safety zones that have been established to identify the compatibility criteria to apply to any given project proposed within the airport's compatibility zones. The noise contours shown on the maps are developed following Federal Aviation Regulation (FAR) Part 150 *Airport Noise Compatibility Planning*. The Part 150 program is designed to lessen the effect of airport noise on the surrounding community as development is proposed around an airport or the airport is modified or expanded. The specific criteria applied for each contour can be found in each airport's ALUCP, both the City's and the one prepared by the ALUC.

Major Stationary Noise Sources

Noise can result from many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and State employee health and safety regulations set by the Occupational Safety and Health Administration (OSHA) and Cal-OSHA, but exterior noise levels may exceed locally acceptable standards. Commercial, recreational, and public service facility activities can also produce noise that affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components that may be annoying to individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

Industrial uses in Fresno are typically located in industrial districts near freeways and commercial uses, away from residences and other sensitive noise receptors. Noise sources associated with service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc., are found at various locations within the city. The noise emissions of these types of uses are dependent on many factors and are therefore difficult to quantify precisely. Nonetheless, noise generated by these uses contributes to the ambient noise environment in immediate vicinity of these uses and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.

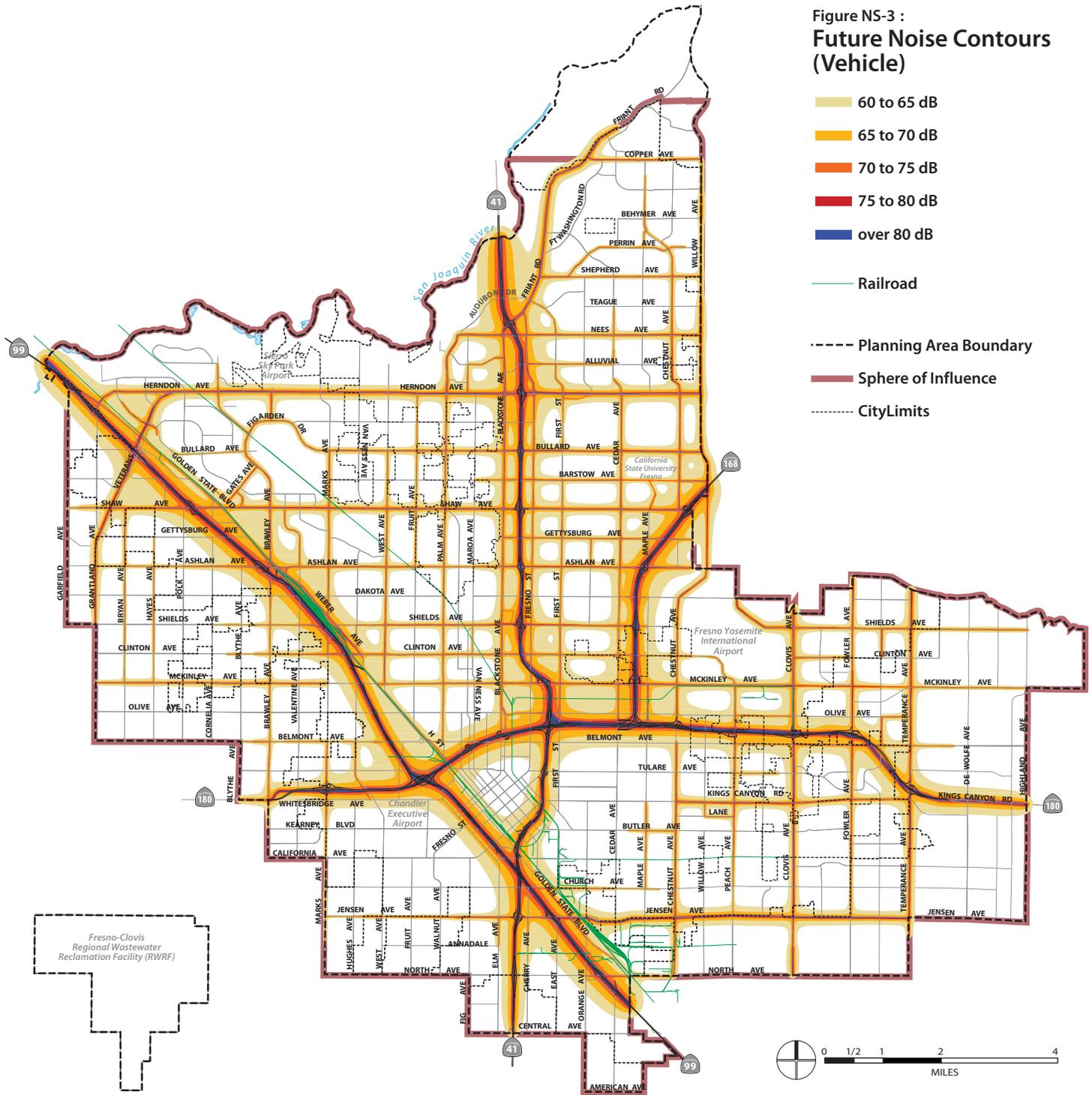
Figure NS-2:
Existing Noise Contours
(Vehicle)



Note: The Fresno Air National Guard Base, a military airport, and the Fresno Yosemite International Airport are located in the area represented as Fresno Yosemite International Airport.

Source: City of Fresno, 2011; Salter Associates, 2012
Dyett & Bhatia, 2012.

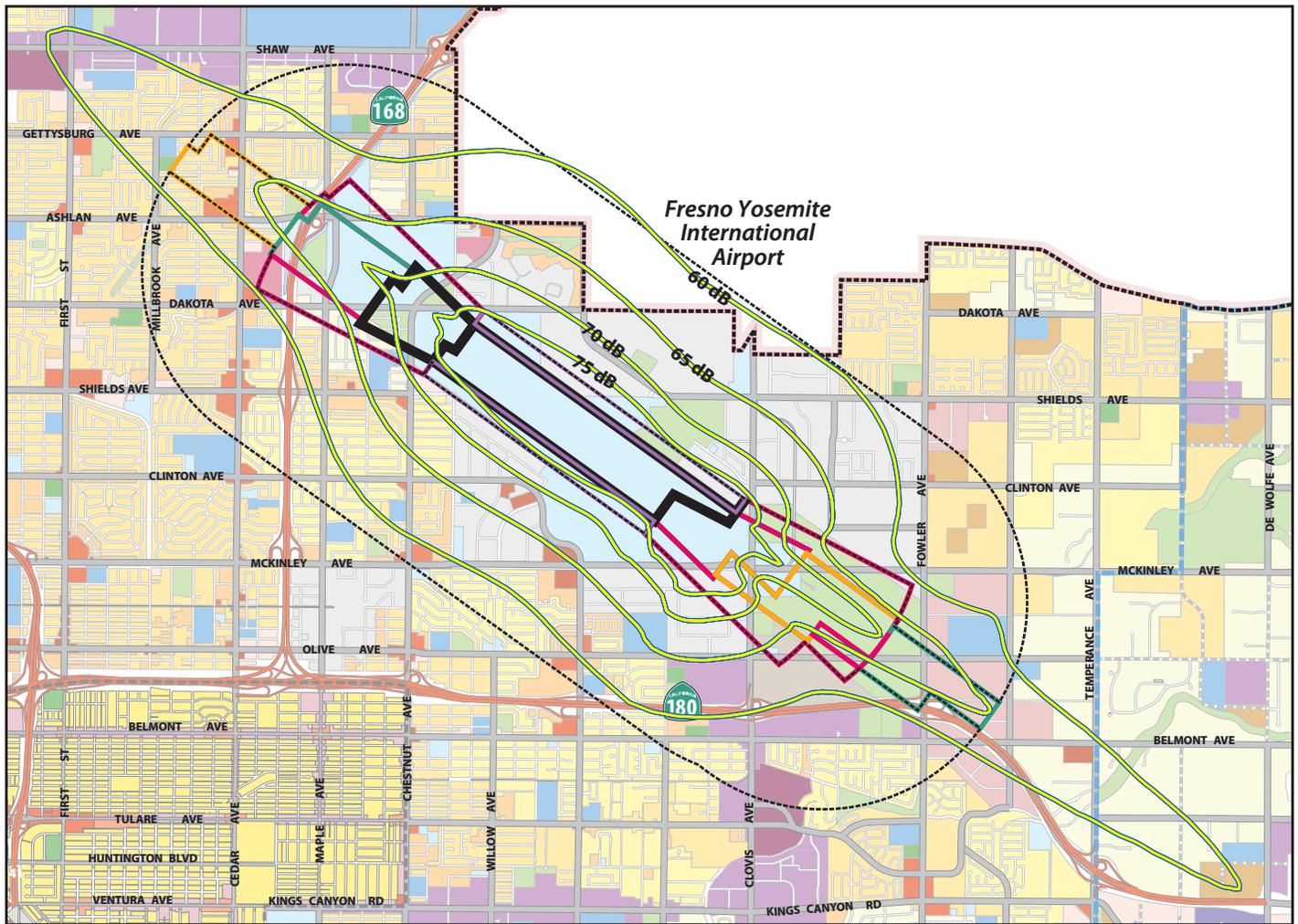
Figure NS-3 :
Future Noise Contours (Vehicle)



Note: The Fresno Air National Guard Base, a military airport, and the Fresno Yosemite International Airport are located in the area represented as Fresno Yosemite International Airport.

Source: City of Fresno, 2011; Salter Associates, 2012
 Dyett & Bhatia, 2012.

Figure NS-4:
Existing Fresno Yosemite International Airport Noise and Safety Zones



Safety Zones

-  Zone 1 RPZ
-  Zone 2 Inner Approach/Departure
-  Zone 3 Inner Turning
-  Zone 4 Outer Approach/Departure
-  Zone 5 Sideline
-  Zone 6 Traffic Pattern

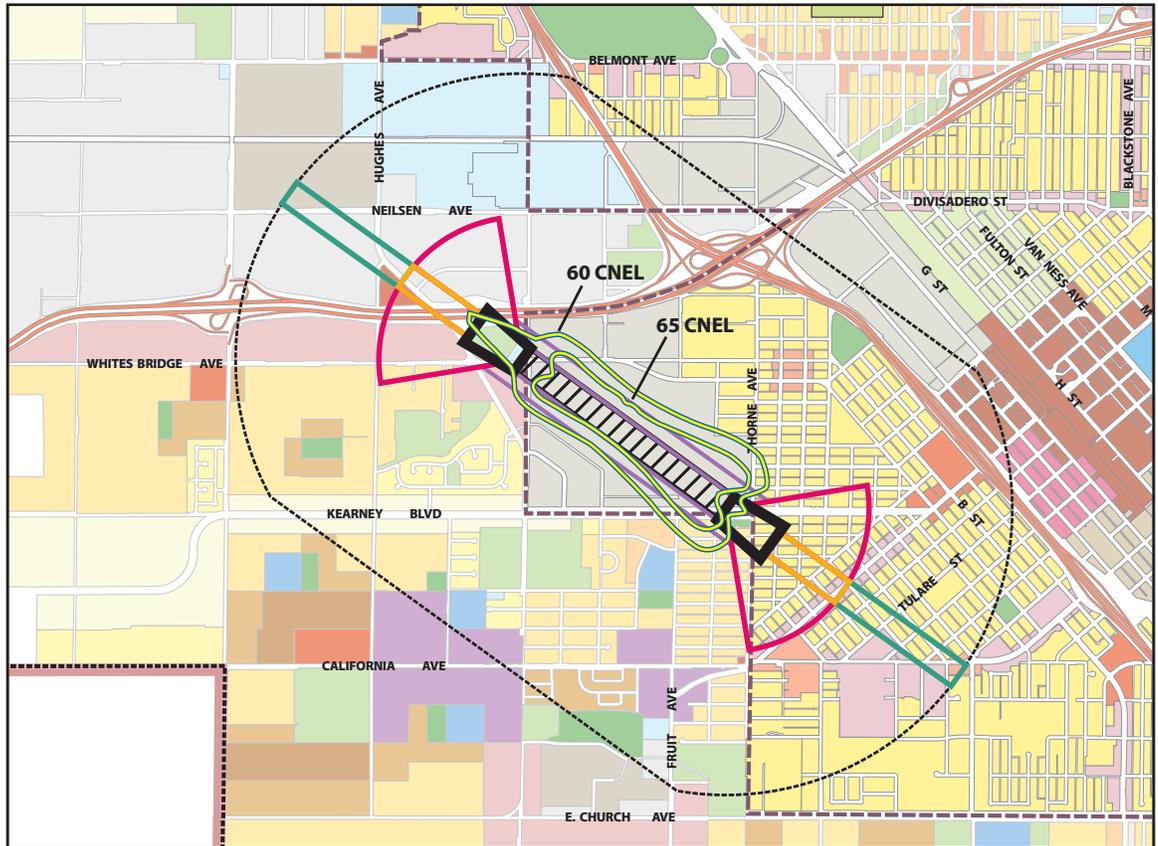
Noise Contours

-  75 dB
-  Planning Area
-  Sphere of Influence
-  City Limits

Source: City of Fresno, 2014.

Note: The Planned Land Use (PLU) designations represented in the background of this map may not reflect the most current PLU. For the adopted PLU designations see Figure LU-1.

Figure NS-5:
Existing Fresno Chandler Executive Airport Noise And Safety Zones



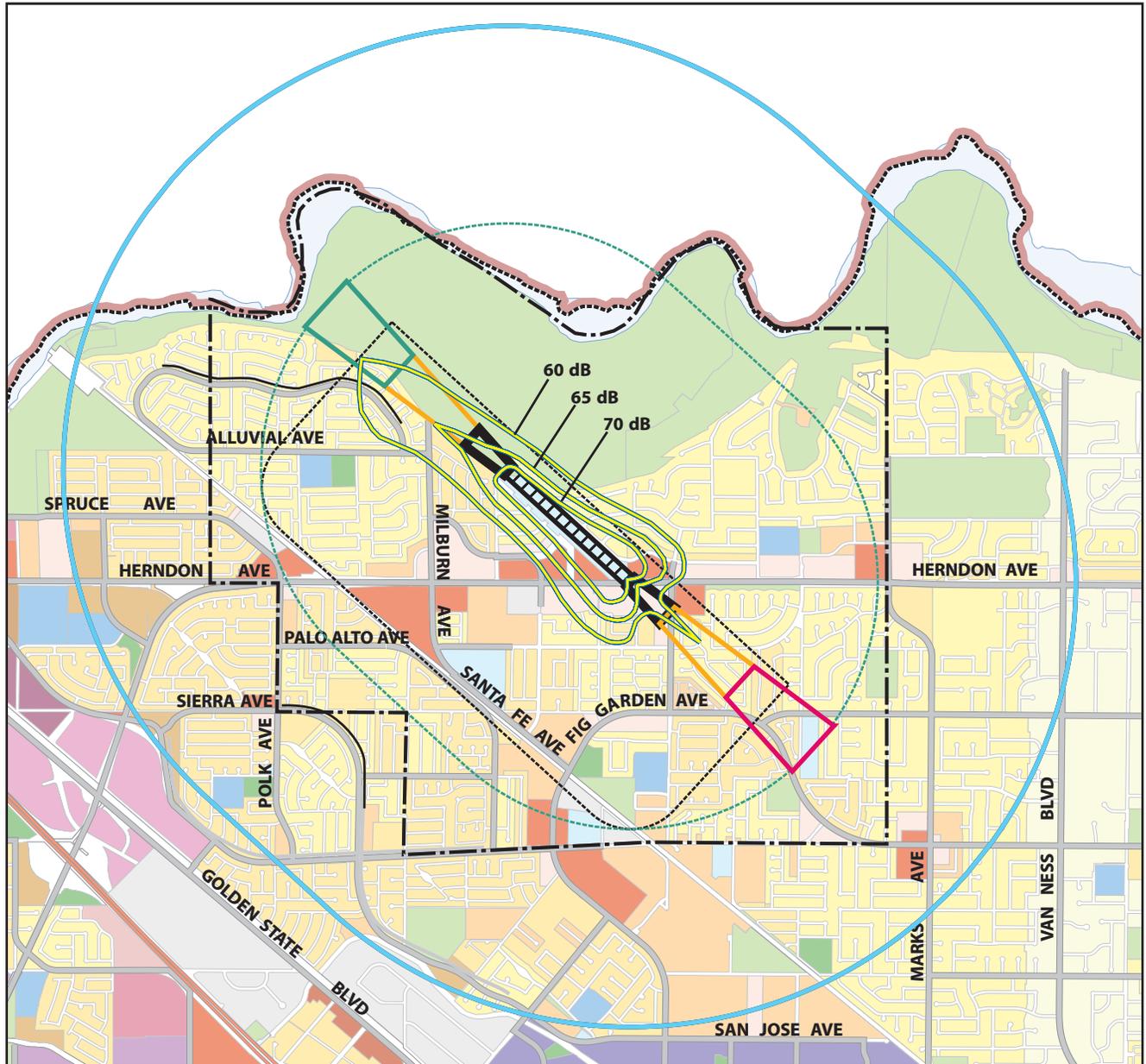
Safety Zones

-  Primary Surface
 -  Runway Proction Zone
 -  Inner Approach Zone
 -  Inner Turning Zone
 -  Outer Approach Zone
 -  Sideline Zone
 -  Traffic Pattern Zone
-
-  Noise Contours
 -  Planning Area
 -  Sphere of Influence
 -  City Limits
 -  Downtown Planning Area

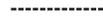
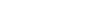
Source: City of Fresno, 2014.

Note: The Planned Land Use (PLU) designations represented in the background of this map may not reflect the most current PLU. For the adopted PLU designations see Figure LU-1.

Figure NS-6:
Existing Sierra Skypark Airport Noise and Safety Zones



Safety Zones

-  Primary Surface
-  Clear Zone
-  Inner Approach Zone
-  Outer Approach
-  Horizontal Surface
-  Conical Surface
-  Traffic Pattern
-  Primary Review Area Boundary
-  Noise Contours
-  Planning Area
-  Sphere of Influence
-  City Limits

Note: The Planned Land Use (PLU) designations represented in the background of this map may not reflect the most current PLU. For the adopted PLU designations see Figure LU-1.

Source: City of Fresno, 2014.

There are numerous park and school uses within the city. Noise generated by these uses depends on the age and number of people utilizing the respective facility at a given time and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be higher. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, respectively, can be expected. At organized events such as high-school football games with large crowds and public address systems, the noise generation is often significantly higher. As with service commercial uses, the noise generation of parks and school playing fields is variable.

Noise Control – Maximum Noise Level Standards

With the proposed intensification of land uses in the city, noise control will be an increasing consideration for infrastructure and new development, particularly for infill residential projects. Major cities in California commonly consider maximum noise levels of 65 dB to be considered “normally acceptable” for unshielded residential development including outdoor space in an urban environment. Suburban and rural jurisdictions tend to prefer a 60 dB or lower threshold for residential areas. Noise levels from 65 dB to 70 dB fall within the “conditionally unacceptable” range, and those in the 70 to 75 dB range are considered “normally unacceptable.”

The General Plan is consistent with noise control practice in urban areas, employing 60 dB as being a desirable level, but accepting 65 dB as being in the “normally acceptable” range for noise due to the number of transportation sources located in proximity to urban residential areas. This policy supports the development of infill residential projects, as well as non-residential infill projects by setting a realistic, achievable threshold of impact for new development.

Section 10-101 of the City’s Municipal Code contains the City’s Noise Ordinance, which establishes excessive noise guidelines and exemptions. Standards are set for ambient noise based on district type (residential, commercial, and industrial) and time of day. Upon adoption of the new noise limits and policies proposed in this General Plan Update, the City will commence an update of its Noise Ordinance to provide regulatory consistency with adopted policies.

Acceptable ranges for exterior noise levels in the Noise Ordinance will be updated to be consistent with this General Plan. This update will need to increase the threshold in residential districts to 65 decibels and adjust noise limits for other planned uses. The updated Noise Ordinance will also specify maximum hourly noise levels for outdoor activity areas and indoor spaces measurement standards; uniform guidelines for acoustical studies based on current professional standards; required noise mitigation

standards and enforcement procedures for stationary noise sources which cause the allowable noise limits to be exceeded. Finally, the Noise Ordinance will establish performance standards for noise reduction for new developed property that may be exposed to community noise levels exceeding target acceptable noise levels for outdoor activity levels and interior spaces.

TABLE 9-2: TRANSPORTATION (NON-AIRCRAFT) NOISE SOURCES

Noise-Sensitive Land Use ¹	Outdoor Activity Areas ²	Interior Spaces	
	L _{dn} /CNEL, dB	L _{dn} /CNEL, dB	L _{eq} dB ²
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Nursing Homes	65	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	65	-	45
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

1. Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.

TABLE 9-3: STATIONARY NOISE SOURCES¹

	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Hourly Equivalent Sound Level (Leq), dBA	50	45
Maximum Sound Level (Lmax), dBA	70	60

1. The Department of Development and Resource Management Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.
2. As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five dB.

OBJECTIVE

- NS-1** Protect the citizens of the City from the harmful and annoying effects of exposure to excessive noise.

IMPLEMENTING POLICIES

- NS-1-a** **Desirable and Generally Acceptable Exterior Noise Environment.** Establish 65 dB_A L_{dn} or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior

areas of residential and noise-sensitive uses for noise, but designate 60 dB_A L_{dn} or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise-sensitive uses. Maintain 65 dB_A L_{dn} or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dB_A L_{dn} or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.

Commentary: The Noise Ordinance will define usable exterior areas for single family and multiple family residential and noise sensitive uses to include rear yards and other outdoor areas intended to accommodate leisure or active use, excluding front or side yard areas, and front or side porches. Balconies or roof decks facing front and side yards shall be included in designated areas to be protected from noise where these spaces are used to calculate compliance with required outdoor living area as required by adopted development standards.

NS-1-b

Conditionally Acceptable Exterior Noise Exposure Range. Establish the conditionally acceptable noise exposure level range for residential and other noise sensitive uses to be 65 dB L_{dn} or require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the desirable and conditionally acceptable exterior noise level and the required interior noise level standards set in Table 9-2.

NS-1-c

Generally Unacceptable Exterior Noise Exposure Range. Establish the exterior noise exposure of greater than 65 dB L_{dn} or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table 9-2 as conditions of permit approval.

NS-1-d

Allowable Exterior Noise Environment for BRT and Activity Centers. Exclude residential and noise sensitive uses located along Bus Rapid Transit corridors or within Activity Centers identified by this General Plan, from exterior noise standards in Policies NS-1-a through NS-1-c where it is determined application of noise mitigation measures will

be detrimental to the realization of the General Plan's mixed use policies.

Commentary: Interior noise level standards of Table 9-2 will still apply.

NS-1-e Update Noise Ordinance. Update the Noise Ordinance to ensure that noise exposure information and specific standards for both exterior and interior noise and measurement criteria are consistent with this General Plan and changing conditions within the city and with noise control regulations or policies enacted after the adoption of this element.

NS-1-f Performance Standards. Implement performance standards for noise reduction for new residential and noise sensitive uses exposed to exterior community noise levels from transportation sources above 65 dB L_{dn} or CNEL, as shown on Figure NS-3: Future Noise Contours, or as identified by a project-specific acoustical analysis based on the target acceptable noise levels set in Tables 9-2 and Policies NS-1-a through NS-1-c.

NS-1-g Noise mitigation measures which help achieve the noise level targets of this plan include, but are not limited to, the following:

- Façades with substantial weight and insulation;
- Installation of sound-rated windows for primary sleeping and activity areas;
- Installation of sound-rated doors for all exterior entries at primary sleeping and activity areas;
- Greater building setbacks and exterior barriers;
- Acoustic baffling of vents for chimneys, attic and gable ends;
- Installation of mechanical ventilation systems that provide fresh air under closed window conditions.

The aforementioned measures are not exhaustive and alternative designs may be approved by the City, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative design(s) will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

NS-1-h Interior Noise Level Requirement. Comply with the State Code requirement that any new multifamily residential, hotel, or dorm

buildings must be designed to incorporate noise reduction measures to meet the 45 dB L_{dn} interior noise criterion, and apply this standard as well to all new single-family residential and noise sensitive uses.

NS-1-i

Mitigation by New Development. Require an acoustical analysis where new development of industrial, commercial or other noise generating land uses (including transportation facilities such as roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by Tables 9-2 and 9-3 to determine impacts, and require developers to mitigate these impacts in conformance with Tables 9-2 and 9-3 as a condition of permit approval through appropriate means.

Noise mitigation measures may include:

- The screening of noise sources such as parking and loading facilities, outdoor activities, and mechanical equipment;
- Providing increased setbacks for noise sources from adjacent dwellings;
- Installation of walls and landscaping that serve as noise buffers;
- Installation of soundproofing materials and double-glazed windows; and
- Regulating operations, such as hours of operation, including deliveries and trash pickup.

Alternative acoustical designs that achieve the prescribed noise level reduction may be approved by the City, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along roadways when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.

NS-1-j

Significance Threshold. Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.

Commentary: When an increase in noise would result in a "significant" impact (increase of three dBA or more) to residents or

businesses, then noise mitigation would be required to reduce noise exposure. If the increase in noise is less than three dBA, then the noise impact is considered insignificant and no noise mitigation is needed.

By setting a specific threshold of significance in the General Plan, this policy facilitates making a determination of environmental impact, as required by the California Environmental Quality Act. It helps the City determine whether (1) the potential impact of a development project on the noise environment warrants mitigation, or (2) a statement of overriding considerations will be required.

NS-1-k Proposal Review. Review all new public and private development proposals that may potentially be affected by or cause a significant increase in noise levels, per Policy NS-1-i, to determine conformance with the policies of this Noise Element. Require developers to reduce the noise impacts of new development on adjacent properties through appropriate means.

NS-1-l Enforcement. Continue to enforce applicable State Noise Insulation Standards and Uniform Building Code noise requirements, as adopted by the City.

NS-1-m Transportation Related Noise Impacts. For projects subject to City approval, require that the project sponsor mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the City's adopted standards for noise-sensitive land uses.

NS-1-n Best Available Technology. Require new noise sources to use best available control technology to minimize noise emissions.

Commentary: Noise from mechanical equipment can be reduced by soundproofing materials and sound-deadening installation; controlling hours of operation will also reduce noise impacts during the morning or evening.

NS-1-o Sound Wall Guidelines. Acoustical studies and noise mitigation measures for projects shall specify the heights, materials, and design for sound walls and other noise barriers. Aesthetic considerations shall also be addressed in these studies and mitigation measures such as variable noise barrier heights, a combination of a landscaped berm with wall, and reduced barrier height in combination with increased

distance or elevation differences between noise source and noise receptor, with a maximum allowable height of 15 feet. The City will develop guidelines for aesthetic design measures of sound walls, and may commission area wide noise mitigation studies that can serve as templates for acoustical treatment that can be applied to similar situations in the urban area.

Commentary: While acoustical studies need to be site-specific in order to appropriately assess particular settings, having prototypical design measures and noise control templates that can be applied for similar situations and contexts can facilitate infill and other development.

NS-1-p

Airport Noise Compatibility. Implement the land use and noise exposure compatibility provisions of the adopted Fresno Yosemite International Airport Land Use Compatibility Plan, the Fresno-Chandler Executive Airport Master and Environs Specific Plan, and the Sierra Sky Park Land Use Policy Plan to assess noise compatibility of proposed uses and improvements within airport influence and environs areas.

9.3 SEISMIC AND GEOLOGIC HAZARDS

Seismicity

Fresno is in one of the more geologically stable areas of California and does not lie within a known active earthquake fault zone. Although a number of faults are located within the Sierra Nevada Mountain Range, none are considered active. The nearest active fault is located by Independence, CA, approximately 100 miles to the east along the Fresno County-Inyo County boundary. Overall, seismic-related concerns (including liquefaction and subsidence) are considered fairly minor for the Planning Area. The city is not located in an Alquist-Priolo Special Fault Study Zone, that is, it has not been identified as a zone of special study around active faults. Hidden faulting in Western Fresno County did manifest itself in the Coalinga Earthquake of 1983, causing ground shaking in Fresno, but minimal damage. In the future, Fresno could be affected by major seismic events from the following active fault systems in other regions of California:

- The San Andreas Fault paralleling the Coast Ranges in western Fresno County;
- The Owens Valley Fault system in the Eastern Sierra Region of California;
- The White Wolf Fault paralleling the Tehachapi range southeast of Bakersfield
- Hidden thrust fault(s) in the west side of the San Joaquin Valley; and

- The Long Valley Caldera, a seismic and volcanic area in the Eastern Sierra that lies between Mono Lake and Crowley Lake.

The principal potential earthquake hazard for Fresno is ground shaking, which could cause damage to buildings and infrastructure elements such as bridges and pipes. The distance between Fresno and major faults minimizes this potential hazard.

Soil Hazards

Expansive soils, soil erosion, and water infiltration are issues that can cause safety concerns in Fresno.

Expansive soils are largely comprised of clays, which expand in volume when water is absorbed and shrink as the soil dries. Expansion is measured by shrink-swell potential, which is the volume change in soil with a gain in moisture. If the shrink-swell potential is rated moderate to high, then damage to buildings, roads, structural foundations, and pipes can occur. In the northern portion of Fresno's SOI, there are some areas of expansive clay soil that require special construction standards for foundations and infrastructure. Expansive clay problems can be surmounted by appropriate engineering design and construction techniques.

Highly erodible soils are those that are easily carried by water and, to a lesser extent, by wind. Surface erosion is more commonly visible, but subsurface erosion can lead to damage to pipes, roads, foundations, and other structural elements. Soil erosion potential is identified by a specific soil's "K Factor," which provides an indication of a soil's inherent susceptibility to erosion, absent of slope and groundcover factors. Values of K range from 0.05 to 0.43, and the higher the value, the more susceptible the soil is to sheet erosion by water. The addition of weight, such as pools and decks, onto susceptible soil, as well as private irrigation systems and the action of burrowing rodents, are factors that may aggravate land slippage. Fresno is not susceptible to soil erosion with the exception of land within 300 feet of the toe of the San Joaquin River bluffs, where the steep slopes and soil composition predispose it to instability and erosion.

Soils are also defined by their rainfall runoff potential, which is the degree to which soil allows or disallows rainfall water to infiltrate and transmit down to the groundwater table. Groups of soils having similar runoff potential under similar storm and cover conditions, absent of slope, are placed into one of four hydrologic group classifications: A, B, C or D. Definitions of the classes are as follows:

- **Soil Group A. High Infiltration (Low runoff potential)**—Soils having high infiltration rates, even when thoroughly wetted and consisting chiefly of deep, well drained sands or gravels. These soils have a high rate of water transmission.
- **Soil Group B. Moderate Infiltration**—Soils having moderate infiltration rates, even when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately fine to moderately course textures. These soils have a moderate rate of transmission.
- **Soil Group C. Slow Infiltration**—Soils having slow infiltration rates, even when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures. These soils have a slow rate of transmission.
- **Soil Group D. Very Slow Infiltration (High runoff potential)**—Soils having very slow infiltration rates, even when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Hydrological groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning watershed protection and flood prevention projects and for designing structures for the use, control, and disposal of water.

OBJECTIVE

- NS-2** Minimize risks of property damage and personal injury posed by geologic and seismic risks.

IMPLEMENTING POLICIES

- NS-2-a** **Seismic Protection.** Ensure seismic protection is incorporated into new and existing construction, consistent with the Fresno Municipal Code.

- NS-2-b** **Soil Analysis Requirement.** Identify areas with potential geologic and/or soils hazards, and require development in these areas to conduct a soil analysis and mitigation plan by a registered civil engineer (or engineering geologist specializing in soil geology) prior to allowing on-site drainage or disposal for wastewater, stormwater runoff, or swimming pool/spa water.

- NS-2-c** **Landfill Areas.** Require proposed land uses on or near landfill areas to be designed and maintained to comply with California Code of Regulations, Title 27, Section 21190, Post Closure Land Use.
- NS-2-d** **Bluff Preservation Overlay Zone.** Per the requirements of the Bluff Preservation Overlay Zone District and Policy POSS-7-f (Chapter 5, Parks and Open Space), the following standards shall be applicable for property located within the Bluff Preservation zone:
- Require proposed development within 300 feet of the toe of the San Joaquin River bluffs to undertake an engineering soils investigation and evaluation report that demonstrates that the site is sufficiently stable to support the proposed development, or provide mitigations to provide sufficient stability; and
 - Establish a minimum setback of 30 feet from the San Joaquin River bluff edge for all buildings, structures, decks, pools and spas (which may be above or below grade), fencing, lighting, steps, etc.
 - An applicant may request to reduce the minimum setback to 20 feet from the bluff edge if it can be demonstrated, to the satisfaction of the City's Building Official and the Planning Director, that the proposed building, structure, deck, pool and/or spas (which may be above or below grade), fencing, steps, etc., will meet the objectives of the Bluff Preservation Overlay Ordinance. In no case shall the setback be reduced to less than 20 feet.

9.4 STORM DRAINAGE AND FLOOD CONTROL

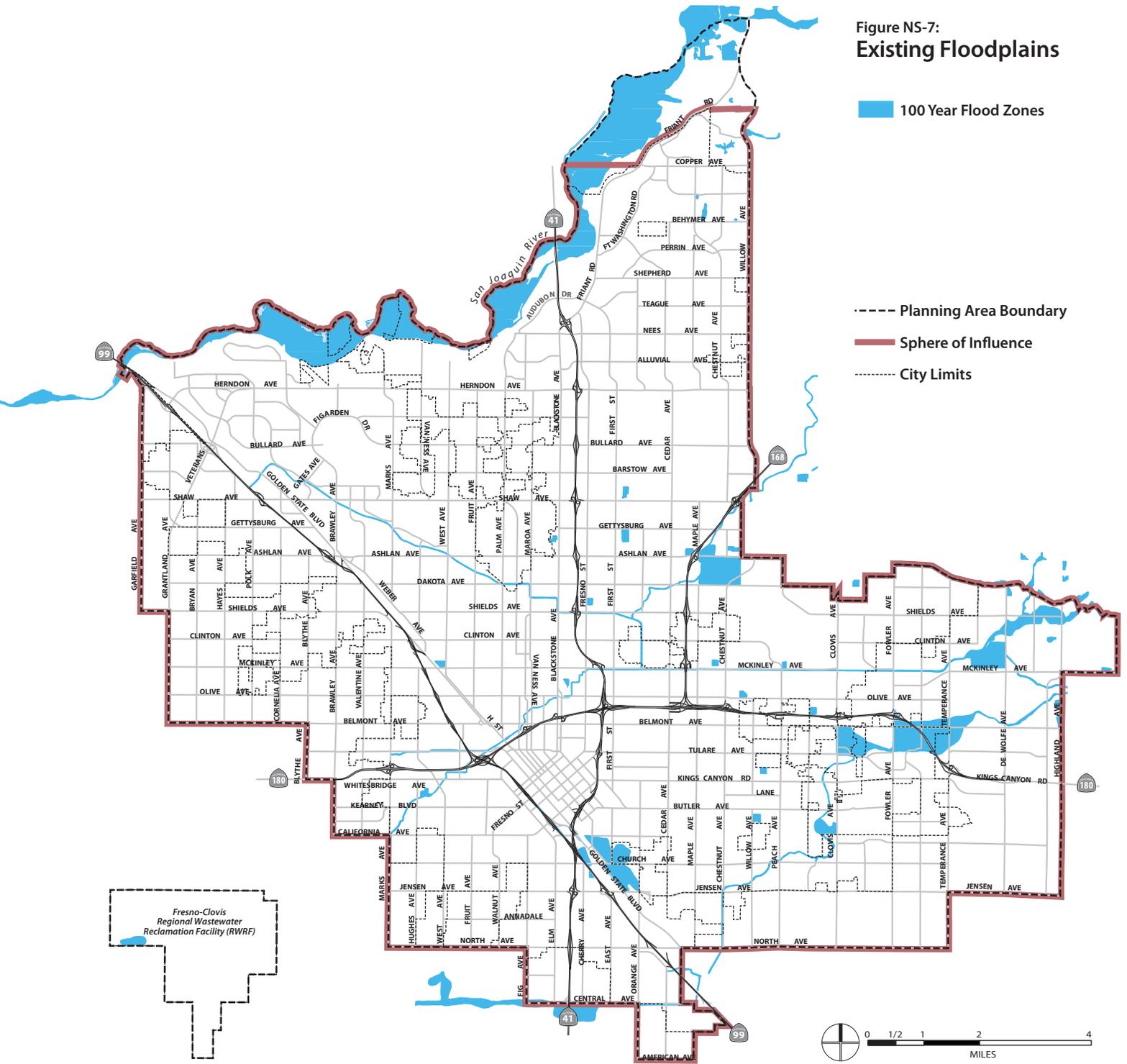
Fresno's precipitation comes in episodic storm events, which may be severe and may cause localized flooding. The Fresno area receives inflows of regional runoff from a large watershed to the east, and is in the path of natural drainage from the valley floor, foothills and Sierra Nevada range. The San Joaquin River, confined between bluffs, comprises the northern boundary of Fresno. Figure NS-7: Flood Plains shows the locations of the existing 100-year floodplains in the Planning Area, as mapped by FEMA's National Flood Insurance Maps.

The Fresno Metropolitan Flood Control District (FMFCD) is responsible for flood control and storm water planning and management. It was authorized as a "special act"

district and established by voter approval in 1956 to serve a 54-square mile area. Since its creation the district boundaries have been expanded several times and now include approximately 400 square miles—almost the entire portion of the Fresno-Clovis Metropolitan Area, with the exception of 6.5 square miles of SEDA which has yet to be annexed to the District. Once all of SEDA is annexed, FMFCD will develop and adopt Storm Water Master Plans for SEDA based on this General Plan.

The District was formed for the purpose of acquiring and constructing flood control and drainage facilities to safely convey, discharge, store and conserve storm water received on land within the District boundaries or which flows through the District. Eight flood control reservoirs and major basin facilities have been constructed along the Big Dry Creek, Redbank Creek, Dog Creek, Pup Creek, and Fancher Creek, comprising the Fresno Stream Group. The District also serves as the local sponsor of the U.S. Army Corps of Engineers for five the flood control facilities within the Redbank-Fancher Creeks Flood Control Project.

Figure NS-7:
Existing Floodplains



Source: FEMA, 2014.

The urban storm water drainage program provides a system comprised of storm drainage collection, conveyance, detention and retention serving planned urban and rural areas within the Fresno-Clovis environs. The adopted Storm Drainage and Flood Control Master Plan divides the service area into 163 local drainage areas. Collectively, the system has in excess of 600 miles of storm drainage pipeline and 154 local stormwater management basins together with ancillary facilities, such as storm water lift pump stations.

This system expands as the area of urbanization expands. Facilities are funded and constructed by owners/developers of properties pursuant to the City's drainage fee requirements in Fresno Municipal Code section 12-1901 et. seq., or constructed by FMFCD under publicly awarded contracts. The City also requires drainage to be directed to public streets, so that storm water travels along paved surface areas to inlets per the Fresno Municipal Code. The inlets accept the water into the storm drainage pipelines which convey water to stormwater management basins. The pipeline system is designed with a peak flow capacity to accommodate a two-year intensity storm event (50 percent probability of occurring in any given year). The basin capacity utilizes the percentage of runoff from the two-year pipeline data, but with a volume from six inches of rainfall. All basins are designed with relief systems so that additional capacity can be created by dewatering between rainfall events. The District's drainage services program includes topographic mapping; master plan engineering and facility design; system construction; and operation and maintenance.

Any infill project that increases the amount of impervious surfacing, changes the existing drainage pattern(s), and/or generates storm flows faster or greater than the existing condition could result in the existing pipeline collection system being overburdened. Typically, infill projects are required to mitigate any increase in runoff by either increasing the capacity of the existing system (i.e., build more infrastructure) or holding storm runoff on site to ensure offsite runoff does not increase.

As the owner and operator of the storm water drainage system, the District has primary responsibility for implementing the U.S. Clean Water Act requirements through a National Pollutant Discharge Elimination System discharge permit issued by the Regional Water Quality Control Board (RWQCB). This program is comprised of pollutant removal in the stormwater basins and education to avoid storm water pollution; best management practices for commercial, industrial and new development storm water quality control; monitoring to assess storm water impacts upon the quality of receiving water; and the preparation of ordinances for adoption by local governments to enforce storm water quality control measures.

The District's programs include water conservation efforts through its design and operation of storm water drainage facilities to detain and retain water from storm

events as well as receive dry season surface water supplies for groundwater recharge. Approximately 90 basins are intertied with Fresno Irrigation District (FID) canals and receive surface water through contracts with the irrigation district and the cities of Fresno and Clovis. Storm water drainage basins serving primarily residential areas are also designed to accommodate passive and active recreational activities. Recreational use of 27 basins has been accommodated by improvements including baseball and playground areas, and two basins have been specifically designed to accommodate use by individuals with disabilities, while a third accommodates a high quality little league baseball facility. District flood control and drainage facilities also provide important open space in the urban area and areas for wildlife habitat. Through a memorandum of understanding, which serves as a Section 1601 Master Streambed Alteration Agreement with the California Department of Fish and Wildlife, restoration and protection of rural streams for flood control purposes also brings long-term net benefits for fish, wildlife, water quality, native plants, and stream habitats.

OBJECTIVE

NS-3 Minimize the risks to property, life, and the environment due to flooding and stormwater runoff hazards.

IMPLEMENTING POLICIES

NS-3-a **Stormwater Drainage and Flood Control Master Plan.** Support the full implementation of the FMFCD Storm Drainage and Flood Control Master Plan, the completion of planned flood control and drainage system facilities, and the continued maintenance of stormwater and flood water retention and conveyance facilities and capacities. Work with the FMFCD to make sure that its Storm Drainage and Flood Control Master Plan is consistent with the General Plan.

NS-3-b **Curb and Gutter Installation.** Coordinate with Fresno Metropolitan Flood Control District (FMFCD) to install curbing, gutters, and other drainage facilities with priority to existing neighborhoods with the greatest deficiencies and consistent with the Storm Drainage and Flood Control Master Plan.

NS-3-c **Dual Use Facilities.** Support multiple uses of flood control and drainage facilities as follows:

- Use, wherever practical, FMFCD facilities for groundwater management and recharge; and

- Promote recreational development of ponding basin facilities located within or near residential areas, compatible with the stormwater and groundwater recharge functions.

NS-3-d Landscaped Buffer. City will support the development of FMFCD ponding basins including the landscaping and irrigation for the top one third of the side sloped areas consistent with the FMFCD Basin Design Criteria.

NS-3-e Pollutants. Work with FMFCD to prevent and reduce the existence of urban stormwater pollutants pursuant to the requirements of the National Pollution Discharge Elimination Systems Act.

NS-3-f Flooding Emergency Response Plans. Work with responsible agencies to update emergency dam failure inundation plans, evacuation plans and other emergency response plans for designated flood-prone areas, including the San Joaquin riverbottom.

NS-3-g Essential Facilities Siting Outside of Floodplains. Avoid siting emergency response and essential public facilities, such as fire and police stations, within a 100-year floodplain, unless it can be demonstrated that the facility can be safely operated and accessed during flood events.

NS-3-h Runoff Controls. Implement grading regulations and related development policies that protect area residents from flooding caused by urban runoff produced from events that exceed the capacity of the Storm Drainage and Flood Control Master Plan system of facilities. Place all structures and/or flood-proofing in a manner that does not cause floodwaters to be diverted onto adjacent property, increase flood hazards to other property, or otherwise adversely affect other property.

NS-3-i New Development Must Mitigate Impact. Require new development to not significantly impact the existing storm drainage and flood control system by imposing conditions of approval as project mitigation, as authorized by law. As part of this process, closely coordinate and consult with the FMFCD to identify appropriate conditions that will result in mitigation acceptable and preferred by FMFCD for each project.

Commentary: The City recognizes the expertise and significant role of the FMFCD, and will give the highest deference to its

recommendations for mitigation measures, consistent with applicable law.

- NS-3-j National Flood Insurance Program.** Continue to participate in the National Flood Insurance Program (NFIP) by ensuring compliance with applicable requirements. Review NFIP maps periodically to determine if areas subject to flooding have been added or removed and make adjustments to the Land Use Diagram Figure LU-1.
- NS-3-k 100-Year Floodplain Policy.** Require developers of residential subdivisions to preserve those portions of development sites as open space that may be subject to 100-year flood events, unless the flood hazard can be substantially mitigated by development project design.
- NS-3-l 200-Year Floodplain Protection.** Promote flood control measures that maintain natural conditions within the 200-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Discourage construction of permanent improvements that would be adversely affected by periodic floods within the 200-year floodplain, particularly in the San Joaquin riverbottom.
- NS-3-m Flood Risk Public Awareness.** Continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation. Remind households and businesses located in flood-prone areas of opportunities to purchase flood insurance.
- NS-3-n Precipitation Changes.** Work with FMFCD to evaluate the planned and existing stormwater conveyance system in light of possible changes to precipitation patterns in the future.

9.5 WILDLAND FIRE HAZARDS

Fresno's high summer temperatures, intense sunlight, and low rainfall could encourage wildland fires by drying and pre-heating combustible material and fostering spontaneous combustion of flammable material. Fresno's estimated maximum wind speed is 70 mph, which could fan blazes to a high intensity. Fire hazards are typically highest in heavily wooded areas, as trees are a great source of fuel, as are grasslands. Given that the Planning Area is largely urbanized or working agricultural land and lacks steep topographies, wildfire threats are minimal. Although Fresno is proximate to high and very high fire hazard designated areas, the city is largely categorized as little or no threat or moderate fire hazard, which is largely attributed to paved areas. Small areas

along the San Joaquin River Bluff area in northern Fresno are prone to wildfire due to relatively steep terrain and vegetation and therefore classified as high fire hazard.

Policies related to fire protection and response are located in the Public Utilities and Services Element.

9.6 HAZARDOUS MATERIALS

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas.

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

Sites previously contaminated by hazardous materials are required to be identified and cleaned up. The contaminated sites in Fresno are largely associated with leaking underground storage tanks and are predominately clustered south of Downtown, near Fresno Yosemite International Airport and Palm Bluffs Corporate Center (northwest Fresno), and along the Union Pacific Railroad Tracks as shown on Figure PU-3: Regional Groundwater Contamination shows the locations of known leaking underground storage tanks and known hazardous waste sites requiring cleanup under federal or State direction.

Releases, leaks, or disposal of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface can lead to contamination of underlying soil and groundwater. Depending of the conditions and intensity of the release, groundwater contamination can migrate beyond the property boundary of the original release site. Disturbance of a previously contaminated area through grading or excavation

operations could expose the public to health hazards from physical contact with contaminated materials or hazardous vapors. Improper handling or storage of contaminated soil and groundwater can further expose the public to these hazards, or potentially spread contamination through surface water runoff or air-borne dust.

In addition, contaminated groundwater can spread down gradient, potentially contaminating subsurface areas of surrounding properties. This also poses a threat due to the high number of private water wells and the City's reliance on groundwater as the principal potable water source. Groundwater quality is discussed in the Public Utilities and Services Element.

OBJECTIVE

NS-4 Minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

IMPLEMENTING POLICIES

NS-4-a **Processing and Storage.** Require safe processing and storage of hazardous materials, consistent with the California Building Code and the Uniform Fire Code, as adopted by the City.

NS-4-b **Coordination.** Maintain a close liaison with the Fresno County Environmental Health Department, Cal-EPA Division of Toxics, and the State Office of Emergency Services to assist in developing and maintaining hazardous material business plans, inventory statements, risk management prevention plans, and contingency/emergency response action plans.

NS-4-c **Soil and Groundwater Contamination Reports.** Require an investigation of potential soil or groundwater contamination whenever justified by past site uses. Require appropriate mitigation as a condition of project approval in the event soil or groundwater contamination is identified or could be encountered during site development.

NS-4-d **Site Identification.** Continue to aid federal, State, and County agencies in the identification and mapping of waste disposal sites (including abandoned waste sites), and to assist in the survey of the kinds, amounts, and locations of hazardous wastes.

NS-4-e **Compliance with County Program.** Require that the production, use, storage, disposal, and transport of hazardous materials conform to the

standards and procedures established by the County Division of Environmental Health. Require compliance with the County's Hazardous Waste Generator Program, including the submittal and implementation of a Hazardous Materials Business Plan, when applicable.

- NS-4-f** **Hazardous Materials Facilities.** Require facilities that handle hazardous materials or hazardous wastes to be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.

- NS-4-g** **Hazmat Response.** Include policies and procedures appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of Fresno County's Hazardous Materials Incident Response Plan.

- NS-4-h** **Household Collection.** Continue to support and assist with Fresno County's special household hazardous waste collection activities, to reduce the amount of this material being improperly discarded.

- NS-4-i** **Public Information.** Continue to assist in providing information to the public on hazardous materials.

9.7 AIRPORT SAFETY

There are two public airports in the Planning Area, Fresno-Yosemite International Airport (FYI) and Chandler Executive Airport (FCH), and one private airport open to public use, Sierra Sky Park. In conjunction with Fresno-Yosemite International Airport, the Air National Guard maintains an airbase for military flight and training operations. Each airport has its own airport land use plan designed to provide for public safety. The Fresno County Airport Land Use Commission (ALUC) provides guidance to local jurisdictions on adjacent land uses through Airport Land Use Compatibility Plans (ALUCPs). This General Plan and all other City land use plans must be compatible with the ALUCPs.

Airports may impact public safety due to the potential for aircraft crashes. Policies in this section are designed to minimize public exposure to risks associated with airport operations and to minimize the siting of land uses near airports that might interfere with airport operations. As shown earlier in this chapter, Figures NS-4 through NS-6 show each airport's safety zones, which are established to identify the land or water area surrounding the airport runways that could be impacted by an airport hazard.



Fresno Yosemite International Airport is one of two public airports in Fresno, and it has its own land use plan.

OBJECTIVE

- NS-5** Protect the safety, health, and welfare of persons and property on the ground and in aircraft by minimizing exposure to airport-related hazards.

IMPLEMENTING POLICIES

- NS-5-a** **Land Use and Height.** Incorporate and enforce all applicable Airport Land Use Compatibility Plans (ALUCPs) through land use designations, zoning, and development standards to support the continued viability and flight operations of Fresno's airports and to protect public safety, health, and general welfare.
- Limit land uses in airport safety zones to those uses listed in the applicable ALUCPs as compatible uses, and regulate compatibility in terms of location, height, and noise.
 - Ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace), particularly in terms of height.

NS-5-b **Airport Safety Hazards.** Ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, fuel storage, or from wildlife, in violation of adopted safety standards.

NS-5-c **Avigation Easements.** Employ avigation easements in order to secure and protect airspace required for unimpeded operation of publicly owned airports.

Commentary: Avigation easements are established in the form of land use covenants and are binding upon present and subsequent property owners.

NS-5-d **Disclosure.** As a condition of approval for residential development projects, require sellers to prepare and provide State Department of Real Estate Disclosure statements to property buyers notifying of noise and safety issues related to airport operations.

NS-5-e **Planned Expansion.** Allow for the orderly expansion and improvement of publicly-owned airports, while minimizing adverse environmental impacts associated with these facilities.

- Periodically update airport facility master plans in accordance with FAA regulations.
- Require land use within the boundaries of the Fresno-Yosemite International Airport and Chandler Downtown Airport to conform to designations and policies specified in adopted City of Fresno compatible land use plans.
- Provide local jurisdictions surrounding the City's publicly owned airports with specific guidelines for effectively dealing with the presence and operation of these airports.

9.8 EMERGENCY RESPONSE

Police and fire protection services are addressed in the Public Utilities and Services Element.

Emergency Planning

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in

conditions of disaster or in extreme peril to life. The City does have an adopted Emergency Operations Plan (EOP). The EOP does not designate evacuation routes, which may not be necessary since Fresno does not face any expected natural hazards from likely sources or locations.

Local Hazard Mitigation Planning

The purpose of a Local Hazard Mitigation Plan is to reduce or eliminate long term risk to human life and property resulting from hazards, by identifying risks before they occur and putting together resources, information, and strategies for emergency response. Fresno County is the lead agency on the Multi-Jurisdictional Local Hazard Mitigation Plan (MHMP) for the county. On December 1, 2009, the Fresno County Board of Supervisors adopted the Fresno County MHMP. It includes a City of Fresno annex which lists information most relevant to Fresno in the areas of health, infrastructure, housing, government, environment, and land use.

The MHMP meets the requirements of the Disaster Mitigation Act of 2000 (DMA). A federally-approved hazard mitigation plan enables Fresno County to apply for federal pre-disaster hazard mitigation grant funds to support mitigation projects. The DMA establishes a national hazard mitigation program to reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters. The DMA also provides a source of pre-disaster hazard mitigation funding to assist local governments in implementing effective hazard mitigation measures to ensure the continued functionality of critical services and facilities after a natural disaster.

OBJECTIVE

NS-6 Foster an efficient and coordinated response to emergencies and natural disasters.

IMPLEMENTING POLICIES

NS-6-a **County Multi-Jurisdiction Hazard Mitigation Plan.** Adopt and implement the Fresno County Multi-Jurisdiction Hazard Mitigation Plan and City of Fresno Local Hazard Mitigation Plan Annex.

***Commentary:** The federal Disaster Mitigation Act of 2000 requires that cities, counties, and special districts have a Local Hazard Mitigation Plan to be eligible to receive FEMA hazard mitigation funds. Cities and counties can adopt and use all or part of a regional multi-jurisdictional plan, such as the one prepared by Fresno County, in lieu of preparing all or part of a Local Hazard Mitigation Plan.*

NS-6-b **Disaster Response Coordination.** Maintain coordination with other local, State, and Federal agencies to provide coordinated disaster response.

NS-6-c **Emergency Operations Plan.** Update the City's Emergency Operations Plan periodically, using a whole community approach which integrates considerations for People with access and functional needs in all aspects of planning.

NS-6-d **Evacuation Planning.** Maintain an emergency evacuation plan in consultation with the Police and Fire Departments and other emergency service providers, which shows potential evacuation routes and a list of emergency shelters to be used in case of catastrophic emergencies.

Commentary: The evacuation plan will be flexible in order to consider many scenarios and multiple modes of transportation beyond private automobiles. It will provide special provisions for disadvantaged populations, such as those with physical disabilities or those with low or very low incomes, and for areas with fewer resources through neighborhood emergency preparedness programs.

NS-6-e **Critical Use Facilities.** Ensure critical use facilities (e.g. City Hall, police and fire stations, schools, hospitals, public assembly facilities, transportation services) and other structures that are important to protecting health and safety in the community remain operational during an emergency.

- Site and design these facilities to minimize their exposure and susceptibility to flooding, seismic and geological effects, fire, and explosions.
- Work with the owners and operators of critical use facilities to ensure they can provide alternate sources of electricity, water, and sewerage in the event that regular utilities are interrupted in a disaster.

NS-6-f **Emergency Vehicle Access.** Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, hard standing areas, and vertical clearance.

NS-6-g **Emergency Preparedness Public Awareness Programs.** Continue to conduct programs to inform the general public, including people with access and functional needs, of the City's emergency preparedness and disaster response procedures.