



8

SAFETY ELEMENT



8.1 Introduction and Purpose

Ensuring the safety of community members, through protection from hazards, is an essential service of public agencies and a critical priority for maintaining community health and welfare. The purpose of the Safety Element is to identify the natural and manmade public safety hazards that exist within the city and to establish preventative and responsive policies and programs to mitigate their potential impacts. In addition, exposure to loud and/or unwanted noises can also affect community health and safety, as well as quality of life.

The Safety Element is organized as follows:

- **Section 8.1: Introduction and Purpose.** Introduces the topics covered in this Element and outlines the Element's relationship to State law and the Visioning Statement and Guiding Principles.
- **Section 8.2: Geologic and Seismic Hazards.** Explains the geologic makeup of the Planning Area and analyzes potential threats that may result from land instability or seismic activity.
- **Section 8.3: Flood Hazards and Protection.** Provides an overview of State and regional flood regulations and requirements, flood hazards in the Planning Area, and flood protection efforts.
- **Section 8.4: Fire Hazards.** Discusses the threat of urban and wildland fires.
- **Section 8.5: Airport Hazards.** Addresses safety and noise issues that result from the Planning Area's proximity to nearby airports.
- **Section 8.6: Hazardous Materials and Operations.** Provides an overview of hazardous materials sites in the Planning Area.
- **Section 8.7: Emergency Response.** Introduces Woodland's Emergency Operations Plan and Local Hazard Mitigation Plan.
- **Section 8.8: Noise.** Addresses existing sources of noise and introduces the General Plan noise standards.
- **Section 8.9: Goals and Policies.**

For additional background data and information on these topics, refer to the *Opportunities and Challenges, Issues and Options* report.

Relationship to State Law

The Safety Element combines two of the seven required elements of a General Plan: The Safety Element and the Noise Element. Government Code Sections 65302(f) and 65302(g) require that the key topics identified in Table 8-1 are addressed in the Safety and Noise elements of the General Plan. State law provides that the General Plan can address these topics in any format and is required to address them only to the extent that they are relevant in the Planning Area.

TABLE 8-1: SAFETY AND NOISE TOPICS REQUIRED BY STATE LAW

<i>Required Topic</i>	<i>Addressed in this Element</i>	<i>Location if not addressed in this Element</i>
<i>Safety</i>		
Seismically induced surface rupture, ground shaking, ground failure	Yes	
Tsunami, seiche, and dam failure	Yes	
Slope instability leading to mudslides and landslides	Yes	
Subsidence	Yes	
Liquefaction	Yes	
Other seismic hazards identified pursuant to the Seismic Hazards Mapping Act, and other geologic hazards known to the legislative body	No	There are no other seismic or geologic hazards that affect the Planning Area.
Flooding	Yes	
Flood hazard zones, as identified by FEMA	Yes	
National Flood Insurance Program maps, published by FEMA	Yes	
Information about flood hazards from the U.S. Army Corps of Engineers, including the Corps Sacramento and San Joaquin River Basins Comprehensive Study	Yes	
Dam failure and inundation maps from CalEMA	Yes	
Designated floodway maps, available from the CVFPB	Yes	
Awareness Floodplain Mapping Program maps and 200-year flood plain maps from DWR	Yes	
Maps of levee flood protection zones (LFPZs, available from DWR)	Yes	

TABLE 8-1: SAFETY AND NOISE TOPICS REQUIRED BY STATE LAW

<i>Required Topic</i>	<i>Addressed in this Element</i>	<i>Location if not addressed in this Element</i>
Areas subject to inundation in the event of the failure of project or nonproject levees or floodwalls	Yes	
Historical data on flooding, including locally prepared maps of areas that are subject to flooding, areas that are vulnerable to flooding after wildfires, and sites that have been repeatedly damaged by flooding	Yes	
Existing and planned development in flood hazard zones, including structures, roads, utilities, and essential public facilities	Partially	Development in flood hazard zones is also addressed in the Land Use, Community Design, and Historic Preservation Element
Reference to local, state, and federal agencies with responsibility for flood protection, including special districts and local offices of emergency services	Yes	
Goals, policies, and feasible implementation measures that: <ul style="list-style-type: none"> • Avoid or minimize the risk of flooding to new development <ul style="list-style-type: none"> • Evaluate whether new development should be located in flood hazard zones • Identify construction methods or other methods to minimize damage if new development is located in flood hazard zones • Maintain the structural and operational integrity of essential public facilities during flooding • Locate, when feasible, new essential public facilities outside of flood hazard zones (including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communication facilities) or identify construction methods or other methods to minimize damage if these facilities are located in flood hazard zones • Establish cooperative working relationships among public agencies with responsibility for flood protection 	Yes	

TABLE 8-1: SAFETY AND NOISE TOPICS REQUIRED BY STATE LAW

<i>Required Topic</i>	<i>Addressed in this Element</i>	<i>Location if not addressed in this Element</i>
Wildland and urban fires, including fire risk for land classified as state responsibility areas and/or within a very high fire hazard severity zone	Yes	
Mapping of known seismic and other geologic hazards	Yes	
Evacuation routes, military installations, peakload water supply requirements, and minimum road widths and clearances around structures, as each of these items relate to identified fire and geologic hazards	Yes	Military installations are not addressed as there are none located within or adjacent to the Planning Area.
Noise		
Analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels from all of the following: <ul style="list-style-type: none"> • Highways, freeways, primary arterials and major local streets • Rail lines and ground rapid transit • Commercial aviation, general aviation, heliports, helistops, military airports, aircraft overflights, jet engine test stands, and all other ground and maintenance functions related to airport operations • Industrial plants and railyards • Other ground stationary sources, including military installations 	Yes	Military installations are not addressed as there are none located within or adjacent to the Planning Area.
Implementation measures and possible solutions to existing and foreseeable noise issues	Yes	

Relationship to Visioning Statement and Guiding Principles

The Safety Element provides the underpinning for many values expressed in the Visioning Statement and Guiding Principles by ensuring public safety, which is the first step in fostering Woodland to be a highly desirable community in which to live, learn, work and recreate. Specifically, this Element directly supports the following Guiding Principle:

- **Safety:** Ensure that Woodland remains a safe place to live, protected from natural and manmade hazards.

8.2 Geologic and Seismic Hazards

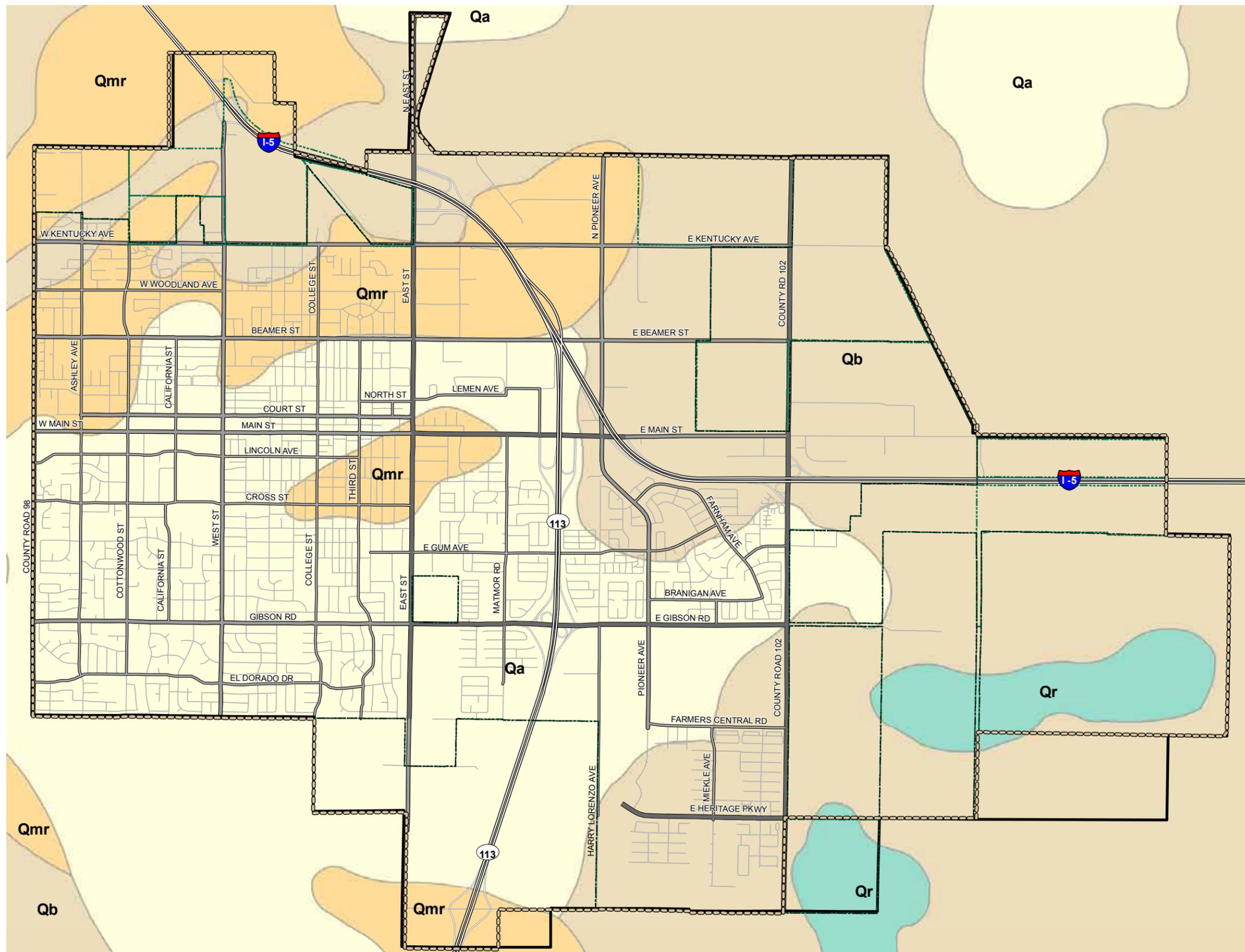
Geology

Woodland is located in the Great Valley geomorphic province of California and consists of gently sloping to level alluvial plains. The geologic parent material within the region was formed from the erosion of mountain ranges to the east and geologic uplift along the western shore of the North American continent. Two hundred and forty-five million years ago, the Great Valley province began forming from sediment-laden runoff deposits. Eventually, the deposits accumulated to a depth of almost six miles, with large amounts of sediment continuing to be added until approximately 30 million years ago. These processes occurred beneath the sea, and as a result, the water captured in the pores of deeply buried rock is saline.

The Great Valley area generally consists of Holocene alluvium or basin deposits, as well as Quaternary Modesto and Riverbank formations, both of which consist of somewhat older alluvium. Figure 8-1 illustrates the local geology within and surrounding the Planning Area.

Refer to the Sustainability, Conservation, and Open Space Element for a more detailed discussion about soils found in the Planning Area.

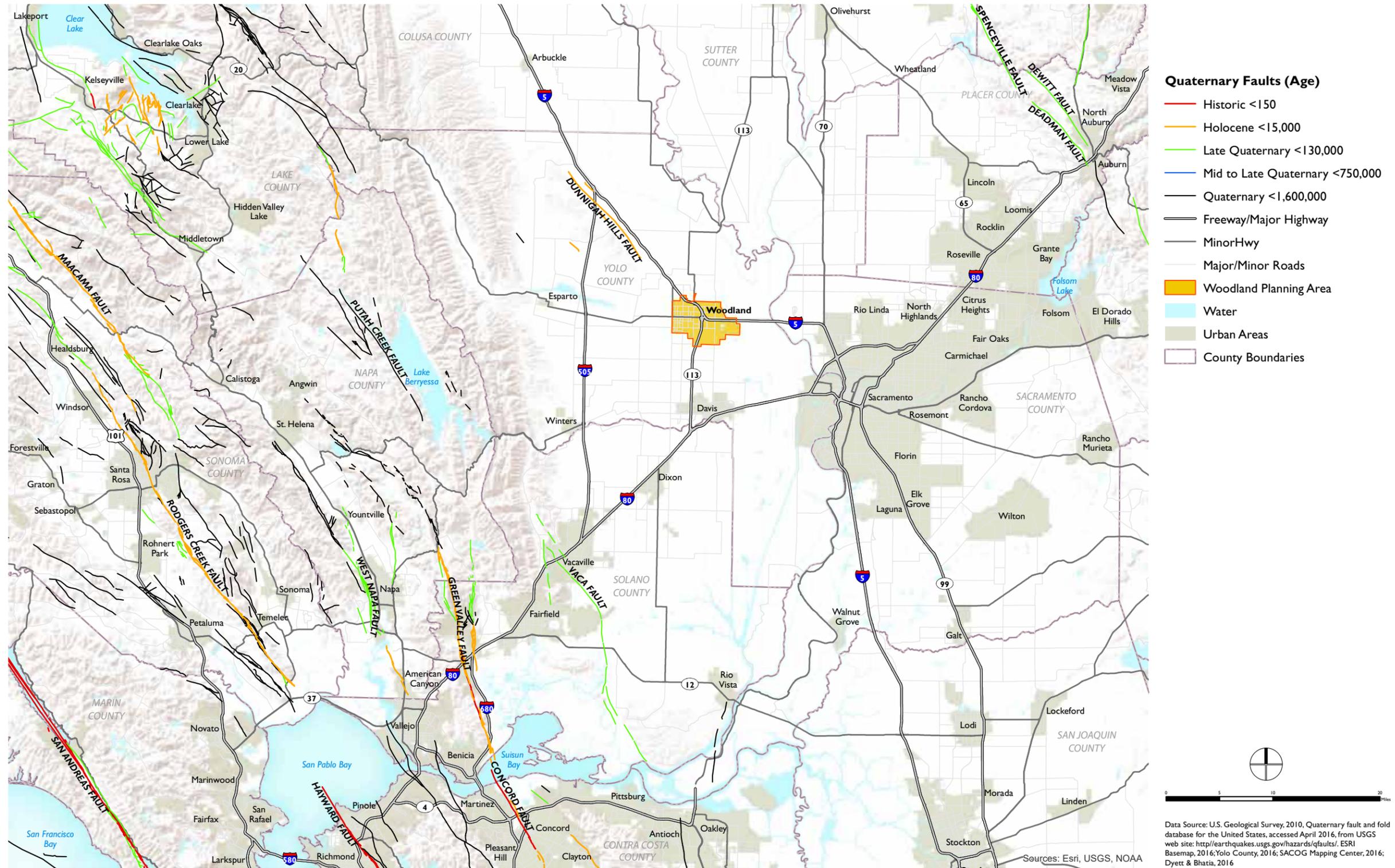
FIGURE 8-1: GEOLOGY



- Qa Levee and channel deposits
- Qb Basin deposits (Alluvium)
- Qr Riverbank Formation (Alluvium)
- Qmr Modesto-Riverbank Formation (Arkosic alluvium)
- Highways
- Principal Arterials
- Minor Arterials
- Collectors
- Local Roads
- Ramps
- Study Area
- Urban Limit Line
- Sphere of Influence
- City Limits

Data Source: City of Woodland, California, 2013; Yolo County, 2013; SACOG Mapping Center, 2013; Dyett & Bhatia, 2013; California Geologic Survey, 1981

FIGURE 8-2: EARTHQUAKE FAULTS



Faults

The nearest fault zones exhibiting historic displacement (activity within the last 200 years) are the Concord-Green Valley, Marsh Creek-Greenville, and Hayward fault zones, located approximately 27 miles west, 40 miles west, and 54 miles southwest of Woodland, respectively. Other active faults within 70 miles of Woodland are the Dunnigan Hills (10 miles northwest), West Napa (36 miles southwest) Healdsburg-Rodgers Creek (57 miles southwest), and San Andreas (66 miles west).

In addition, a seismically-active, concealed (blind) fold and thrust fault belt situated within the Coast Range-Central Valley Geomorphic Boundary is located approximately 10 miles west of the Planning Area. Earthquakes associated with this fault system include the 6.1 magnitude Kettleman Hills and 6.5 magnitude Coalinga events. In Northern California, it is also thought to have produced the Vacaville-Winters earthquake of 1892, which had an estimated magnitude of 6.75. Published estimates of the Coast Range-Central Valley slip rate range from 1 to 10 millimeters per year, and Coalinga-type events are estimated to occur once every 200 to 2,000 years.

Figure 8-2 displays all earthquake faults located in the vicinity of the Planning Area.

Geologic and Seismic Hazards

The Planning Area could experience the effects of a major earthquake from one of the active or potentially active faults located within 60 miles of Woodland. The major hazards associated with earthquakes are fault surface rupture (ground displacement), ground motion (or ground shaking), ground failure (e.g., liquefaction), differential settlement, and potential dam failure.

Surface Fault Rupture

Surface rupture is the actual cracking or breaking of the ground along a fault during an earthquake. Structures built over an active fault can be torn apart if the ground ruptures. Surface ground rupture along a fault is generally limited to a linear zone a few yards wide. The Alquist-Priolo Earthquake Fault Zoning Act was enacted to prohibit structures designed for human occupancy from being built across the traces of active faults, thereby reducing the risk of loss of life and property from an earthquake. Located more

than 25 miles southwest of Woodland, the Concord-Green Valley and Marsh Creek-Greenville fault zones are the closest active faults zoned under the Alquist-Priolo Earthquake Fault Zoning Act. Because there are no Alquist-Priolo fault zones located in the Planning Area, the risk of surface fault rupture within Woodland is considered low.

Ground Shaking

Ground shaking is motion that occurs as energy is released during an earthquake. Depending on the magnitude of the earthquake, the location of its epicenter, the character and duration of the ground motion, and the type of soil and/or rock formation, ground shaking has the potential to cause building damage, landslides, subsidence, liquefaction, or seiches. The California Geological Survey has determined the probability of earthquake occurrences and their associated peak ground accelerations throughout the State of California. The estimated range of peak ground acceleration within the Planning Area is considered to be moderate.

Liquefaction

During an earthquake, shaking of granular loose soil saturated with water can lead to liquefaction, a condition in which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. As a result, this can cause structures to lose foundation-bearing capacity. The Planning Area is characterized by shallow groundwater, with standing water generally encountered between zero to three feet below the surface. Additionally, a review of local well records indicates that the Planning Area is underlain by stratified layers of silt, silty clays, and isolated lenses of gravel and/or sand. Therefore, portions of the Planning Area may be prone to liquefaction resulting from ground shaking.

Earthquake-Induced Settlement

Prolonged ground shaking can also lead to the rapid compaction and settling of subsurface materials that are loose, non-compacted, or have a variable sandy quality. Typically, areas underlain by artificial fills, unconsolidated alluvial sediments, and slope wash, as well as areas with improperly engineered construction fills, are susceptible to settlement. Although the general parent material of the soil resources in the Planning Area may indicate a higher risk,

the potential for earthquake-induced settlement in Woodland is considered low due to the city's distance from major active faults.

Slope Instability and Landslides

Slope failure, commonly referred to as landslides, can be triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Engineered slopes have a tendency to fail if not properly designed, constructed or compacted. Because the Planning Area is generally level, hazards associated with landslides are typically limited to embankments along creek and drainage ways, and are very minor.

Seismic Sea Waves and Seiches

Earthquakes may affect open bodies of water by creating seismic sea waves and seiches. Seismic sea waves (often called "tidal waves" or tsunamis) are caused by abrupt, usually vertical ground movements on the ocean floor in connection with a major earthquake. Because of the Planning Area's long distance from the Pacific Ocean and the intervening mountainous topography, seismic sea waves are not a factor in Woodland.

A seiche is a standing wave that results in sloshing water in an enclosed or restricted body of water, such as a basin, river, or lake. Seiches can result from earthquakes, and the resulting sloshing can last for a few minutes or several hours. There are no bodies of water that are large enough for destructive seiche action to occur within or adjacent to the Planning Area.

Dam Failure

In addition, areas in and around Woodland could potentially experience up to eight feet of flooding in the unlikely event of failure of the Indian Valley Dam, located on the North Fork of Cache Creek. In addition to a severe earthquake, other potential events that could lead to dam failure or overtopping include major flood inflows, massive landslide or slippage, and piping (when water finds a path through the levee embankment) or erosion of the dam embankment. Flooding would occur within six to seven hours of dam failure. Figure 8-3 identifies areas in and around Woodland subject to dam inundation.



New development is required to abide by current safety standards associated with seismic activity.

8.3 Flood Hazards and Protection

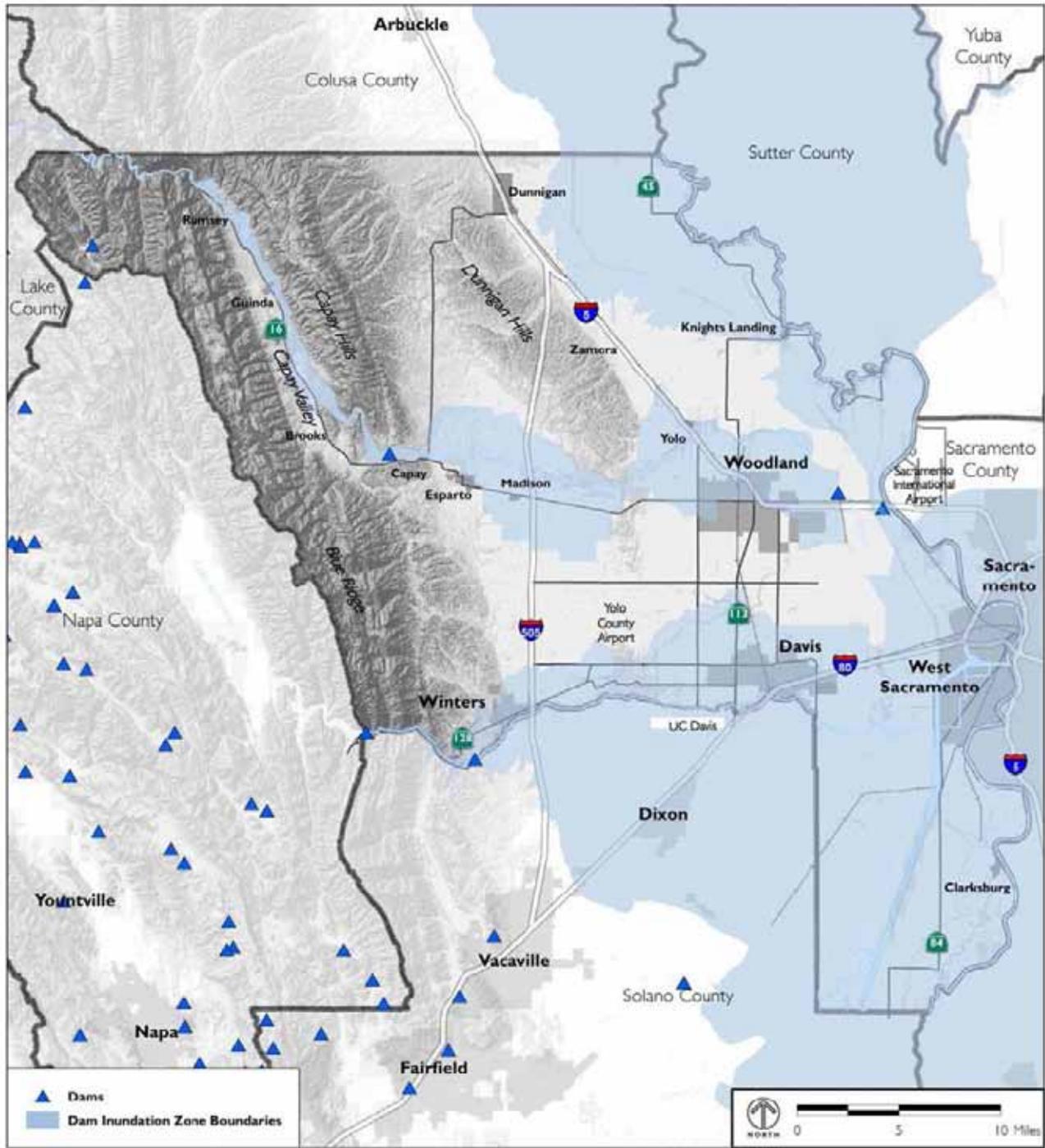
The City of Woodland is surrounded by waterways that periodically flood. These waterways include Cache Creek to the north and northwest and the Yolo Bypass/Sacramento River system to the east. In the event of a severe storm, these water bodies can overtop creek banks and levees, or levees could fail, resulting in flooding in Woodland.

Laws and Regulations

In 2007, the State legislature enacted six interrelated bills to strengthen the linkage between local land use planning decisions and flood management practices. SB 5 and 17, and AB 5, 70, 156, and 162 added or amended over 25 sections of the Government Code, Health and Safety Code, Public Resources Code, and Water Code. There was considerable overlap between these bills. Together they significantly modified floodplain planning and management at the State, regional, and local levels. The six flood protection bills of 2007 (in the order they were signed) are summarized below:

- **SB 5 (Machado).** Enacts the Central Valley Flood Protection Act of 2008. Requires the California Department of Water Resources (DWR) and the Central Valley Flood Protection Board (CVFPB; previously known as the State Reclamation Board) to prepare and adopt a Central Valley Flood Protection Plan (CVFPP) by 2012. Establishes that 200-year protection is to be the minimum urban level of flood protection. Sets deadlines for cities and counties in the Central Valley to amend their general plans and their zoning ordinances to conform to the Plan. Restricts approval of development agreements and subdivision maps in flood hazard zones, once the general plan and zoning ordinance amendments have been enacted, unless certain findings are made. Mandates Central Valley counties to develop flood emergency plans within 24 months of adoption of the Plan. Legislative intent for SB 5 is also included in AB 5 and AB 156.
- **SB 17 (Flores).** Sets compensation for the members of the CVFPB. Establishes the duties of the Board. The provisions of this bill were also enacted by AB 5.

FIGURE 8-3: DAM INUNDATION AREAS



Source: California Office of Emergency Services, 2000.

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- **AB 5 (Wolk).** Establishes the CVFPB and its duties. Sets out requirements and deadlines for reports on the flood control system to be prepared by DWR and the Board, including levee flood zone protection maps to be prepared by DWR. The same requirements are also enacted by AB 156.
- **AB 70 (Jones).** Provides that cities and counties will share liability with the state in the case of litigation over unreasonably approved new development on agricultural lands. This would not apply where the city or county has amended its general plan and zoning, and otherwise makes land use decisions consistent with the CVFPP. “Unreasonably approving” is defined as approval without appropriate consideration of known significant risks of flooding.
- **AB 156 (Laird).** Requires DWR and the Board to adopt a schedule for mapping flood risk areas within the Central Valley. Sets out requirements for reports on the flood control system to be prepared by DWR and the Board, including levee flood zone protection maps to be prepared by DWR by December 31, 2008. Mandates DWR to provide yearly notices to owners of property within a levee protection zone, beginning September 1, 2010. The same requirements are also enacted by AB 5.
- **AB 162 (Wolk).** Requires cities and counties to amend the land use, conservation, safety, and housing elements of their general plans to address flood-related matters. These amendments are required to be made by the next scheduled revision of the housing element after January 1, 2009.

Since 2007, there have been a number of legislative amendments to provide further clarifications to these bills, and to require further related actions at both the state and local level.

California planning law has long required that city and county general plans identify flood prone areas and limit development within those areas. The 2007 flood bills revised the requirements for the Land Use, Conservation, and Safety elements of city and county general plans, with the most extensive changes taking place in the requirements for the Safety Element. These requirements apply to all cities and counties statewide. However, jurisdictions within the Central Valley (of which Woodland is one) face additional requirements as a result of this package of bills to ensure conformity between their general plans and the CVFPP. This Safety Element addresses all of the applicable requirements.

Environmental Setting

The City of Woodland is located on the western side of the California Central Valley. The terrain generally slopes downward from west to east and north to south. Cache Creek drains a large portion of the coastal range and flows into the Yolo Bypass near the City of Woodland. The Lower Cache Creek and Yolo Bypass levees, as well as levee protection zones and areas subject to inundation in the event of levee failure are shown in Figure 8-4. Regional floodways are shown in Figure 8-5.

The Lower Cache Creek levee system, including the Cache Creek Settling Basin, was designed to contain a flood flow from approximately a 30 year storm event. As a result, the City is subject to flooding from the right bank of Cache Creek from larger storm events. Flood flows from Cache Creek flow south and east towards Woodland. The presence of the Interstate Highway 5 (I-5) embankment and the Cache Creek Settling Basin levees exacerbates the flooding experienced by the city by directing the out-of-bank flows southward and into the urban areas of the city. The existing Cache Creek Settling basin and Yolo Bypass levees will prevent the Cache Creek out-of-bank flows from entering the Yolo Bypass and will result in flood depths of 10 to 12 feet in part of the Planning Area that includes commercial and residential development, and a portion of I-5.

The existing Yolo Bypass west levee does not meet the State of California's Urban Levee Design Criteria and is not certified by FEMA as adequate to provide the FEMA-required 100-year level of flood protection. A failure of the Yolo Bypass levee would result in flooding of portions of the city along the eastern edge of the city limit.

The City of Woodland and the Central Valley Flood Protection Board are participating with the U. S. Army Corps of Engineers to identify a flood solution to reduce the city's risk of flooding from Cache Creek. The City is also supportive of other ongoing federal and State efforts to address flood risk associated with the Yolo Bypass west levee.

Typical flood hazards in Woodland generally consist of shallow sheet flooding from surface water runoff from large rainstorms with depths generally less than two feet. However, in larger storm events, there are significant areas within the Planning Area on the

north and east sides that are also affected by flooding from Lower Cache Creek and/or the Yolo Bypass.

The Federal Emergency Management Agency (FEMA) has published flood hazard maps which delineate portions of the city on the north and east that fall within the 100-year floodplain. DWR subsequently published floodplain maps showing areas that would be inundated by a 200-year flood event. The areas of the city within the 200-year and the 100-year floodplain of Cache Creek are approximately the same. As shown in Figure 8-6, 45 percent of the Planning Area is located in the Cache Creek and/or Yolo Bypass 200-year floodplains and subject to a 0.5 percent probability of flooding in any given year.



Due to inadequate flood infrastructure, major storms can result in significant flooding in the Planning Area—including in areas that have commercial, industrial, and residential development. This image shows flooding that occurred in the Planning Area in 1996. Source: LAFCo of Yolo County

Refer to the Land Use, Community Design, and Historic Preservation Element for additional discussion regarding the impact of flooding and flood protection on land use, including the establishment of the Flood Study Area (FSA) land use designation. Refer to the Public Facilities and Services Element for a more detailed discussion of the city's stormwater infrastructure.



Underpasses and other low points can be subject to localized flooding during periods of heavy rainfall.

In utilizing this information, it is important to consider the potential flooding depths that properties could experience, as this can indicate the relative ease or difficulty of mitigating future flood hazards. For instance, a parcel with a historic flood depth of less than one foot presents a more attractive development opportunity than one that can flood to levels of more than three feet, in which case the structural improvements would have to be raised, using fill, to an elevation above the flood water surface elevation. The urban level of flood protection as defined in the 2007 legislation applies to urban or urbanizing areas located in the Sacramento and San Joaquin Valleys with potential flood depths greater than three feet (excluding localized conditions) and designated as either a special or moderate flood hazard area on the applicable FEMA FIRMs. The City of Woodland meets the criteria and is subject to these provisions. As a result, the City is required to achieve 200-year flood protection or restrict development until it does. Roughly 25 percent of land within the Planning Area is subject to flooding depths of over three feet.

The industrial area, located in the northeastern section of the Planning Area, is particularly susceptible to flooding. This places Woodland at a competitive disadvantage relative to nearby industrial areas, as the risk level and insurance costs of developing in Woodland are higher as a result. In addition, some portions of SP-3 are subject to flood depths of up to three feet and the majority of SP-2 is susceptible to flooding depths of greater than seven feet. No specific plan for SP-2 or SP-3 may be processed until the designs for projects to provide necessary 200-year flood protection have been approved and the funding for construction has been secured. Any contemplated sale of the City's 900-acre property within SP-2 will require a four-fifths (4/5th) vote of the City Council. Before the City enters into a Development Agreement for any property located within a floodplain, the City must impose conditions that will ensure 200-year flood protection.

City streets, even those outside of the floodplain, are also subject to localized flooding during periods of heavy rainfall. Currently, the city's storm drain system is not adequately sized for the actual flows. Older parts of the city, particularly west of East Street, do not have a system of under-street storm drain pipes. Instead, runoff is conveyed through intersections in valley gutters, gutter culverts, or inverted siphons, and must travel long distances to reach a drain inlet. In these areas, when the capacity of drain inlets and pipes is exceeded, localized street flooding occurs and remains for three to four hours after rainfall has subsided.

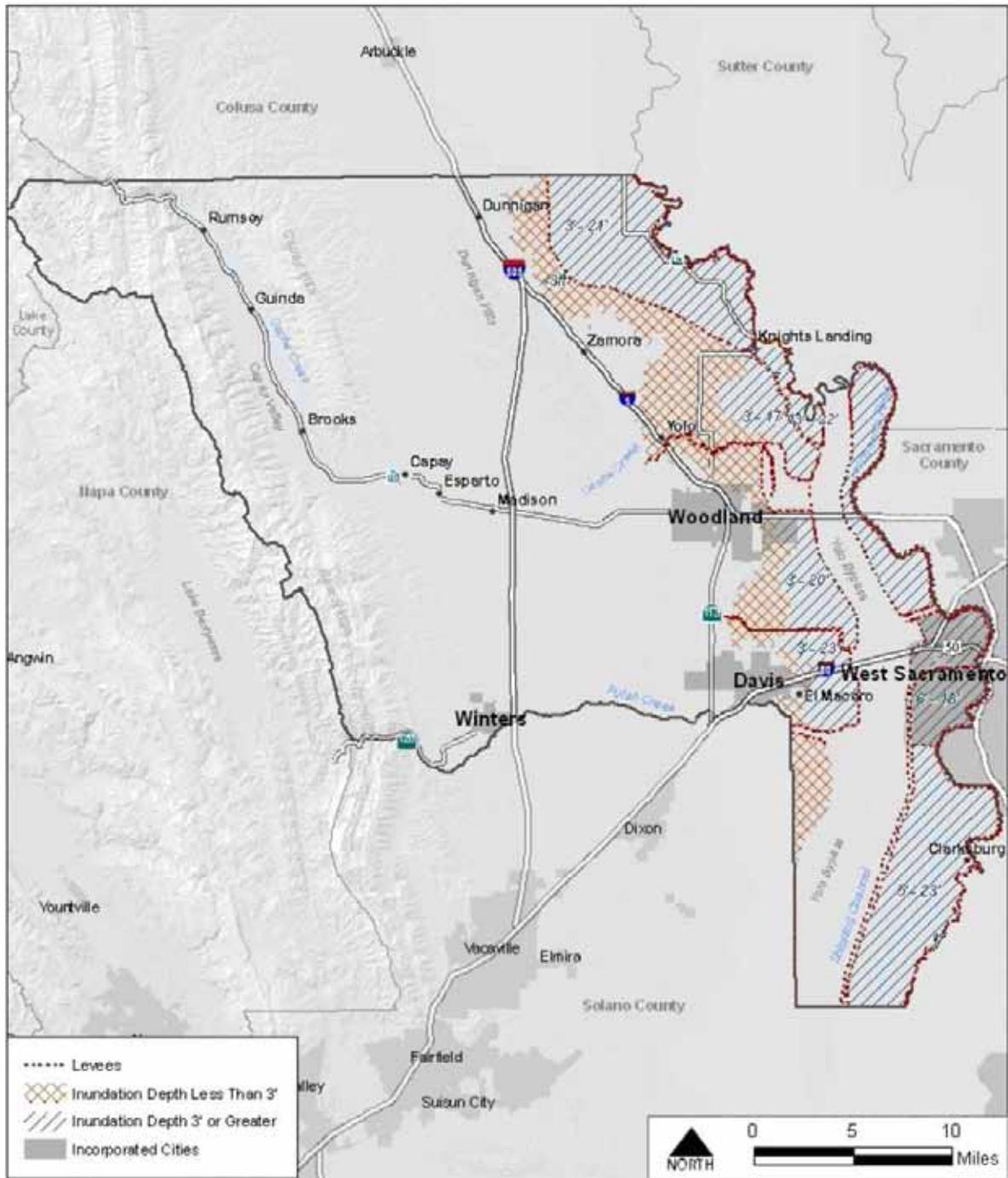
Flood Protection

Many agencies at various levels of government are responsible for flood protection. At the federal level, the three primary agencies are the U.S. Army Corps of Engineers, FEMA, and the Bureau of Reclamation. At the state level, the primary agencies are DWR and the CVFPB. At the regional and local level, the primary agencies include the Yolo County Flood Control and Conservation District, Yolo County, and the City of Woodland.

Woodland's geography and flooding history present challenges for phasing of new development, which has significant implications for economic development. Securing a comprehensive flood protection solution is a critical priority for Woodland. The City is currently working with the US Army Corps of Engineers on a comprehensive solution to achieve 200-year flood protection. Through their Lower Cache Creek Feasibility Study, the Corps has narrowed the alternatives for flood risk reduction to several alternatives which are undergoing further study. The policies in this General Plan support interim solutions and strategies to allow development in Woodland to move forward where it is safe and appropriate, while still actively seeking and advocating for a permanent flood solution for the Planning Area.

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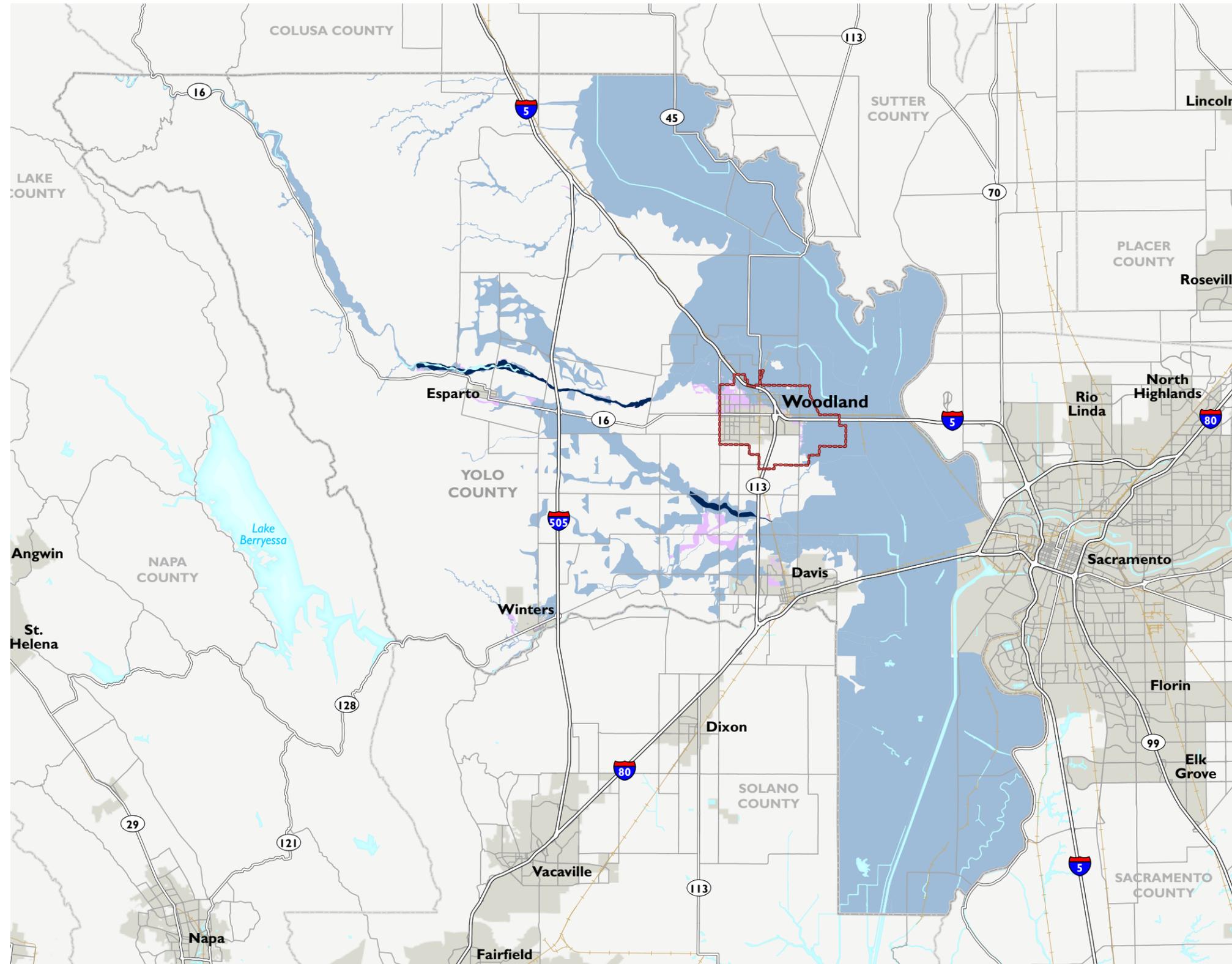
FIGURE 8-4: LEVEE PROTECTION ZONES



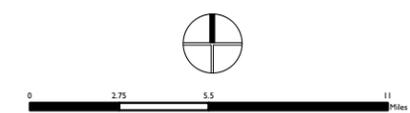
Source: Yolo County General Plan, Health and Safety Element

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FIGURE 8-5: FLOODWAYS

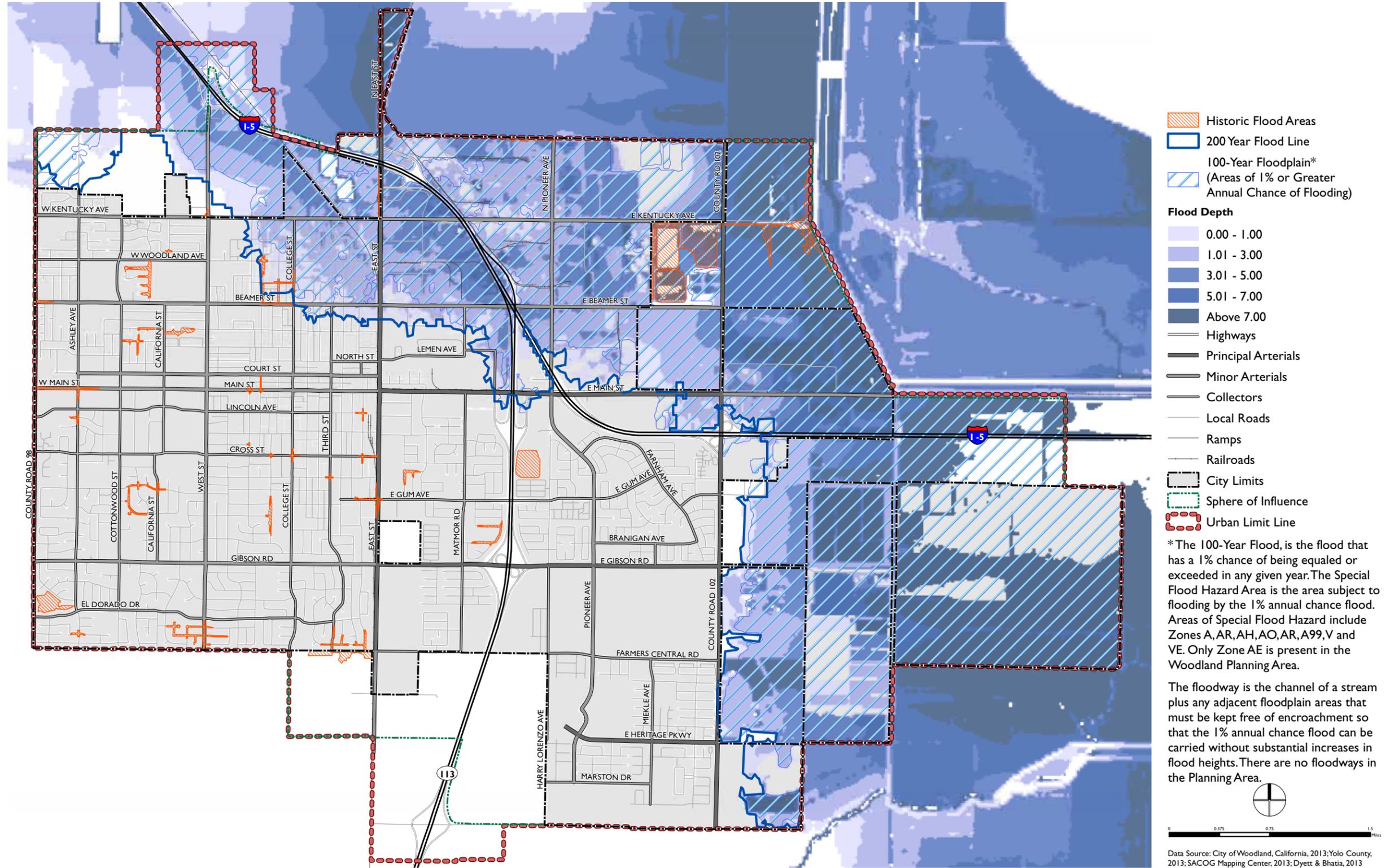


- Floodways
- 100 Year Floodplain
- 500 Year Floodplain
- Freeway/Major Highway
- Minor Highway
- Major/Minor Roads
- Railroads
- Woodland Planning Area
- Water
- Urban Areas
- County Boundaries



Data Source: Digital Flood Insurance Rate Maps (dFIRMs), National Flood Hazard Layer (NFHL), FEMA, 2012; Yolo County, 2016; SACOG Mapping Center, 2016; Dyett & Bhatia, 2016

FIGURE 8-6: 100 AND 200 YEAR FLOODPLAINS AND HISTORIC FLOODING DEPTHS



8.4 Fire Hazards

Urban and wildland fire hazards can threaten life and property in Woodland. Policies of this General Plan seek to ensure that new development is constructed to minimize potential fire hazards and to provide public education concerning fire prevention.

Urban Fires

Urban fires are fires that begin in buildings in urban centers. They are typically localized, but have the potential to spread to an adjoining building, especially in areas where homes and/or business facilities are clustered close together. Structural fire risk in Woodland is greatest in older structures and neighborhoods built before modern building codes for fire safety and building systems were in place.

Peakload Water Supply Requirement

Woodland engineering standards require a minimum flow of water for fire protection in accordance with Woodland Fire Department, California Fire Code, and Insurance Services Office standards.

Minimum Road Widths and Clearances Around Structures

Adequate emergency vehicle access to buildings is important for effective public safety service and emergency response. Emergency access is regulated by the California Fire Code. Under the current Fire Code, all portions of a building must be located within 150 feet of a serviceable fire access road. In some instances, the Fire Marshal can make an exception to this rule, such as when a building is equipped with an approved automatic sprinkler system.

Wildland Fires

Wildland fires resulting from either natural or manmade causes occur in forest, brush, grasslands, or undeveloped areas. Their potential for damage is dependent on the extent and type of vegetation, known as surface fuels, as well as weather and wind conditions.

The Public Facilities and Services Element addresses the service levels and maintenance of the City's Fire Department.

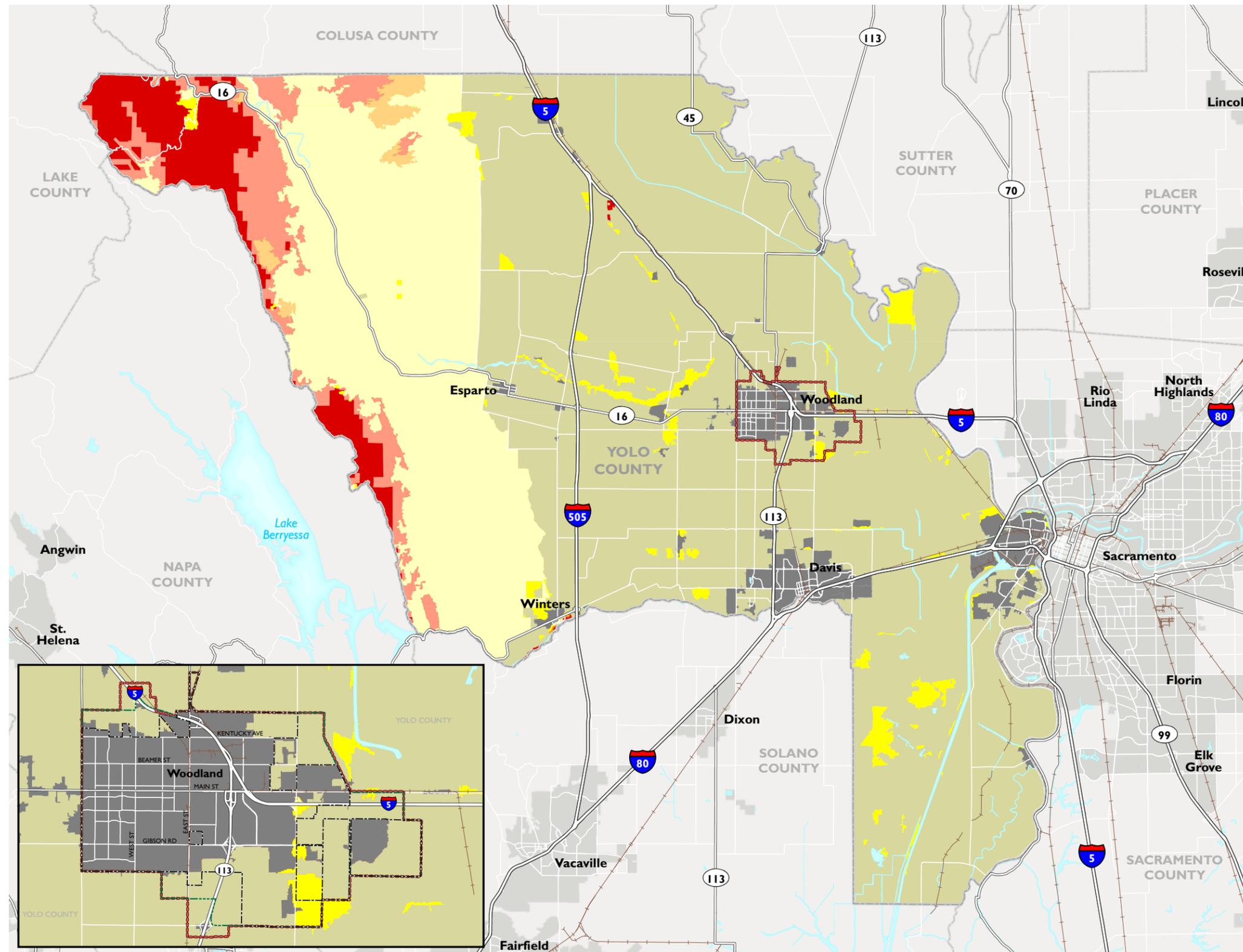
All portions of a building must be located within 150 feet of a serviceable fire access road.



Emergency vehicle access is necessary for emergency response and public safety service.

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped fire threat potential throughout California. CAL FIRE ranks fire threat according to the availability of fuel and the likelihood of an area burning (based on topography, fire history, and climate). The rankings include little or no fire threat, moderate, high, and very high fire threat. There are no State Responsibility Areas or Very High Fire Hazard Severity Zones located within the Planning Area or its vicinity. While the majority of the Planning Area is identified to have little to no wildland fire threat, some areas along CR 102 are identified as Local Responsibility Areas with a moderate fire threat. However, it is likely that wildfire danger will increase with climate change. Figure 8-7 shows existing fire hazard severity zones within the Planning Area and its vicinity.

FIGURE 8-7: FIRE HAZARDS



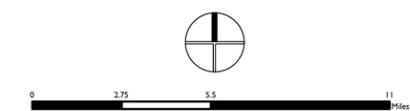
Fire Hazard Severity Zones

Local Responsibility Area (LRA)

- Very High
- High
- Moderate
- Non-Wildland/Non-Urban
- Urban Unzoned

State Responsibility Area (SRA)

- Very High
- High
- Moderate
- Freeway/Major Highway
- Minor Highway
- Major/Minor Roads
- Railroads
- Woodland Planning Area
- Water
- Urban Areas
- County Boundaries



Data Source: California Department of Forestry and Fire Protection (CAL FIRE), 2007 & 2009; Yolo County, 2016; SACOG Mapping Center, 2016; Dyett & Bhatia, 2016

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8.5 Airport Hazards

State law requires the preparation of an Airport Land Use Compatibility Plan (ALUCP) for most airports. Local plans (including general plans) with planning areas that overlap the Airport Influence Area defined by the ALUCP are required by State law (Government Code Section 65302.3) to ensure that the policies in place for the affected area are consistent with the ALUCP. This helps ensure the safety and comfort of those in the area as well as the safe operation of the airport itself.

Sacramento International Airport (SMF)

Sacramento International Airport (SMF) is located just five miles east of the Planning Area. SMF's ALUCP contains policies pertaining to noise, safety, overflight areas, and airspace protection. As shown in Figure 8-8, the western boundary of the SMF Airport Influence Area travels north-south through the Planning Area, following the western edge of the Water Pollution Control Facility. The portion of the Influence Area that overlaps with Woodland is not subject to restrictions pertaining to noise or safety. Some development in this overlap area may be subject to Airport Land Use Commission review to ensure that it abides by height requirements set by Federal Aviation Administration Regulations, refrains from creating electrical or visual hazards that could negatively impact aircraft in flight, and avoids producing thermal plumes that extend to an altitude where aircraft can fly.¹

In addition, a small portion of the eastern side of the Planning Area is located within the "Secondary Approach Area" defined in the ALUCP. This is a form of real estate disclosure that is recorded on each residential property deed however it does not convey property rights. For other areas within the Influence Area, State law requires that notice disclosing information about the presence of nearby airports be given to prospective buyers of certain residential real estate. This would apply to any existing or new residential development located anywhere in the Influence Area. Future residential development within SP-2 will be subject to these requirements.² Additional consideration of noise impacts resulting from airports is covered in Section 8.8.

The Secondary Approach Area is subject to frequent fly-overs by aircraft, and as a result, new residential development located within this area requires a Recorded Overflight Notification as a condition of project approval.

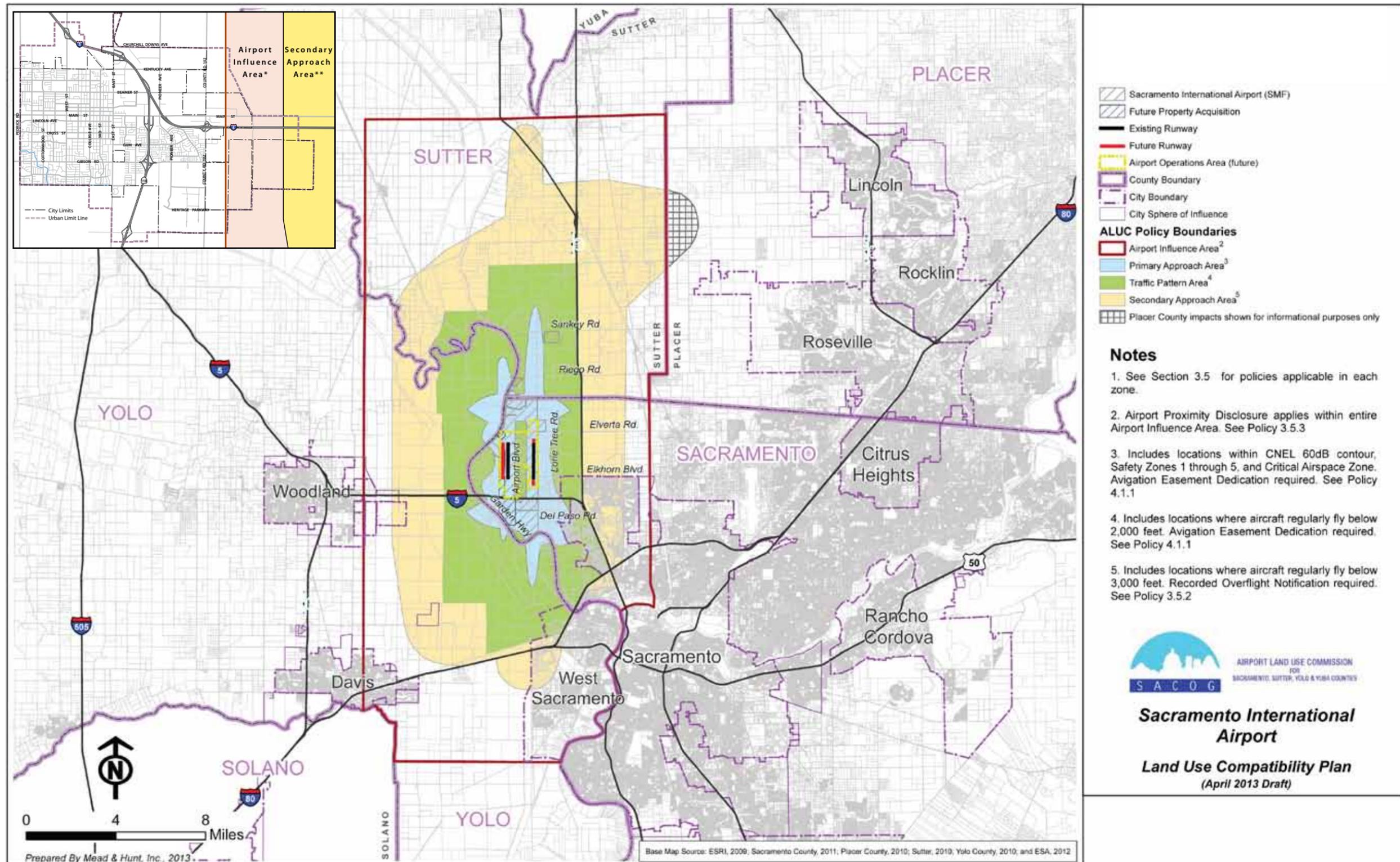
1 Sacramento International Airport Land Use Compatibility Plan (2013), Section 1.5.

2 Sacramento International Airport Land Use Compatibility Plan (2013), Section 1.5.

Other Airports

Two other airports are located near Woodland: the Yolo County Airport, located roughly nine miles to the southwest; and the Watts-Woodland Airport, located approximately 3.5 miles west of the city. While these airports may serve Woodland residents, businesses, and visitors, neither airport's Influence Area overlaps with the Planning Area.

FIGURE 8-8: ALUCP OVERFLIGHT COMPATIBILITY



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8.6 Hazardous Materials and Operations

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, and/or if it has characteristics defined as hazardous by such an agency. California Health and Safety Code Section 25501 defines a hazardous material as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include a wide variety of substances commonly used in households and businesses. Motor oil, paint, solvents, lawn care and gardening products, household cleaners, gasoline, and refrigerants are among the diverse range of substances classified as hazardous materials.

“Hazardous wastes” are defined in California Health and Safety Code Section 25141(b) as substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to 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 the environment when improperly treated, stored, transported or disposed of, or otherwise managed. 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). Nearly all businesses and residences generate some amount of hazardous waste. Certain businesses and industries, including gas stations, automotive service and repair shops, printers, dry cleaners, and photo processors, generate larger amounts of such substances. Hospitals, clinics, and laboratories generate medical waste, much of which is also potentially hazardous.

Hazardous Materials Sites

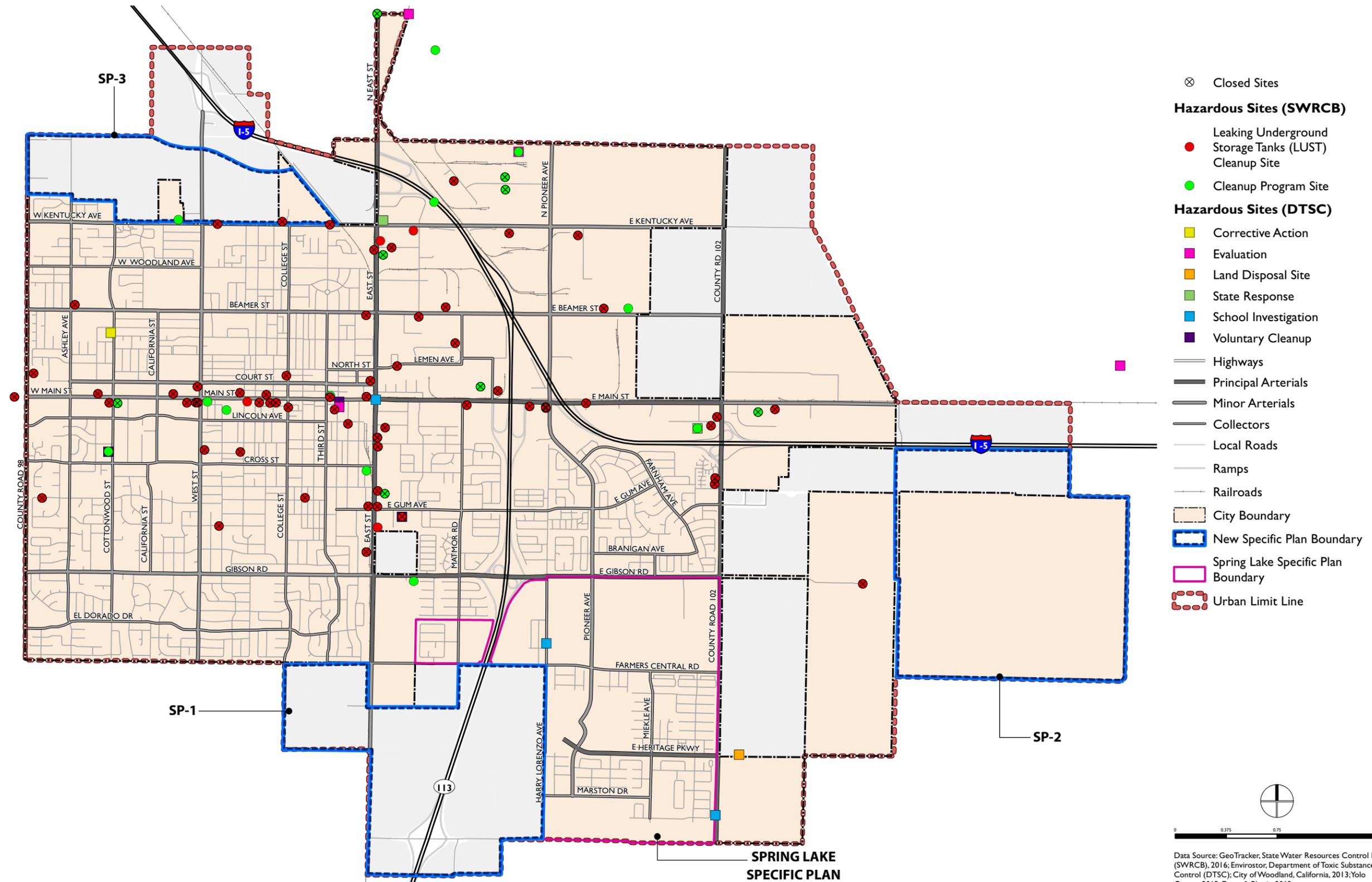
Releases, leaks, or disposal of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface, can lead to contamination of underlying soil and groundwater. Disturbance of a previously contaminated area through grading or excavation operations could expose the public to health hazards 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.

Areas with known or suspected release of hazardous materials to soil and groundwater, and where current clean up activities monitored by the State Water Quality Control Board or the California Department of Toxic Substances are active, are shown in Figure 8-9. The sites are primarily located in the industrial area and along Main Street and East Street. Most of the sites in Woodland are Leaking Underground Storage Tanks (LUSTs), and many of the sites are automobile-related, such as gas stations or auto repair shops. Woodland also currently has sites undergoing remediation for contamination with hazardous materials. Some contaminated sites are on vacant parcels or properties with the potential to redevelop. Contamination does not render these sites unusable, but may require time and funding for cleanup, and in some cases, may limit allowable land uses.

Regulation and Enforcement

Various local, State, and federal agencies govern the proper storage, handling, and transport of hazardous materials. Generators of hazardous waste in Yolo County are required to submit a Hazardous Materials Business Plan to the Environmental Health Department, which serves as the Certified Unified Program Agency (CUPA) for the County. Hazardous waste generators are inspected by the CUPA for compliance with hazardous waste storage, handling, and disposal regulations at least once every three years. For household related hazardous waste, the Yolo County Planning and Public Works Department sponsors hazardous waste collection days at the Yolo County Central Landfill that are free for Yolo County residents on select days.

FIGURE 8-9: HAZARDOUS MATERIALS SITES



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8.7 Emergency Response

Although Woodland seeks to minimize hazards and reduce risks, in the rare event of an emergency, quick and effective response is vital. Chapter 8 of the Woodland Municipal Code provides for the preparation and execution of emergency response efforts.

SB 379

As California confronts mounting climate change impacts, local governments are now required, in accordance with Senate Bill 379, Land Use: General Plan: Safety Element (Jackson) to include a climate change vulnerability assessment, measures to address vulnerabilities, and comprehensive hazard mitigation and emergency response strategy. Impacts that Woodland may face as a result of climate change include increased flooding, wildfires, and heat waves.

Emergency Operations Plan

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 Woodland Emergency Operations Plan addresses the City's planned response to extraordinary emergency situations associated with natural disasters, technological incidents and national security emergencies, including acts of terrorism. The plan does not apply to normal day-to-day emergencies, but rather focuses on large-scale disasters that pose major threats to life, property and the environment, and require unusual emergency responses.

Local Hazard Mitigation Plan

The purpose of a Local Hazard Mitigation Plan (LHMP) 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. A LHMP is required of all cities by federal law.

The City of Woodland partnered with the County and the cities of Davis, West Sacramento, and Winters to develop the Yolo County Operational Area Multi-Jurisdictional Hazard Mitigation Plan. Most recently updated in 2012, the Mitigation Plan addresses threats from potential hazards and identifies possible strategies to reduce impacts. It also serves as the document that, upon its next update, will address the requirements of SB 379.

8.8 Noise

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.

Figure 8-10 illustrates sound levels associated with common noise sources. The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable and can be approximated by frequency filtering using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment, and noise levels reported in this General Plan are A-weighted.

Noise-Sensitive Receptors

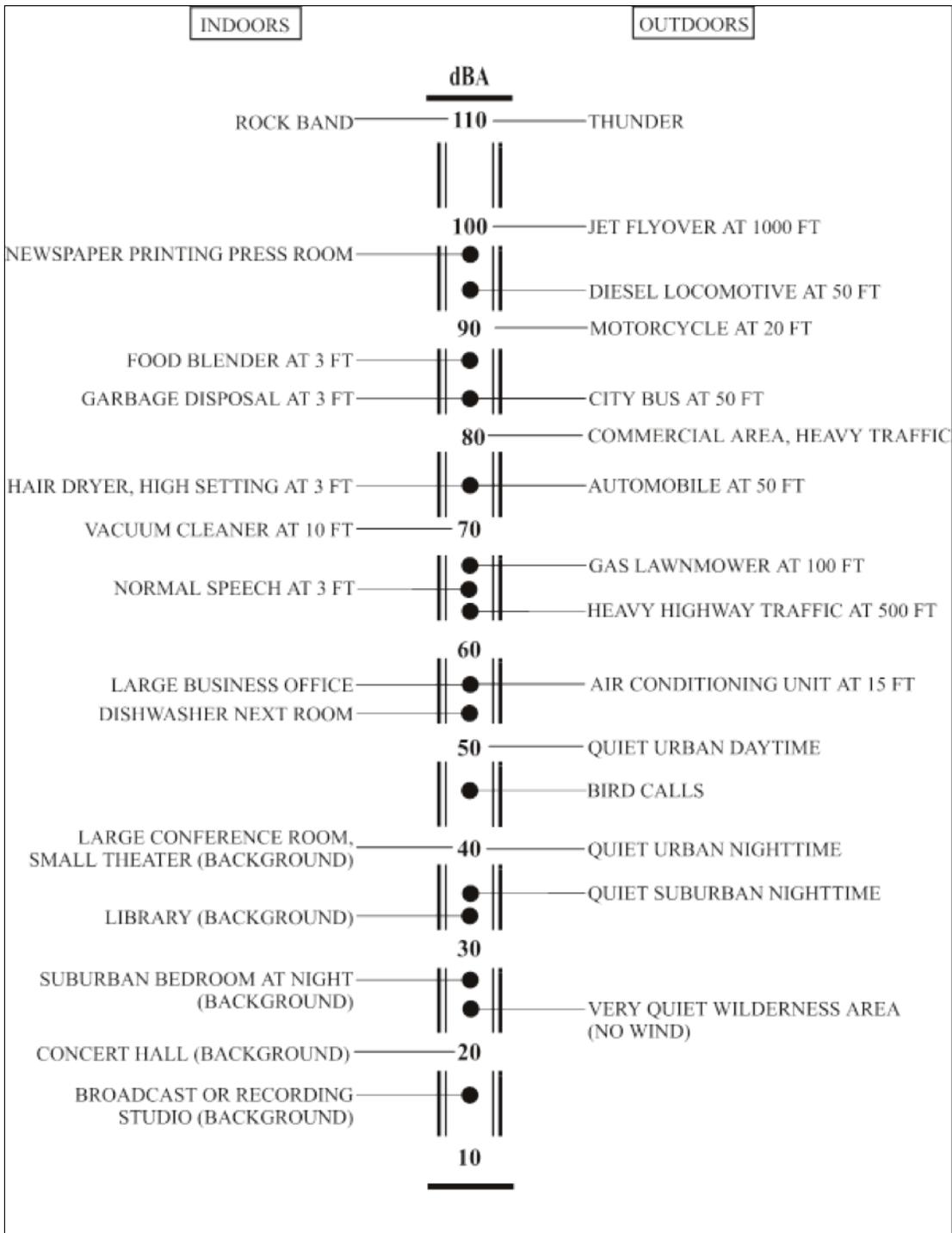
Noise-sensitive receptors are land uses where the presence of unwanted sound could adversely affect the use of the land. Examples include residentially designated areas, nursing homes, schools, libraries, and places of worship.

Ambient Noise Level Measurements

A community noise survey was conducted on March 21-25, 2013 to document noise exposure in areas with noise-sensitive receptors.³ Noise measurement sites are shown in Figures 8-11 and 8-12. Short-term ambient noise level measurements were conducted at 11 sites. The measurement duration was 15-minutes and at three different times of the 24-hour day in order to best estimate the 24-hour, day-night average noise level (L_{dn}). Three continuous 96-hour ambient noise level measurements were completed to record day-night statistical noise level trends. Noise measurement sites, measured noise levels, and estimated L_{dn} levels for each site are summarized in Table 8-2.

³ Noise measurement sites were selected to be representative of typical residential conditions. The community noise survey was conducted at three of the same sites which were previously selected (in 1995) to support the 1996 General Plan, in order to understand any changes over time.

FIGURE 8-10: DECIBEL SCALE



The community noise survey results indicate that typical noise levels in areas with noise-sensitive receptors range from 51 dB to 69 dB L_{dn} . Traffic on local roadways and I-5, distant industrial activities, and neighborhood activities are the controlling factors for background noise levels in the majority of the Planning Area.

The L_{eq} values presented in Table 8-2 represent the average measured noise levels during the sample periods (15 minutes). The L_{eq} values were the basis of the estimated L_{dn} values. L_{max} values show the maximum noise levels observed during the samples. The values in parentheses show sound levels measured in 1995 for the previous background noise study.

TABLE 8-2: SUMMARY OF SHORT-TERM AMBIENT NOISE LEVEL SURVEY RESULTS

Site	Location	Time Period	Measured Sound Level, dB 2013 (1995)		
			L_{eq}	L_{max}	L_{dn}
ST-01	Campbell Park	L_{d1}	57 (49)	75 (65)	56 (53)
		L_{d2}	56 (52)	73 (64)	
		L_n	45 (46)	63 (63)	
ST-02	Tredway Park	L_{d1}	54	77	58
		L_{d2}	54	66	
		L_n	51	76	
ST-03	Woodside Park	L_{d1}	55 (49)	68 (62)	63 (55)
		L_{d2}	58 (53)	70 (64)	
		L_n	57 (48)	77 (62)	
ST-04	133 E Heritage Pkwy (Spring Lake Area)	L_{d1}	52	74	51
		L_{d2}	51	71	
		L_n	41	63	
ST-05	Northwest Corner of Kentucky Ave & Walnut St	L_{d1}	67	82	69
		L_{d2}	66	77	
		L_n	61	79	
ST-06	Private Ranch, South of I-5, East of Hwy 102	L_{d1}	52	73	54
		L_{d2}	49	61	
		L_n	46	69	

TABLE 8-2: SUMMARY OF SHORT-TERM AMBIENT NOISE LEVEL SURVEY RESULTS

Site	Location	Time Period	Measured Sound Level, dB 2013 (1995)		
			L_{eq}	L_{max}	L_{dn}
ST-07	Beamer Park	L_{d1}	51 (49)	64 (61)	58 (54)
		L_{d2}	55 (50)	75 (59)	
		L_n	52 (48)	74 (59)	
ST-08	Pool, Americas Best Value Inn & Suites	L_{d1}	58	68	61
		L_{d2}	61	73	
		L_n	53	75	
ST-09	Ramon S Tafoya Elementary School	L_{d1}	49	61	56
		L_{d2}	50	63	
		L_n	50	72	
ST-10	Southwest Corner of Co Hwy E8 (102) & Kentucky Ave	L_{d1}	67	82	68
		L_{d2}	66	79	
		L_n	59	82	
ST-11	Downtown, Southeast corner of Main St & 5th St	L_{d1}	65	76	66
		L_{d2}	64	72	
		L_n	58	73	

Notes:

 L_d = Average measured sound level during daytime hours (7:00 am – 10:00 pm) L_n = Average measured sound level during nighttime hours (10:00 pm – 7:00 am)

Source: AECOM, 2013

As shown in Table 8-3, ambient noise levels have increased by approximately 3 to 8 dB (L_{dn}) since 1995. This is a reasonable amount of change for a growing urban area such as Woodland. The continuous noise level measurement data shows that ambient noise levels at the measurement sites ranged from 55 to 63 dB L_{dn} . These results are consistent with the estimated L_{dn} values presented in Table 8-2.

TABLE 8-3: SUMMARY OF LONG-TERM AMBIENT NOISE LEVEL SURVEY RESULTS

Site	Location	Measured Sound Level, dB March (21-25), 2013				Est. L_{dn}
		Avg. L_{eq} (Range)	Avg. L_{max} (Range)	Avg. L_{eq} (Range)	Avg. L_{max} (Range)	
LT-01	1435 Roosevelt Drive	62 (57 - 66)	78 (70 - 84)	54 (51 - 57)	68 (65 - 73)	63
LT-02	2113 Glacier Place	54 (42 - 59)	73 (59 - 84)	47 (39 - 50)	57 (52 - 65)	55
LT-03	2795 Ortiz Avenue	54 (51 - 56)	69 (62 - 73)	49 (47 - 51)	64 (61 - 68)	56

Source: AECOM, 2013

Existing Sources of Noise

Major transportation routes are dominant sources of noise in the city. These include traffic on I-5, SR 113, and other local arterials and streets; aircraft overflights from SMF, Yolo County Airport, and Watts-Woodland Airport; and train operations on the California Northern Railway and Sierra Northern Railway. Stationary sources in the city include construction sites, farming activities, and commercial and industrial facilities. These noise sources are discussed individually below.

Traffic

Traffic noise contours prepared using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model for I-5, SR 113, major and minor arterials, and collector roadway segments are shown in Figures 8-11 and 8-12. The contour distances may be used to estimate the distance to the 70 dB L_{dn} traffic noise contour for existing Average Daily Traffic (ADT) volumes and the posted speed limit.⁴

⁴ The L_{dn} contours shown in Figures 8-11 and 8-12 and Tables 8-2 and 8-3 are only indicators of potential noise conflicts, requiring more detailed analysis to determine traffic noise levels at any given location.

Railroads

Woodland has two active rail lines: The California Northern and the Sierra Northern Railway. The California Northern Railway is a freight line that runs through Woodland and Davis, and along I-5 past the City of Corning. The freight line schedule varies depending on agricultural/seasonal demands. The rail line carries an average of two trains daily, using between one and 50 rail cars and one or two locomotives, traveling at an average speed of 15 miles per hour. The estimated railroad noise level at 100 feet from the railway centerline is approximately 45 dB L_{dn} . The 70 dB L_{dn} contour generally aligns with the railroad right-of-way.

The Sacramento River Train is operated by the Sierra Northern Railroad Company as an entertainment passenger train that runs from Woodland to West Sacramento. According to Sierra Northern Railroad personnel, there is typically one River Train round trip per day. The trains typically have between two and 25 rail cars with one or two locomotives, traveling at an average speed estimated at 15 miles per hour. Assuming two daily train passes, each with 25 cars and two locomotives traveling at 15 miles per hour, the estimated railroad noise levels at 100 feet from the railroad centerline is approximately 44 dB L_{dn} . The 70 dB L_{dn} contour generally aligns with the railroad right-of-way.

Train noise levels and contours distances were calculated following Federal Transportation Administration guidelines. Noise is associated with the engines and wheel/track interaction, road crossing alarm bells, and horn blasts. The use of the railroad warning horns at the roadway crossings results in brief periods of elevated noise levels near the tracks. The Federal Railroad Administration regulates locomotive horns under Code of Federal Regulations Parts 222 and 229. CFR Part 222 states that locomotive horns must be sounded by the lead locomotive of any passenger or freight train traveling over 15 miles per hour within 15–20 seconds of crossing any public roadway. Any train traveling over 60 mph may not sound their horn until it is within ¼-mile of the approaching crossing. Trains are not required to sound their horn if there is no at-grade crossing. CFR Part 229 states that lead locomotive horns shall be equipped with a horn that produces a minimum of 96 dBA and a maximum of 110 dBA at 100 feet. Some sections of rail lines within the Planning Area may be eligible for a Federal Railroad Administration Quiet Zone designation, which would significantly reduce the use of train horns along designated lengths of track.

Aircraft

Aircraft operations in the vicinity of an airport can be a significant source of noise. The nearest airport is Watts Woodland Airport, which is located approximately 3.5 miles from the western City limits. SMF is located approximately five miles northeast, and the Yolo County Airport is located approximately nine miles southwest of the City limits. Noise contours for SMF, Watts-Woodland airport, and Yolo County Airport are depicted in Figure 8-13. None of the airports' CNEL contours overlap with Woodland's Planning Area.⁵

Farming Activities

The primary sources of noise related to farming activity include tractors, harvesters, farm cannons, and crop-dusting aircraft. Noise is a concern for growing communities when sensitive uses are proposed in areas with ongoing agricultural activities, and complaints from new residents create pressure to convert agricultural properties to urban use. There are various strategies for addressing this potential conflict, including but not limited to site and building orientation and design, agricultural buffers, and providing notice to prospective residents regarding ongoing agricultural activities.

Typical noise levels from tractors, as measured at a distance of 50 feet, range from about 75 dB to 95 dB with an average of about 84 dB. These noise levels should be reasonably representative of noise levels from other wheeled and tracked farm equipment. Using a source level of 84 dB at 50 feet, and assuming nominal point-source attenuation of 6 dB per doubling of distance, the distance to noise level contours are as shown in Table 8-4. Most noise-generating activities on agricultural lands are seasonal, and therefore a noise policy approach that focuses on average daily noise may not be appropriate for this type of land use/noise conflict.

To address the special case of residential development and other sensitive uses being introduced in close proximity to agricultural areas, this General Plan has established policies that promote a buffer along the urban-agriculture edge. See the Land Use, Community Design, and Historic Preservation Element.

⁵ Community Noise Equivalent Level (CNEL): Similar to L_{dn} , CNEL is the energy-average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours (10 p.m.-7 a.m.), and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours (7 p.m.-10 p.m.). The CNEL is usually within 1 dB of the L_{dn} , and the two are basically interchangeable.

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FIGURE 8-11: CITY ROAD NOISE MEASUREMENT SITES AND CONTOURS

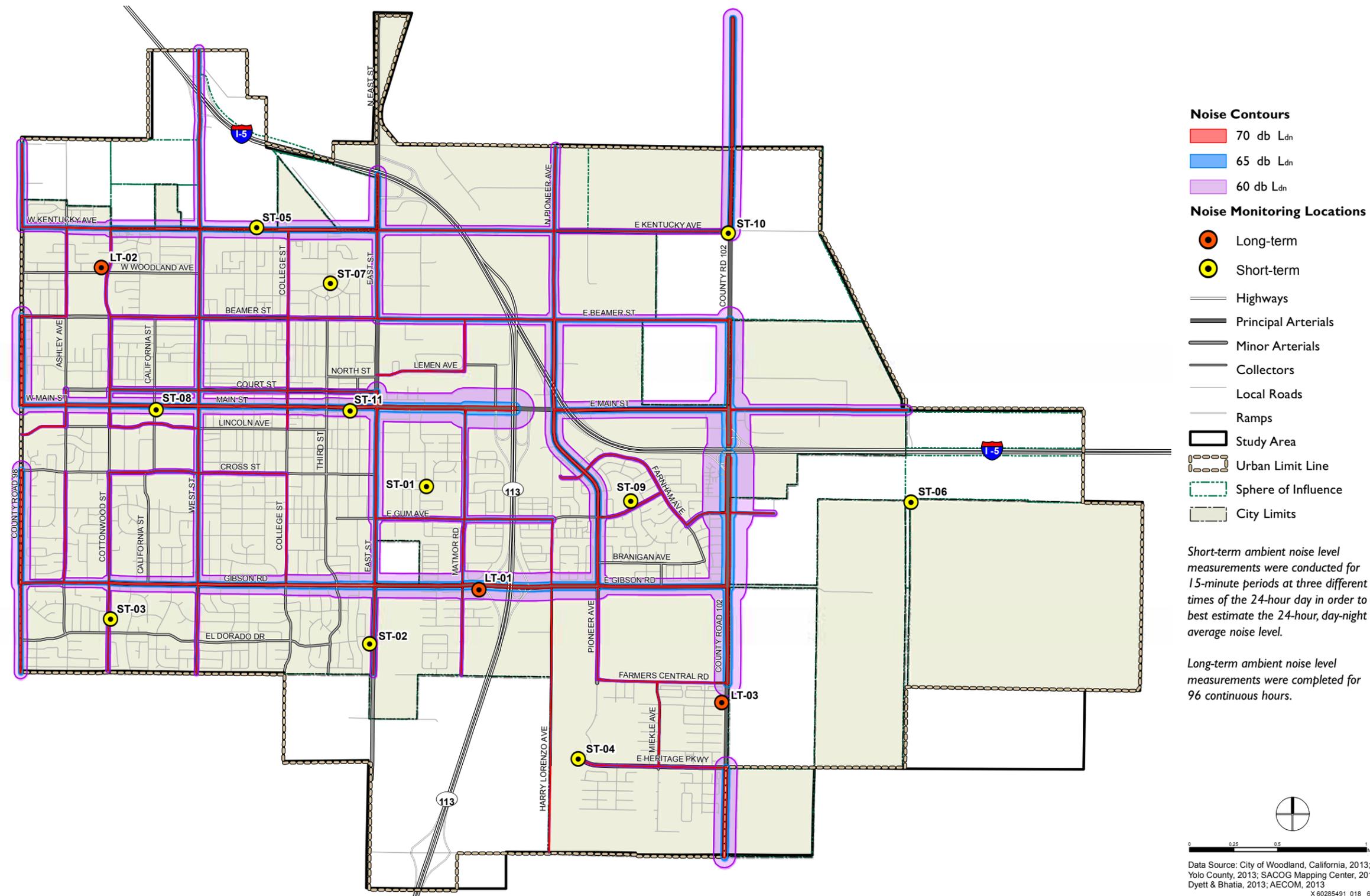


FIGURE 8-12: HIGHWAY NOISE CONTOURS

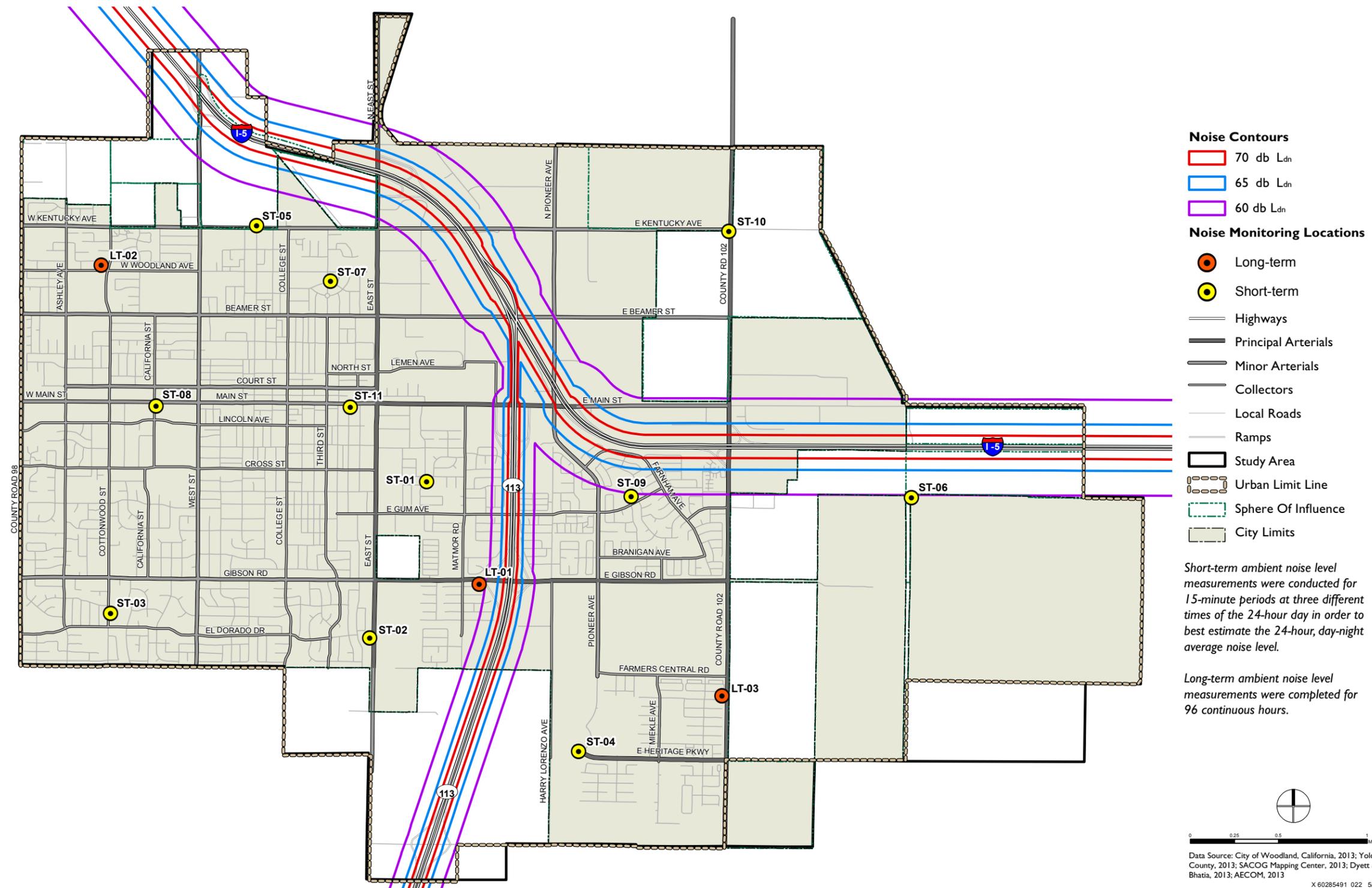
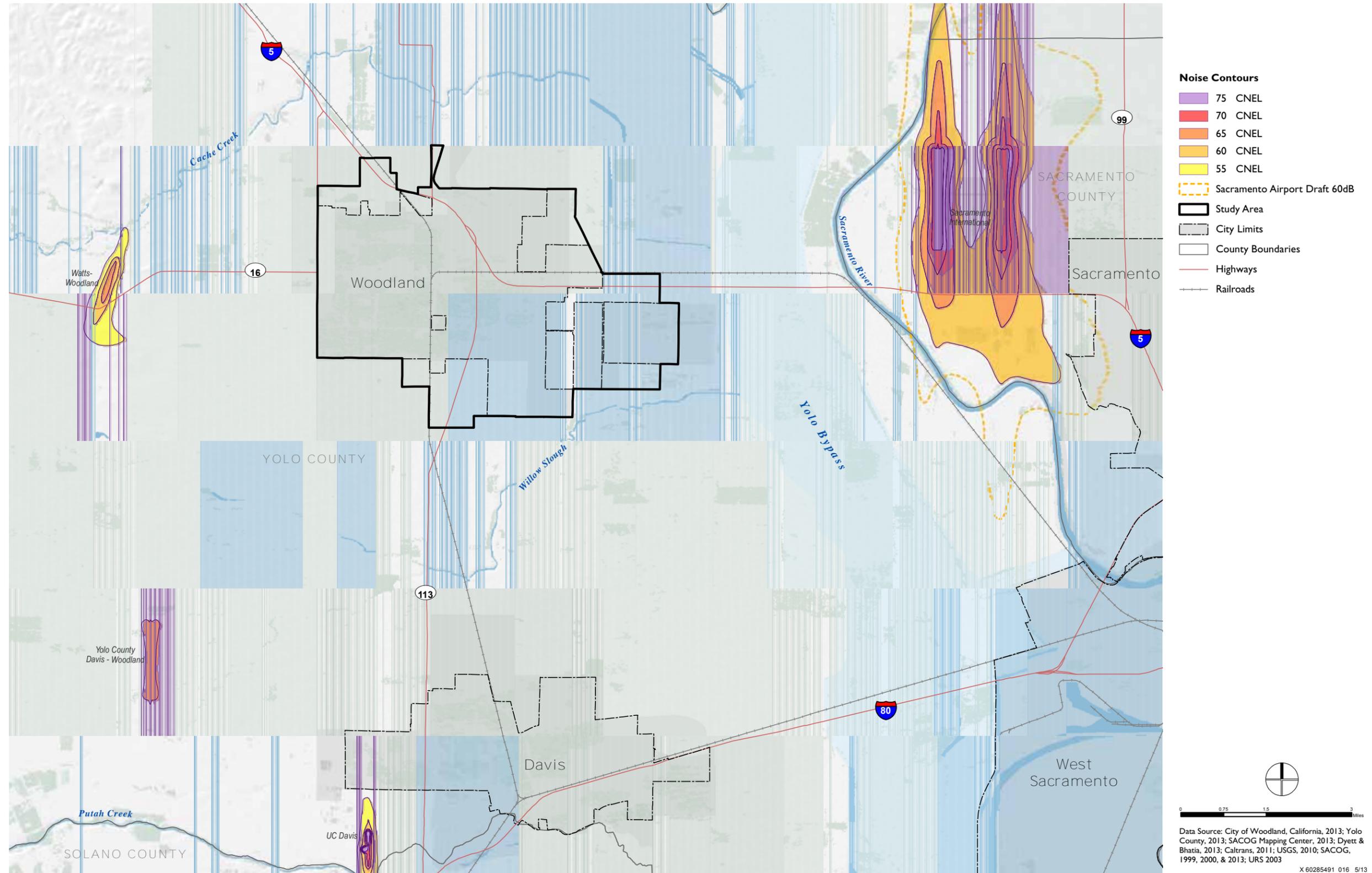


FIGURE 8-13: AIRPORT NOISE CONTOURS



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TABLE 8-4: NOISE EXPOSURE FROM OPERATION OF TYPICAL FARMING EQUIPMENT (TRACTOR)

<i>Distance from Source (feet)</i>	<i>Calculated Noise Level (dB)</i>
50	84
100	78
200	72
400	66
800	60
1,600	54

Source: Toth, W. J. *Noise abatement techniques for construction equipment*. U.S. Department of Transportation. National Highway Traffic Safety Administration, Washington D.C.

Other Fixed Noise Sources

Commercial and industrial facilities are also a source of noise within Woodland. Mechanical equipment and trucking are the primary sources of noise associated with these facilities. Industrial processes can generate noise, even when the best available noise control technology is applied. Noise exposure within industrial facilities is controlled by federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels can be guided with local standards. These noise sources can be continuous and potentially 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.

From a land use planning perspective, fixed-source noise control issues focus on (1) limiting the introduction of new noise-producing uses in areas with noise-sensitive receptors, and (2) limiting encroachment of noise-sensitive receptors upon existing noise-producing facilities. The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive receptors in near proximity to noise-producing facilities be sited in a manner, and include construction techniques, that help minimize noise.

Fixed noise sources that are typically of concern include, but are not limited to, the following:

- HVAC systems
- Pump stations
- Emergency generators
- Steam valves
- Generators
- Air compressors
- Conveyor systems
- Pile drivers
- Drill rigs
- Welders
- Outdoor speakers
- Cooling towers/Evaporative condensers
- Lift stations
- Boilers
- Steam turbines
- Fans
- Heavy equipment
- Transformers
- Grinders
- Gas or diesel motors
- Cutting equipment
- Blowers

These noise sources may be found in all kinds of industrial facilities, construction sites, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields. Numerous industrial facilities are dispersed throughout the Planning Area.

Construction

Construction can be a substantial, though short-term, source of noise. Construction is most disruptive when it takes place near sensitive land uses, or when it occurs at night or in early morning hours. Typically, diesel engines without sufficient muffling are responsible for the most disruptive construction noises. However, in other instances, operations such as impact pile driving or pavement breaking are the dominant noise source.

Other portable or small-scale pieces of equipment may also produce noise. Mechanical equipment, such as pumps and fans, may produce low noise levels, but continuously and for substantial distances. Portable power equipment, such as leaf blowers and drills, can produce very high noise levels. Other amplified sounds, such as automotive audio equipment or loudspeakers, also create noise exposure.

Ground Borne Vibration

Ground borne vibration is manmade noise caused by vibrations of the ground due to explosions, construction, or railway and transit movement. Ground borne vibration noise from rail systems typically stems from degraded wheel and rail surfaces. In addition, cars and buses can also cause ground borne vibration, especially when they travel on rough or uneven roadways.

Additional Noise Sources

Other miscellaneous and intermittent noise sources include those associated with residential uses (e.g., children at play, barking dogs, etc.); sources associated with property maintenance (e.g., lawn mowers, edgers, blowers, pool pumps, power tools, etc.); safety, warning and alarm devices, including house and car alarms, and other warning devices; operation of schools typically consisting of classes and other school-sponsored activities, such as school bands and school athletic events; and emergency response.

General Plan Noise Standards

With the proposed intensification of land uses in Woodland, especially Downtown and along key corridors, noise control will be an increasing consideration for new development, particularly for infill projects. However, urban development generally experiences greater ambient (background) noise than rural areas. In order to



Prominent mobile noise sources in Woodland include freight rail activity and vehicle traffic on freeways and major roads.

achieve the increased levels of density and development intensity outlined in this General Plan, somewhat greater ambient noise levels must be acknowledged and accepted.

Table 8-5 establishes standards that will help the City determine the appropriateness of locating specific land uses in noise-prone environments. If the measured noise level at a proposed development site falls within the “Normally Acceptable” range for the proposed land use, conventional construction techniques will typically suffice. If the measured noise level falls within the “Conditionally Acceptable” or “Normally Unacceptable” ranges, special acoustic treatments and noise insulation features may be required in order for the development to be approved. If the measured noise level falls within the “Clearly Unacceptable” range, the development project should generally not be undertaken.

TABLE 8-5: LAND USE NOISE COMPATIBILITY STANDARDS

Land Use Category	Common Noise Exposure <i>L_{dn}</i> or CNEL, dB					
	55	60	65	70	75	80
Residential - Low Density Single Family, Duplex, Mobile Homes	Green			Yellow	Brown	Red
Residential - Multi. Family	Green			Yellow	Brown	Red
Transient Lodging - Motels, Hotels	Green			Yellow	Brown	Red
Schools, Libraries, Churches, Hospitals, Nursing Homes	Green			Yellow	Brown	Red
Playgrounds, Neighborhood Parks	Green			Brown	Red	Red
Sports Arena, Outdoor Spectator Sports	Green			Yellow	Yellow	Red
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Green			Brown	Red	Red

INTERPRETATION

 **Normally Acceptable**
Specified land use is satisfactory, without any special noise insulation requirements.

 **Conditionally Acceptable**
New development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional building techniques, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

 **Normally Unacceptable**
New development should generally be discouraged. If new development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

 **Clearly Unacceptable**
New development should generally not be undertaken.

Notes:
1) Noise levels refer to external ambient noise from permanent land uses. They do not refer to noise from non-stationary sources, such as cars, trucks, buses, or trains.
2) For mixed land uses, defer to the most noise-sensitive use.

The noise standards established in Table 8-5 accept 70 dB as being in the “normally acceptable” range for noise experienced in outdoor areas. This supports the development of infill projects Downtown and along key corridors by setting a realistic, achievable threshold of impact for new development that acknowledges the somewhat greater noise levels associated with a vibrant, urban environment in appropriate locations.

In addition, various land uses can also be impacted by noise emanating from transportation noise sources, such as roadways and rail lines. Table 8-6 indicates the acceptable limits of transportation noise for exterior and interior environments. In some places, noise attenuation measures may be necessary to meet these standards.

TABLE 8-6: NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AND EXISTING NON-TRANSPORTATION SOURCES^{1,2}

	<i>Daytime (7 am to 10 pm)</i>	<i>Nighttime (10 pm to 7 am)</i>
Hourly Equivalent Sound Level (L_{eq}), dBA	60	45
Maximum Sound Level (L_{max}), dBA	75	65

Notes:

- Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
- These standards apply to the noise sources themselves; noise caused by motor vehicles traveling to and from the site is exempt from this standard.

Table 8-7 provides performance standards for noise emanating from new projects and from existing stationary, non-transportation noise sources. These standards apply to the noise sources themselves, though noise caused by motor vehicles associated with these uses is exempt. The types of uses that are most likely to produce high noise levels include, but are not limited to, industrial facilities, automotive servicing, car washes, equipment yards, entertainment venues, hotels, and shopping centers. The standards are intended to limit the noise emanating from any single (non-transportation related) land use or noise source. Noise from individual sources is of particular concern when siting new noise-sensitive receptors.

TABLE 8-7: MAXIMUM ALLOWABLE NOISE EXPOSURE FROM TRANSPORTATION SOURCES¹

<i>Land Use²</i>	<i>Outdoor Activity Areas^{3,4}</i>		<i>Interior Spaces</i>	
	<i>DNL/CNEL, dB</i>	<i>DNL/CNEL, dB</i>	<i>DNL/CNEL, dB</i>	<i>L_{eq} dB</i>
Residential	70	45	---	---
Transient Lodging	70	45	---	---
Hospitals, Healthcare Facilities, Nursing Homes	70	45	---	---
Theaters, Auditoriums, Music Halls	---	---	---	35
Places of Worship, Meeting Halls	70	---	---	40
Office Buildings	---	---	---	45
Schools, Libraries, Museums	---	---	---	45
Playgrounds, Neighborhood Parks	70	---	---	---

Notes:

1. Non-aircraft
2. As determined for a typical worst-case hour during periods of use.
3. Outdoor activity areas are considered to be the portion of a property where outdoor activities would normally be expected (i.e., patios of residences and outdoor instructional areas of schools). Outdoor activity areas for the purposes of this element do not include gathering spaces alongside transportation corridors or associated public rights-of-way.
4. Where it is not possible to reduce noise in outdoor activity areas to the levels specified in this table using a practical application of the best-available noise reduction measures, a higher exterior noise level may be allowed provided that interior noise levels are in compliance with this table.

Roadway Improvement Projects

New roadway improvement projects will be needed to accommodate development permitted according to the Land Use Diagram. Where existing noise-sensitive receptors may be exposed to increased noise levels due to increased roadway capacity and increases in travel speeds associated with roadway improvements, the following criteria will determine the significance of increases in noise related to roadway improvement projects:

- Where existing traffic noise levels are less than 70 dB L_{dn} at the outdoor activity areas of noise-sensitive receptors, a +5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant; and
- Where existing traffic noise levels range between 70 and 75 dB L_{dn} at the outdoor activity areas of noise-sensitive receptors, a +3 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant; and
- Where existing traffic noise levels are greater than 75 dB L_{dn} at the outdoor activity areas of noise-sensitive receptors, a +1.5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.

8.9 Goals and Policies

Goal 8.A **Seismic and Geologic Hazards.** Minimize the loss of life, injury, and property damage due to seismic and geological hazards.

Policy 8.A.1 **Minimize Seismic Risk.** Continue to maintain and enforce appropriate standards to ensure new development is designed to meet current safety standards associated with seismic activity. Require public and private development to be located, designed, and constructed to minimize the risk of loss of life and injury in the event of a major earthquake or other natural disaster.

Policy 8.A.2 **Geologic-Seismic Analysis.** Require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., groundshaking, liquefaction, expansive soils).

Policy 8.A.3 **Expansive Soils.** Evaluate and avoid siting of structures across soil materials of substantially different expansive properties. Require appropriate design specification including special slabs where foundations are in areas of expansive soils.

Policy 8.A.4 **Indian Valley Dam.** Work with the Yolo County Flood Control and Water Conservation District to ensure the continued maintenance of the Indian Valley Dam in order to protect against potential dam failure. Require new development in inundation areas to consider risks from dam failure.

For policies related to flooding from potential levee failure, please refer to Goal 8.B.

Goal 8.B **Flood Hazards and Protection.** Protect the lives and property of the citizens of Woodland from hazards and manage floodplains for their open space and natural resource values.

Policy 8.B.1 **Floodplain Zoning.** Continue to implement floodplain zoning and undertake other actions appropriate and/or required to comply with State flood risk management requirements, and to maintain the City's eligibility under the Federal Flood Insurance Program.

Policy 8.B.2 **Flood Hazard Evaluation.** Require evaluation of potential flood hazards prior to approval of development projects. Require proponents of new development to submit accurate topographic and flow characteristics information. This will include depiction of the 200-year floodplain boundaries under fully-developed, pre- and post-project runoff conditions.

Policy 8.B.3

New Development in Flood Hazard Zones. No subdivisions, development agreements, or permits that would place development within a flood hazard zone can be approved unless the City makes explicit findings that either existing flood management facilities provide an adequate level of protection from flooding, the City has conditioned the project to provide an adequate level of protection, or the local flood management agency has made adequate progress on the construction of a flood protection system that will provide adequate protection.

Specifically, the City is prohibited from:

- a) Approving a discretionary permit or other discretionary entitlement for all development projects;
- b) Approving a ministerial permit that would result in the construction of a new residence for a project (Government Code Section 65962);
- c) Approving a tentative map consistent with the Subdivision Map Act for all subdivisions;
- d) Approving a parcel map for which a tentative map is not required, consistent with the Subdivision Map Act for all subdivisions (Government Code Section 66474.5); or
- e) Executing a development agreement for any property development (Government Code Section 65865.5),

unless the city finds, based on substantial evidence in the record, one of the following:

- (1) Flood management facilities provide 200-year level of protection;
- (2) The City has imposed conditions on the development action sufficient to provide 200-year level of protection;
- (3) The local flood management agency has made adequate progress on the construction/improvement of flood facilities that will provide 200-year level of protection by 2025; or
- (4) For property in areas without a finding of 200-year protection, the property meets the 200-year level of protection.

These findings must be based on substantial evidence in the record and will require (among other things) an engineer's report demonstrating the technical basis for making the finding.

- Policy 8.B.4** **Properties within CVFPB Jurisdiction.** Require applicants to secure an encroachment permit from the CVFPB for any project that falls within the jurisdiction of the Board (e.g. levees, regulated streams, and designated floodways).
- Policy 8.B.5** **Protective Structures.** Require installation of protective structures or other design measures to protect proposed building and development sites from the effects of flooding.
- Policy 8.B.6** **Facilities for Emergencies and Large Public Assembly.** Prohibit the construction of facilities essential for emergencies (including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communication facilities) and large buildings of public assembly in the 200-year floodplain, unless the structure and road access are free from flood inundation, and all required findings of fact can be made based on substantial evidence in the record.
- Policy 8.B.7** **Adjacent Property.** Require that new flood management projects or development within areas subject to flooding ensure that floodwaters will not be diverted into adjacent property to increase flood hazards on properties located elsewhere unless secured through a flood easement or fee title buyout.
- Policy 8.B.8** **Coordination.** Coordinate with other local regional, State, and federal agencies to improve flood risk management. Maintain the City's membership on the Reclamation District 2035 Board.
- Policy 8.B.9** **Flood Management Funding.** Actively engage with State and federal agencies to develop and implement flood protection for Woodland from both Lower Cache Creek and the Yolo Bypass West Levee.
- Policy 8.B.10** **Public Awareness.** Promote public awareness activities that communicate the requirements and risks associated with owning land and living within a floodplain. Maintain, update, and make available to the public, community flood evacuation and rescue maps.
- Policy 8.B.11** **Levee Inundation Areas.** Require new development in levee inundation areas to conduct an analysis of risk from levee failure.

Goal 8.C **Fire Hazards.** Minimize the risk of loss of life, injury, and damage to property and watershed resources resulting from fire hazards.

- Policy 8.C.1** **Buildings of Public Assembly.** Ensure that existing and new buildings of public assembly incorporate adequate fire protection measures to reduce the potential loss of life and property in accordance with state and local codes and ordinances.

- Policy 8.C.2** **Education.** Continue education programs in schools, service clubs, organized groups, industry, utility companies, government agencies, press, radio, and television in order to increase public awareness of local fire hazards and other risks including the ability to recognize these risks and appropriate avoidance techniques.
- Policy 8.C.3** **Smoke Detectors.** Encourage and promote the installation and maintenance of smoke detectors in existing residences and commercial facilities that were constructed prior to the requirement for their installation.
- Policy 8.C.4** **Fire Prevention Programs.** Develop high-visibility fire prevention programs, including those offering voluntary home inspections and promoting awareness of home fire prevention measures.
- Policy 8.C.5** **Fire Station Siting.** Site future fire stations so as to achieve the best response times.

Goal 8.D **Airport Hazards.** Minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from airport hazards consistent with applicable ALUCPs.

- Policy 8.D.1** **Safety Hazards.** Cooperate with Yolo and Sacramento Counties, and the ALUC, to ensure that new development around airports does not create safety hazards such as lights from direct or reflective sources, smoke, electrical interference, hazardous chemicals, or fuel storage in violation of adopted safety standards.
- Policy 8.D.2** **Federal Compliance.** Ensure that development within airport approach and departure zones complies with Federal Aviation Administration Regulations.
- Policy 8.D.3** **Notification to Residential Buyers.** Disclose information about the presence of nearby airports to prospective buyers of existing or new residential properties located within the SMF Airport Influence Area, in accordance with State law. Require a Recorded Overflight Notification as a condition of approval for residential projects located with the SMF Airport Secondary Approach Area.

Goal 8.E Hazardous Materials. Minimize the risk of loss of life, injury, serious illness, damage to property, and negative economic and social impacts resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous materials waste.

- Policy 8.E.1 Coordination.** Coordinate with Yolo County and other relevant agencies to ensure that the manufacture, purchase, use, storage, transportation, and disposal of hazardous materials in the city is conducted in a responsible manner that complies with local, State, and federal safety standards.
- Policy 8.E.2 Disposal and Storage Plan.** Require that applications for discretionary development projects that will generate hazardous wastes or utilize hazardous materials include a detailed plan for hazardous waste reduction, recycling, and storage.
- Policy 8.E.3 Buffer Zone.** Require that new development for industries that store and process hazardous materials provide a buffer zone between the installation and the property boundaries sufficient to protect public safety.
- Policy 8.E.4 Emergency Response.** Coordinate with Yolo County to provide for safe and efficient hazardous waste emergency response and plan for contaminated site cleanup.
- Policy 8.E.5 Hazardous Materials Database.** Coordinate with Yolo County to develop a database and maintain complete and accurate information on the types, quantities, sources, and management of all hazardous materials and wastes generated in Woodland to aid in management planning and emergency response.
- Policy 8.E.6 Education.** Collaborate with Yolo County to educate residents and businesses about household hazardous wastes, less toxic materials that can be used in place of toxic materials, and proper household and business waste disposal methods.

Goal 8.F Emergency Response. Foster an efficient and coordinated response to emergencies and natural disasters.

- Policy 8.F.1 Emergency Operations Plan.** Ensure the maintenance of the Emergency Operations Plan to effectively prepare for, respond to, recover from, and mitigate the effects of natural disasters, technological incidents and national security emergencies. Update as necessary to address potential flooding hazards.
- Policy 8.F.2 Coordination.** Continue to coordinate emergency preparedness, response, recovery, and mitigation activities with Yolo County, special districts, service agencies, voluntary organizations, other cities within

the county, surrounding cities and counties, and State and federal agencies. Upon the next update of the Yolo County Operational Area Multi-Jurisdictional Hazard Mitigation Plan, participate in the effort to address topics related to climate change vulnerability, as required by SB 379.

- Policy 8.F.3** **Public Information.** Provide periodic public information programs that explain the City’s emergency preparedness programs.
- Policy 8.F.4** **Siting of Critical Facilities.** Ensure that the siting of critical emergency response facilities and communications facilities such as the Emergency Operations Center, hospitals, fire stations, police offices and substations, dispatch centers, and other emergency service facilities and utilities have minimal exposure to flooding, seismic and geological effects, fire, and explosions.
- Policy 8.F.5** **Emergency Access and Evacuation.** Require areas subject to fires, flooding, and other hazards to have emergency access and evacuation routes that are clearly marked with consistent signage. Make evacuation and rescue maps available to the public.

Goal 8.G **Noise.** Strive to achieve an acceptable noise environment for the environmental, health, and safety needs of Woodland residents and workers.

- Policy 8.G.1** **Noise Compatibility for Residential Uses.** Ensure that existing and planned land uses are compatible with the current and projected noise environment. However, urban development and increased density, as supported by the City in this General Plan, generally results in greater ambient (background) noise than lower density areas. It is the City’s intent to meet specified indoor noise thresholds, and to create peaceful backyard living spaces where possible, but particular ambient outdoor thresholds may not always be achievable. Where residential growth is allowed pursuant to this General Plan, these greater noise levels are acknowledged and accepted, notwithstanding the land use noise compatibility standards in Table 8-5.
- Policy 8.G.2** **Land Use Noise Compatibility Standards.** Use the Land Use Noise Compatibility Standards, shown in Table 8-5, as review criteria for new land uses. For proposed new discretionary development, where it is not possible to reduce noise levels to the “normally acceptable” range using practical application of the best-available noise reduction measures, greater exterior noise levels may be allowed, provided that all available reasonable and feasible exterior noise level reduction measures have been implemented.

- Policy 8.G.3** **Noise Exposure from Transportation Sources.** Require noise-reducing mitigation to meet the maximum allowable outdoor and indoor noise exposure standards from transportation sources in Table 8-6. Noise mitigation measures that may be approved to achieve these noise level targets include but are not limited to the following:
- Construct facades with sound insulation to achieve acceptable interior noise;
 - Use sound-rated windows for primary sleeping and activity areas;
 - Use sound-rated doors for all exterior entries at primary sleeping and activity areas;
 - Use setbacks and/or sound barriers where applicable, feasible, and reasonable;
 - Use acoustic baffling of vents for chimneys, attic and gable ends;
 - Install a mechanical ventilation system that provides fresh air under closed window conditions; and
 - Maximize site design so that buildings shelter outdoor areas.
- (EIR Mitigation Measure 4.11-2a)*
- Policy 8.G.4** **Noise-Sensitive Receptors.** For the purposes of environmental review, consider residentially designated areas, nursing homes, schools, libraries, and places of worship to be noise-sensitive receptors.
- Policy 8.G.5** **New Noise-Sensitive Receptors.** Prohibit development of new noise-sensitive receptors where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 8-7 as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards. Create peaceful outdoor spaces where possible, but acknowledge that particular ambient outdoor thresholds may not always be achievable. Require noise mitigation to assure acceptable interior noise levels appropriate to the land use type:
- 45 dB L_{dn} for residential, transient lodgings, hospitals, nursing homes, and other uses where people normally sleep; and
 - 45 dB L_{eq} (peak hour) for office buildings and similar uses.
- Policy 8.G.6** **New Non-Transportation Noise Sources.** Require that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards of Table 8-7 as measured immediately within the property line of lands designated for noise-sensitive receptors.

- Policy 8.G.7** **Roadway Improvements.** Where existing noise-sensitive receptors may be exposed to increased noise levels due to increased roadway capacity and increases in travel speeds associated with roadway improvements, apply the following criteria to determine the significance of increases in noise related to roadway improvement projects:
- Where existing traffic noise levels are less than 70 dB L_{dn} at the outdoor activity areas (defined as the portion of a property where outdoor activities would normally be expected, such as patios of residences and outdoor instructional areas of schools; does not include gathering spaces alongside transportation corridors or associated public rights-of-way) of noise-sensitive receptors, a +5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant; and
 - Where existing traffic noise levels range between 70 and 75 dB L_{dn} at the outdoor activity areas of noise-sensitive receptors, a +3 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant; and
 - Where existing traffic noise levels are greater than 75 dB L_{dn} at the outdoor activity areas of noise-sensitive receptors, a +1.5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.
- Policy 8.G.8** **Site and Building Design.** Orient buildings such that the noise sensitive portions of a project are shielded from noise sources.
- Policy 8.G.9** **Existing Development.** Promote the use of noise attenuation measures to improve the acoustic environment where existing noise sensitive uses are located in noise-impacted environments, such as along arterial streets or adjacent to noise-producing uses. For non-conforming uses, the burden of noise attenuation falls on the non-conforming use. For allowed uses, the burden falls on the newest use, subject to possible later reimbursement based on benefit received by later use. Allowed uses that are developed simultaneously will share the burden of noise attenuation.
- Policy 8.G.10** **Right-to-Farm Ordinance.** Support the City and County's right-to-farm ordinances, especially as they relate to noise emanating from agricultural operations adjacent to urban uses, by requiring notification of the potential impacts to adjacent property owners, purchasers, residents, and users.
- Policy 8.G.11** **Construction Noise.** Consider construction noise to be an acceptable impact that is an expected byproduct of planned growth, so long as the land use is consistent with the General Plan, and noise levels are consistent with the General Plan and Construction Noise Ordinance.

Policy 8.G.12 **Federal Railroad Administration Quiet Zone.** Investigate the potential for establishing a Federal Railroad Administration Quiet Zone designation for sections of the city's railroad tracks.

Policy 8.G.13 **Noise Attenuation Barriers.** Noise attenuation barriers are strongly discouraged, except to attenuate noise for existing developed uses, and may be used in the context of new developments only when no other approach to noise mitigation is feasible.

(EIR Mitigation Measure 4.11-2b)

Policy 8.G.14 **Policy 8.G.14 Vehicle Traffic.** New developments shall disperse vehicular traffic onto a network of fully connected smaller roadways and minimize funneling of local traffic onto large-volume, high speed roadways near existing or planned noise-sensitive land uses to the maximum extent feasible.

(EIR Mitigation Measure 4.11-2b)

Policy 8.G.15 **Operational Noise.** In new development areas, service, utility, loading areas, roof-mounted equipment, and noise-generating equipment shall be screened, designed, and located to reduce visibility and noise for surrounding properties and pedestrian areas.

(EIR Mitigation Measure 4.11-2b)