

ATTACHMENT 3:
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THE PLEASANTON GENERAL PLAN

V. PUBLIC SAFETY ELEMENT

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V. PUBLIC SAFETY ELEMENT

PURPOSE

The purpose of the Public Safety Element is to provide information, policies, and programs directed toward reducing the potential for human injury and loss of life, and to minimize property damage and economic and social disruption due to natural and human-made hazards.

RISKS OF HAZARDS

All urban areas in California are subject to a variety of naturally-occurring hazards as well as hazards caused by human activities. Risks to life and property within the Planning Area are most commonly posed by geology (earthquakes, landslides, etc.); fire; flood; aviation, train and auto accidents; and the accidental discharge of hazardous materials. None of these hazards can be avoided entirely or mitigated completely. However, potentially devastating impacts presented by such hazards can be reduced through the recognition of the safety risks and the application of safety standards designed to protect life and property to the greatest feasible extent.

The Public Safety Element contains policies and programs which establish “safety” criteria for evaluating new developments and which establish standards for the City’s emergency response services and programs to protect life and property.

GEOLOGY AND SEISMICITY

Geologic Setting

The Pleasanton Planning Area is located within the Amador Valley, which is part of the Coast Range geologic province of California. The Coast Range province is a large area of folded and faulted rocks situated along the western edge of the North American continent. The Amador Valley is a depression in this rock formation which joins the San Ramon Valley to the north with the Livermore Valley to the east. The geologic conditions which have formed the topography surrounding Pleasanton are the result of a global pattern of moving continental plates which have shaped the earth’s outer surface over hundreds of millions of years.

The underlying geology of sedimentary rock in the Pleasanton Ridge and the Southeast Hills, the thick deposits of unconsolidated sediment on the Valley floor, and areas of older landslide deposits are factors that, along with the proximity of several earthquake faults, create a geologic setting susceptible to a number of geologic hazards. This Element briefly describes these hazards.

The potential extent and severity of any geologic hazard varies throughout the Planning Area depending upon the underlying geology, topography, surface soil type, groundwater table, and seismicity.¹ Certain portions of the Planning Area are more at risk to particular geologic hazards than others, and the geologic characteristics of a specific area will result in different responses to seismic activity.

¹ Seismicity is earth movement phenomena as related to earthquakes and also a measure of an area’s susceptibility to earthquakes.

Two non-earthquake related geologic hazards exist in the Planning Area: landslides (not related to seismic shaking) and expansive soils.

Landslides

Landsliding is a natural process of relatively rapid downslope movement of soil, rock and rock debris as a mass. The rate of landsliding is affected by the type and extent of vegetation, the slope angle, the degree of water saturation, the strength of the rocks, and the mass and thickness of the deposit. Some of the natural causes of this instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. In addition, certain human activities tend to make the earth materials less stable and increase the chances of ground failure. Activities contributing to instability include extensive irrigation, poor drainage or groundwater withdrawal, removal of stabilizing vegetation and over steepening of slopes by undercutting them or overloading them with artificial fill.

Landslides can involve both the simple sloughing downslope of a small-sized surficial landmass for a distance of several inches or massive earth movements of many feet. Landslides may occur at any time but are more likely during the rainy season, when soils are saturated with water and their cohesive abilities are more likely to break down.

In the Pleasanton Planning Area, about 8,000 acres are in areas of mostly landslide.² Figure V-1 shows areas with mostly landslide, few landslide, or no landslide deposits. The areas of no landslide deposits are mainly level and generally do not contain past or current landslide debris.

Expansive Soils

Expansive soils are surface deposits rich in clays that expand when wet and shrink when dried. Expansive soils are potentially present at or near the surface in areas in northern Pleasanton and along the northeastern flank of Pleasanton Ridge. A moderate potential exists for their presence throughout the remainder of the Planning Area, and site-specific studies are required to determine their actual presence at a given location.

Seismic/Earthquake Setting

As is the case for most of California, people and property in Pleasanton are subject to risks from seismic activity. According to the U.S. Geological Survey (USGS) Workgroup on California Earthquake Probabilities, there is a 62 percent probability of at least one magnitude 6.7 or greater quake, capable of causing widespread damage, striking the San Francisco Bay Area region before 2032.³ The active faults⁴ in or near the Pleasanton Planning Area include the Calaveras, Concord-Green Valley, Green Valley, Greenville, Hayward, Mt. Diablo Thrust, and San Andreas Faults. Figure V-2 shows active earthquake faults in the Bay Area and earthquake magnitudes.

Earthquake magnitude is a measure of overall earthquake size at the epicenter, and is recorded by the Richter Scale (Table V-1), a logarithmic scale related to seismograph readings. In addition, seismologists use “moment magnitude” to measure the amount of energy released by an earthquake.

² ABAG, 2002

³ USGS, April 2004

⁴ A fault that has moved within the past 11,000 years.

Figure V-1 Landslide Zones

Figure V-2 Regional Faults and Earthquake Epicenters

Table V-1: EARTHQUAKE MAGNITUDE AND INTENSITY

Intensity ^a	Richter Magnitude	Perceived Shaking	Modified Mercalli Scale Effects
I	2	Not felt	Not felt. Marginal and long-period effects of large earthquakes.
II	2	Weak	Felt by persons at rest, especially on upper floors. Suspended objects may swing.
III	3	Weak	Felt indoors, especially on upper floors. Hanging objects swing. Vibration feels like passing of light trucks. May not be recognized as an earthquake.
IV	4	Light	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor vehicles rock noticeably. Windows, dishes, doors rattle. Glasses clink and crockery clashes. Wooden walls and frames may creak.
V	4	Moderate	Felt outdoors. Sleepers waken. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move.
VI	5	Strong	Felt by all. Many frightened and run outdoors. Person walks unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc, off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and weak masonry may crack. Small bells ring (church, school). Trees, bushes shake.
VII	5	Very Strong	Difficult to stand. Many run outdoors. Noticed by drivers of motor vehicles. Furniture breaks. Cracking damage to weak masonry. Weak chimneys break at roofline. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Waves on ponds; water turbid with mud. Small slides and caving in and along sand or gravel banks. Large bells ring. Damages concrete irrigation ditches.
VIII	6	Severe	Steering of motor vehicles affected. Partial collapse of unreinforced masonry. Some damage to reinforced masonry although none to modern masonry. Fall of stucco. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses move on foundations if not bolted down; loose panel walls thrown out. Decayed piling breaks off. Branches break on trees. Changes in well water. Cracks in wet ground and on steep slopes.
IX	7	Violent	General panic. Unreinforced masonry seriously damaged or collapsed. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes break. Conspicuous cracks in ground. In alluvial areas sand and mud ejected.
X	7	Extreme	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI	8	Extreme	Rails bent gently. Underground pipelines out of service. Almost all masonry collapses. Broad fissures in ground.
XII	8+	Extreme	Damage nearly total. Large Rock masses displaced. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown into the air.

Source: Richter, Charles F., *Elementary Seismology*, June 1, 1958.

The moment magnitude is proportional to the area of the fault plane that has slipped and thus is directly related to the fault length. An earthquake may have one moment magnitude but a range of intensities. “Intensity” is a measure of the effect of an earthquake at a specific location. The most commonly used measurement of earthquake intensity and ground shaking is the Modified Mercalli Intensity Scale. Table V-1, above, summarizes the Modified Mercalli Intensity Scale (MMI) in relation to the Richter Scale, as well as perceived shaking hazard, potential damage, and earthquake effects as related to groundshaking severity.

Almost all of the major faults in the Bay Area are strike-slip faults where the rupture along the fault plane extends almost vertically into the ground, and the ground on one side moves past the ground on the other side. In some earthquakes, the surface of the ground can rupture along the fault, or a landslide can be triggered, or a number of other incidents may occur. But in all earthquakes the ground shakes, and the shaking of the ground itself causes most earthquake damage.

Earthquakes can cause a number of specific hazards.

1. Ground Shaking

Portions of the Planning Area that are underlain by loosely compacted soils may experience the greatest amount of ground-shaking and damage, even though they may not be closest to the fault rupture.

As shown on Figure V-3 and further described in Table V-1, above, the ground-shaking hazard in the Pleasanton Planning Area is mostly “severe” to “violent.” Damage resulting from severe groundshaking would be moderate to heavy while damage due to violent groundshaking would be heavy. The intensity of earthquake ground shaking in any one area varies for a number of reasons: the magnitude of the earthquake; the distance from the site of the fault source; the direction of propagation of the rupture; soil saturation or groundwater; and the type of geologic materials underlying the site, with stronger shaking occurring on the softer soils.

2. Earthquake-Related Landslides

Landslides could occur generally in areas shown in Figure V-1, above, as a result of groundshaking and other physical conditions as discussed above.

The causes of slope failure, which normally produce landslides and differential settlement, are augmented during earthquakes by strong ground motion. An earthquake occurring in conjunction with a season of heavy rainfall when soils are saturated with water would create the most severe danger of landslides.

3. Liquefaction

In the City of Pleasanton, 6,533 urban acres are in areas of moderate, high or very high liquefaction susceptibility. (See Figure V-4 for a detailed liquefaction susceptibility map for Pleasanton.)

Liquefaction is a specialized form of ground failure caused by earthquake ground motion. It is a “quicksand” condition, occurring in water-saturated, unconsolidated, and relatively clay-free sands and silts caused by hydraulic pressure (from ground motion) forcing apart soil particles, and forcing those into quicksand-like liquid suspension. In the process, ground materials that are normally firm but wet take on the characteristics of liquids. The potential for liquefaction depends on soil conditions and groundwater levels, which may fluctuate. Susceptibility to this hazard is greatest when groundwater tables are high.

Insert Figure V-3 Relative Intensity of Ground Shaking

Figure V-4 Liquefaction Susceptibility

4. Lateral spreading

The type of displacement of major concern associated with liquefaction is lateral spreading because it involves displacing large blocks of soil down gentle slopes or towards stream channels. Lateral spreading could occur along the arroyos where surface materials consist of young alluvial and fluvial deposits.⁵ An occurrence of lateral spreading due to seismic activity is also most likely in conjunction with heavy rainfall.

5. Other Seismic Hazards

Other seismic hazards with less potential impact on the Planning Area include surface faulting, lurch cracks,⁶ rock falls, differential settlement, and seiches. Catastrophic events – such as failure of the Del Valle Reservoir Dam and subsequent flooding of the Pleasanton Planning Area – are considered to have an extremely low potential for occurrence.

Earthquake Fault Zones

The *Alquist-Priolo Hazards Act* passed by the State legislature in 1972 (renamed the *Alquist-Priolo Earthquake Fault Zoning Act* in 1993) established earthquake fault zones along faults considered by the State Division of Mines and Geology to be active or potentially active. An active fault is considered one which has experienced surface displacement within the last 11,000 years, while a potentially active fault is a fault which has moved during the past two to three million years but not proven to have moved within the past 11,000 years.

The State Geologist designates “seismic hazard zones” and the State issues earthquake fault zone maps to assist cities and counties in avoiding the hazard of surface fault rupture. The earthquake fault zone extends for 500 feet in width on either side of an identified fault trace of major active faults and about 200 to 300 feet in width on either side of a minor active fault, as designated by the State. Development of a building for human occupancy is generally restricted within 50 feet of an identified fault. The Calaveras and Verona Faults are the only faults within the Planning Area that the State currently designates as Alquist-Priolo Earthquake Fault Zones (Figure V-5).

The purpose of the *Alquist-Priolo Earthquake Fault Zoning Act* is to prevent construction of new buildings across known active faults in order to avoid surface fault rupture hazard. The Act prohibits placing most structures for human occupancy across traces of active faults thus mitigating damage due to surface fault rupture and not damage due to ground shaking.

When construction of a building for human occupancy is proposed within an earthquake fault zone, the City requires that a developer submit a geologic report.⁷ This study presents conclusions regarding the location and existence (or absence) of active faults at the site and also contains recommendations for

⁵ Alluvial deposits are water-transported sediments such as clays, sands, and/or gravels. Fluvial deposits are those produced by action of, or found in, a river or stream.

⁶ Lurch cracks – or fissures – do not result from surface faulting. They form when weak or unconsolidated soil is subjected to intense shaking and is incapable of responding elastically, or when the boundaries of contrasting surface materials respond differently to ground motion.

⁷ Geologic studies are prepared by a California-registered geologist and address faulting, slope stability, erosion, seismicity, and related hazards. Geotechnical engineering studies are prepared by California-registered engineers and address subsurface soils, drainage, and other conditions for purposes of designing foundations, pavements,

Figure V-5 Alquist-Priolo Earthquake Fault Zones

retaining walls, and other improvements affected by soil conditions.

determining building setback distances from the identified faults. The City's consulting geologist reviews the reports for acceptability.

The investigation of sites for the possible hazard of surface fault rupture is a difficult geologic task. Many active faults are complex, consisting of multiple breaks and/or are difficult to find. Deep young alluvium deposits, for example, often prevent exploratory trenches from reaching ruptured soils making determining a fault's location and activity difficult. In some instances fault trace investigations conclude that a given fault trace is "inferred" or "obscure" with no clear delineation of recent fault rupture.

Currently, the *Pleasanton Municipal Code* requires that the setback from an active fault trace be 50 feet (Section 17.12.040). Most surface faulting is confined to a relatively narrow zone from a few to tens of feet wide, making avoidance (e.g., building setbacks) the most appropriate mitigation method. The geologist's setback recommendations could differ from a simple 50 feet from a given fault, and should consider the style and complexity of faulting at the site and the accuracy of the fault location. Although there is general agreement on a 50-foot setback for buildings adjacent to a known fault trace, the appropriate setback for habitable buildings adjacent to an inferred or hidden fault trace is not as clear. Due to the uncertainty of the exact location of the fault and therefore any potential ground rupture, this General Plan recommends a 100-foot habitable building setback from the inferred fault location.

Geologic Hazards

Landslides

For general planning purposes, a high potential for active landsliding should be considered to exist on all slopes bordering the Amador Valley and other hill slopes within the Planning Area, unless site-specific geotechnical investigations can demonstrate local stability. However, the Southeast Hills are generally more stable and less prone to slope failure than the eastern slopes of the Pleasanton Ridge.

The General Plan Map responds to the potential for landsliding by designating a majority of the land on Pleasanton Ridge as Agricultural and Grazing and Parks and Recreation, and the Southeast Hills as Public Health and Safety. Flatter and generally more stable portions of these areas are designated for Low Density Residential development surrounded by Rural Density Residential development because the potential for landslides and other hazards appears to be sufficiently low in these areas.

Where development is permitted, the City's policy is to require that site-specific geologic investigations and soils reports be prepared and submitted during the plan review process for any type of development proposed. These studies recommend measures to mitigate any potential hazards related to grading, construction, and operation of a development.

The City's consulting geologist reviews the reports for acceptability. Projects must address the recommendations of the City's geologist. Sites must be shown to be stable during adverse conditions such as saturated soils and ground shaking, and during grading for roads, installation of infrastructure, and the creation of building pads. Reports must demonstrate that structures will sustain no more damage due to slope instabilities than damage sustained by a typical building constructed to current *California Building Code* standards on stable soils when exposed to moderate ground shaking.

In unstable areas, the City seeks to minimize grading of slopes for construction or slope-stability repairs, limit grading only to where it is essential for development, and prohibit major grading where existing slopes are 25 percent or greater. Areas with slopes of 25 percent or greater are generally

designated on the General Plan Map as Public Health and Safety. (The Land Use Element discusses the calculation of residential density where slopes, landslides, or geotechnical hazards exist on a property.)

Expansive Soils

While expansive soils do not produce the catastrophic impacts of a large earthquake, their cumulative economic cost to a community can be considerable. Shrink-swell activity in subsurface soils can seriously damage building foundations, streets and other paved areas, sidewalks, curbs and gutters, underground utilities, and swimming pools. When expansive soils are present on a slope, they can promote downslope creep of the entire thickness of surficial deposits present on the slope (in some cases to depths of more than ten feet).

The *Uniform Building Code* contains minimum requirements for construction on expansive soils. These requirements have become more stringent since the 1970's and early 1980's when a number of Pleasanton's residences were constructed and have since suffered some structural and foundation damage due to expansive soils. The City has adopted policies which now require a soils engineer report for development in areas of moderate to highly expansive soils, and all buildings in these areas must be constructed according to the engineer's recommendations. The engineer must also inspect piers and foundations for compliance with the recommendations. Where specific geotechnical reports identify expansive soils, they must address how those soils may impact development. Where warranted, these reports must include mitigation, such as over-excavating expansive soils and replacing them with suitable materials.

Geologic Hazard Abatement District (GHAD)

In areas most prone to landslides or other geologic hazards, the City may require the establishment of a Geologic Hazard Abatement District (GHAD) as a requirement for development. GHADs are districts formed specifically to address geologic concerns. A GHAD may be formed to prevent, mitigate, abate, or control a geologic hazard and also to abate structural hazards that are partly or wholly caused by geologic hazards. A "geologic hazard" is broadly defined as an actual or threatened landslide, land subsidence, soil erosion, or any other natural or unnatural movement of land or earth. The formation of a GHAD would not allow development in areas otherwise thought to be unstable or at risk due to geologic hazards, but would assure that hillside development infrastructure such as drainage ditches, subdrains, erosion protection, etc. remain properly maintained such as to adequately control geologic hazard risks.

Damage that is the result of an earthquake or fault movement is specifically exempted from coverage by the GHAD, in part because the assessments to include protection from land movement due to earthquake would be prohibitively high. Accordingly, residents should not consider the existence of a GHAD as a substitute for earthquake insurance.

Earthquake Impacts

It is not possible to predict with accuracy the extent of damage in the event of a significant earthquake. However, some types of damage can be generally expected. (See Table V-1, above, for a breakdown of damage by earthquake intensity.) In residential areas, moderate shaking during a quake may damage chimneys, porches, and stucco. Structures not properly fixed to foundations may slip from them. In commercial and industrial areas, a severe earthquake can lead to significant damage or collapse of unreinforced masonry buildings. The City has completed a program for seismic retrofitting of unreinforced masonry buildings to address this problem.

The *California Uniform Building Code* (CBC) requires that structures be designed and built to withstand groundshaking during earthquakes. The CBC frequently is updated, as new information is available through continued research and experience. The City regularly adopts and enforces revised versions of building and fire codes. In general, the performance objectives set for structures under the CBC are: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, non-structural damage may occur; and (3) resist major earthquakes without structural collapse, some structural damage may occur.

Secondary impacts caused by earthquakes can include fires resulting from ruptured electric and gas connections and other sources. Suppressing fires can be complicated by breaks in water distribution lines. Fires and impassable roads can complicate emergency response, and road closures can limit evacuation routes and timely response to emergencies. To address these problems, the City has nearly completed a seismic retrofit program of existing utility lines that cross active faults. In addition, recent infrastructure has been built to withstand fault displacement. However, in the event of a severe earthquake, most or all utility systems could be inoperable for several days.

Figure V-3, above, indicates the amount of ground shaking and related damage which could be expected in Pleasanton due to seismic activity along the Hayward and Calaveras Faults. These faults are expected to cause the most ground-shaking movement in the event of an earthquake.

FIRE HAZARDS AND EMERGENCY RESPONSE

Fire hazards exist in both developed and undeveloped areas. Those occurring in developed areas typically include buildings, rubbish, automobiles, and grass fires on vacant lots. Those in undeveloped areas often include large brush and grass fires.

Urban Fire Hazards

Due to the proximity of people and structures, fires in urban areas can pose a threat to both life and property. Those structures posing the greatest fire hazards include unsprinklered buildings, public assembly buildings, institutions, multiple-family residential structures, shopping centers, hazardous use occupancies, multi-story large floor area occupancies and homes in and near wildland areas.

The majority of fires in Pleasanton's urbanized area tend to be vehicle, building, grass, and refuse fires. Historically, structural fires have occurred mostly in residential buildings because of the City's large proportion of housing.

In the future the existing housing stock will age, and some additional residential developments may be built in undeveloped areas adjacent to wildfire hazard areas. These trends might increase the chance of fires and will require appropriate prevention and safety measures.

Wildfire Hazards

Over 7,000 acres in the Pleasanton Planning Area are identified in Special Fire Protection Areas that are in wildland-urban interface fire-threat areas. Human activities such as equipment use or smoking are the usual cause of wildfires that result in loss of valuable natural resources, soil erosion, and damage to life and property. Once a wildfire has been ignited, its outcome is affected by three environmental factors: fuel, climate, and topography.

The quantity and type of vegetation available for burning is called fuel loading. Woodlands over six feet in height and covering 20 percent or more of the ground area are considered heavy fuel loading.

Scrub including brush, shrubs, and other perennial vegetation less than six feet in height and having similar coverage is considered medium fuel loading. Open areas including grasslands, fields, and barren land are considered light fuel loading.

Climate conditions which affect the severity of fires include wind, relative humidity, and precipitation.

Topography influences wildfire behavior and the ability of firefighters to suppress fires once they occur. Fires tend to burn more rapidly upslope than down, and the steeper the slope the greater the rate at which the fire spreads. Steep slopes also contribute to the channeling effects of winds which spread fires more quickly. In addition, steep slopes increase travel times for fire vehicles and firefighters and restrict the methods possible for fighting the fire.

Figure V-6 shows Special Fire Protection Areas that are based on a combination of the environmental factors mentioned above. Special Fire Protection Areas identify those areas where a fire may develop and break out of control.

Fire Hazard Protection

The Livermore-Pleasanton Fire Department (LPFD) serves Pleasanton. The Livermore and Pleasanton Fire Departments consolidated through a joint powers authority in 1996, in order to provide more efficient and effective service to the two communities. The LPFD budget is divided between the cities of Pleasanton and Livermore through a cost-sharing plan that enables each City to pay its fair share of the department’s operating expenses. Each City maintains its own buildings, light-duty vehicles, and fire apparatus. The LPFD maintain 10 stations and one training center. The training center, headquarters, and five of the stations are located in Pleasanton, fielding an on-duty force of 18 personnel per day. An additional five fire stations are located in Livermore. Fire facility locations in and near Pleasanton are listed in Table V-2 and shown on Figure V-6.

Table V-2: FIRE STATIONS IN AND NEAR PLEASANTON

Fire Station 1, Fire Headquarters	3560 Nevada Street
Fire Station 2	6300 Stoneridge Mall Road
Fire Station 3	3200 Santa Rita Road
Fire Station 4	1600 Oak Vista Way
Fire Station 5, Ruby Hill Station	1200 Vineyard Avenue
Fire Station 10 (in Livermore)	330 Airway Boulevard
Sunol Forest Fire Station, California Department of Forestry	Pleasanton-Sunol Road

The Livermore Pleasanton Fire Department operates a total of 52 vehicles. These include 10 fire prevention vehicles, 10 Type I fire engines (the “classic” fire engine with a minimum 1,000-gallon-per-minute (gpm) pump, 400-gallon water tank, and 20-foot ladder); four Type III vehicles (a large, four-wheel-drive engine for wildland fires, with a minimum 120gpm pump and 300-gallon water tank) and eight Type IV vehicles (similar to a large pick-up truck, also for use in wildland fires, with a minimum 50-gpm pump and 200-gallon water tank); two ladder engines; and seven utility vehicles such as rescue vehicles and a volunteer van.

The Livermore-Pleasanton Fire Department is responsible for fire protection and suppression for all areas within the city limits in addition to providing contractual services in a number of developed areas outside the city limits including Happy Valley, the Remen Tract, and the Castlewood Country Club.

Figure V-6 Special Fire Protection Areas and Fire Response Travel Times

The California Department of Forestry’s Sunol Forest Fire Station has jurisdiction in the Pleasanton Ridge, Southeast Hills, and several pockets of unincorporated land adjacent to Pleasanton’s city limits.

The location of fire stations determines in large part the time it takes for a fire engine to travel from the station to the location of the fire.

The definition of response time is changing in order to more accurately describe actual performance of the LPFD. In years past, departments used the term “average” to describe their response time performance. This figure is misleading as statistically the term average means that 50 percent of the data points measured exceed the mean or mid-point. For fire department purposes, responses worse than average are not desirable. The current trend for response time measures (adopted by the LPFD since consolidation) is to report the fractile measure or said another way, the percent of the whole measure actually completed. Thus instead of stating a response time goal of an “average of five minutes,” we would more clearly state, “respond within five minutes 90 percent of the time.”

Additionally, there is no common definition among American fire agencies as to what comprises response time – some agencies measure it from the time of 911 call answer, others from the time the fire crew is notified, and still others from the time the fire engine is actually rolling. All agree to stop the measure when the unit arrives at the curb at the emergency location. The current best practice, (also adopted by the LPFD) is to measure *total reflex time* and define it as the time from the answer of the 911 call to the fire vehicle/equipment stopping at the scene. This is the time the customer perceives from the 911 call to help arriving.

A seven-minute total reflex time measure is comprised of five-minutes travel time, plus one-minute for dispatch processing and one minute for the crew to get dressed in protective clothing and start the engine rolling. Prior to consolidation, both cities used a “five” minute “average response time” measure that was usually defined as travel minutes, not total reflex.

The majority of the City lies within a five-minute travel time from one of the five fire stations. The City requires developments located outside the five-minute travel time or located in Special Fire Protection Areas – as shown on Figure V-6, above – to provide additional fire mitigation measures, which include at a minimum, automatic-fire-sprinkler systems.

For larger structure and wildland fires, the Livermore Pleasanton Fire Department participates in the Alameda County and statewide fire mutual aid agreements which provide for additional fire suppression services, personnel, and support equipment.

Another important requirement in fire suppression is adequate fire flow, which is the amount of water, expressed in gallons per minute, available to control a given fire. The total fire flow needed to extinguish a fire is a function of building construction, occupancy, area, and height; fire loading; and distance between buildings. The City’s fire and water departments use the Insurance Services Office (ISO) rating system for determining necessary fire flow. Fire flow for a given building is totally dependent on a reliable water supply, standards for which are set nationally and by the City. Pleasanton’s fire flow is adequate throughout the City with few exceptions. In the few areas with inadequate water pressure, new construction is required to be equipped with fire sprinklers until such time as water pressure is brought up to national and City requirements.

Fire Prevention

In addition to adequate means of fire suppression, fire prevention efforts are essential to an effective fire protection program. The best way to control a fire is to prevent it from occurring in the first place. The LPPFD encourages this approach through its public education programs and regularly scheduled inspection of all non-residential buildings. The Building and Fire Departments also require built-in fire protection systems in certain new developments, including automatic fire sprinklers, fire resistant construction, and early warning fire detection systems, in addition to access and setback requirements which facilitate firefighters' entry and provide fire separation.

In order to implement fire protection measures, the *Pleasanton Municipal Code* contains four sections that bear directly on fire safety. The Building Code provides minimum standards for design, construction, materials, occupancy, location, and maintenance of all buildings within the City. The Fire Code regulates how a building is used, how machines and equipment are maintained, how hazardous materials are handled and stored, and how access to and from a site is provided. The Zoning Ordinance regulates site location and design, the type and intensity of land uses, building height and separation, access, and street layout. The Subdivision Ordinance establishes standards for roadway dimensions, subdivision layout, and public improvements needed to protect public safety. In addition, City departments review all proposed new developments for their potential effects on public safety, and attach conditions to minimize those effects and conduct inspections to ensure proper installation.

Emergency Medical Response

Of the 4,445 emergency responses undertaken in Pleasanton by the Livermore Pleasanton Fire Department in 2005, 3,187 or 72 percent were calls for medical attention.⁸ The Fire Department is the primary first responder to these calls. All fire station companies include a State-licensed paramedic (who is also a captain, engineer or firefighter) on every shift, while all firefighters are trained as Emergency Medical Technicians. Field personnel can provide medical interventions for both adult and pediatric patients suffering from a multitude of conditions ranging from medical conditions to traumatic injuries.

One ambulance, operated by All American Transportation, is located in Pleasanton on Francisco Street.

FLOODING AND INUNDATION

Background Information

Historically, the Amador Valley has experienced relatively frequent and substantial flooding because many streams which drain large areas of impermeable soils converge in the area. During periods of intense rainfall, runoff rapidly causes stream flows to exceed floodway capacities and inundate adjacent areas of the flat valley floor. Extensive flood channel improvements required of development projects during the past 20 years have significantly reduced this type of flood hazard.

As a result of good planning and system maintenance, the Tri Valley now experiences minimal flood damage compared with other areas of California.

Currently, flood-producing rainfall occurs during the winter months in the Pleasanton area. Storm runoff is concentrated rapidly by the network of tributaries through the hills which discharge into Arroyo Mocho, Arroyo del Valle and other tributaries to the Arroyo de la Laguna. The tributaries have

⁸ Livermore Pleasanton Fire Department, 2005 Annual Report.

carved well-defined courses through the hills but upon reaching the flat valley, the channels become shallow and inadequate for higher frequency flows.

The main flooding problem is currently caused by the low capacity of the lower reaches of Arroyo de la Laguna, which causes backwater flooding in its tributary channels.

When substantial rainfall does occur, the runoff is rapid and heavy, causing stream-flows to exceed the normal stream courses' capacities and inundates large areas of the flat valley floor. Flooding is not limited to occasions of intense precipitation, however. Flooding may occur following low-intensity precipitation spread over several days, as occurred in storms of 1955 and 1958.

Flood Hazard Zones

The Federal Emergency Management Agency (FEMA) maps flood hazards throughout the country, including Pleasanton. These flood hazard maps, known as Flood Insurance Rate Maps, or FIRMS, are used to identify flood-prone areas, with the most susceptible areas designated as special flood hazard zones. The Federal Insurance Administration (FIA) of the Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program, available nationwide. This program provides insurance coverage for events that are not covered by traditional homeowner's policies. By partnering with private insurance companies, FIA makes insurance available to many people who would otherwise be unprotected.

Figure V-7 shows the areas that are subject to 100-year and 500-year flooding. While about 720 acres are in the 100-year FEMA flood plain, about 2,260 acres are in the 500-year flood plain.

Flood Control Efforts

Special Drainage District 7 of the Alameda County Flood Control and Water Conservation District (Zone 7) is responsible for providing flood control and water resources to the Tri Valley, which includes the Cities of Pleasanton, Dublin and Livermore. To ensure controlled drainage of the Valley's surface water runoff, Zone 7 currently manages 39 miles of flood control channels ranging from concrete-lined channels to natural creeks. Streambed channelization along Arroyo de la Laguna, Alamo Canal, Arroyo Mocho, Hewlett Canal, Chabot Canal, Pleasanton Canal, and Tassajara Creek has substantially reduced the possibility of extensive flooding, especially by reducing the time of ponding. A major dam on Arroyo Del Valle controls flooding on that waterway.

In March 2006, Zone 7 published the Draft *Stream Management Master Plan* (SMMP). This plan balances flood protection with water supply, water quality, habitat and environment, and recreation and trails objectives for the Tri Valley.

Dam Failure Inundation

As shown in Figure V-8, about 6,000 acres in Pleasanton are located within the dam failure inundation hazard area for Lake Del Valle Dam.⁹ The 235-foot Del Valle Dam impounds a reservoir with a total capacity of 77,100 acre-feet. To provide a flood-control reserve, it normally stores from 25,000 to 40,000 acre-feet. (An acre-foot is 325,900 gallons, enough water to cover one acre of land one foot deep.) This dam is under the jurisdiction of the California Department of Water Resources (DWR),

⁹ Since the City calculated the acres of flooding due to potential failure of Lake Del Valle Dam, Zone 7 Water Agency has instituted numerous measures that would reduce flooding, although the reduced flooding hazard has not yet been quantified.

Division of the Safety of Dams. Existing dams under DWR jurisdiction are periodically inspected to ensure adequate maintenance and to direct the owner to correct any deficiencies found. In 2002, the City adopted an evacuation plan as an annex to its *Comprehensive Emergency Management Plan*.

Figure V-7 Flood Hazard Zones

Figure V-8 Del Valle Dam Inundation Area

HAZARDOUS MATERIALS

Products as diverse as gasoline, paint, solvents, film-processing chemicals, household cleaning products, refrigerants, and radioactive substances are categorized as hazardous materials. What remains of a hazardous material after use, or processing, is considered to be a hazardous waste. The handling, storage, transportation, and disposal of such wastes are of concern to all communities. Improper handling of hazardous materials or wastes may result in significant effects to human health and the environment.

Nearly all businesses and residences in Pleasanton generate some amount of hazardous wastes. The most common industrial hazardous wastes in Pleasanton are generated from gasoline service stations, dry cleaners, automotive mechanics, auto body repair shops, machine shops, printers, and photo processors. Most of these wastes are petroleum-based or hydrocarbon hazardous waste and include cleaning and paint solvents, lubricants, and oils. However, medical wastes, defined as potentially infectious waste from sources such as laboratories, clinics and hospitals, are also included among the hazardous wastes found in Pleasanton.

In addition to the hazards of stored chemicals, there are hazards of transporting chemicals into and through the area. Most hazardous materials are regularly carried on railroads and the freeways and major roads designated as explosive routes by CALTRANS and the Highway Patrol. Petroleum product and natural gas pipelines also traverse the Planning Area. (See Figure V-9 for the location of these pipelines as well as PG&E transmission lines.) The extreme toxicity of some chemicals used in the area and the specialized handling and cleanup procedures required during an accident can close major thoroughfares and necessitate evacuation.

The Union Pacific / Southern Pacific and Western Pacific Railroads conduct rail operations in the Pleasanton Planning Area. Cargoes of electronics, fabricated metals, plastics, precision machinery, agricultural chemicals, construction materials, rock/sand/gravel aggregates, and other hazardous materials are also shipped over the rail lines.

A spill of bulk hazardous materials could result in fire, explosion, toxic cloud, or direct contamination of people and property. The effects may involve a local site or many square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or may be eventual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous substance.

The I-580 corridor affords a large amount of truck movement from the Bay Area to the Central Valley. At its eastern end, it connects to Interstate 5, the major north-south route through California, and at its west end, Interstate 80, the major east-west route through Northern California. The weigh station operated by the California Highway Patrol at Vasco Road reports that, on a month-by-month basis, an average of 25,000 trucks pass through that facility. About eight percent of those trucks, or 2,000 trucks per month, display hazardous materials placards. Assuming each vehicle had an average load weight of 35,000 pounds that would convert to approximately 35,000 tons of placarded material a month moving through the I-580 corridor.

Regulatory Agencies

A range of federal, State, and local agencies heavily regulate hazardous materials in Pleasanton. One of the primary hazardous materials regulatory agencies is the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). DTSC is authorized by the U.S.

Figure V-9 Petroleum Pipelines and PG&E Transmission Lines

This figure is under preparation.

Environmental Protection Agency (EPA) to enforce and implement federal hazardous materials laws and regulations, which are equally stringent or less stringent than State hazardous materials laws and regulations. DTSC has responsibility for oversight of Annual Work Plan sites (commonly known as State Superfund sites), sites designated as having the greatest potential to affect human health and the environment.

The Hazardous Materials Division of the Livermore-Pleasanton Fire Department (LPPFD) has primary responsibility for enforcing most regulations pertaining to hazardous materials in the City of Pleasanton. To better serve these needs, the LPPFD has been certified by California EPA to be a Certified Unified Program Agency (CUPA) which is charged with administering six environmental regulatory programs locally.

The LPPFD also acts as first responder to hazardous materials incidents within the City and fields a hazardous materials response team which can handle moderate chemical emergencies.

The Livermore-Pleasanton Fire Department maintains a Hazardous Materials Area Plan. This Plan satisfies the requirements of *Health and Safety Code* Division 20, Chapter 6.95, Article 1 and serves as the Livermore-Pleasanton Fire Department's Emergency Response Plan required by the California Occupational Safety and Health Administration (OSHA). The Area Plan describes the jurisdiction's plan for the prevention of, preparation for, and response to hazardous materials incidents and threatened incidents. In addition, and more importantly, the Livermore-Pleasanton Fire Department is the primary and first emergency responder for the control of hazardous materials incidents in the cities of Pleasanton and Livermore. Therefore, it is critical that the Fire Department have a comprehensive plan for minimizing the likelihood of hazardous materials emergencies, and preparing for and responding to such events when they do occur. The Plan describes the hazardous materials present in the community, and how the Fire Department plans, trains, equips, and responds to hazardous materials emergencies. The Fire Department provides copies of the Plan to specified Fire Department staff, each fire station, the Livermore and Pleasanton emergency operation centers, the dispatch center, and the State Office of Emergency Services.

Alameda County Hazardous Waste Management Plan

The *Alameda County Hazardous Waste Management Plan* also governs hazardous waste programs in Pleasanton. The purpose of the Alameda County Hazardous Waste Management Plan is to forecast the potential future waste generation in the County, to encourage an aggressive waste reduction strategy, and to establish acceptable siting criteria.

Household hazardous waste drop off is available three days each month through Alameda County at a location in Livermore near Vasco Road.

AVIATION HAZARDS

Airports

Although not located within the Pleasanton Planning Area boundary, the Livermore Municipal Airport affects land uses in Pleasanton in the form of noise, safety, and air quality. Noise and safety concerns are addressed by the Alameda County Airport Land Use Commission (ALUC) in the *Airport Land Use Policy Plan of 1986*, and the City of Livermore's adopted Airport Protection Area (1993). The development of the Airport and phasing of improvements is addressed in the Livermore Municipal Airport Master Plan (adopted December 1975). In March 2004, the City of Livermore released a Public

Review Draft Master Plan Update which outlined plans for airport expansion, including additional hangar space, office space, expansion of services serving aviation uses, and creation of a southern parallel taxiway. Due to considerable public opposition from residential neighbors in Pleasanton and Livermore, the City of Livermore withdrew the draft pending the completion of noise studies and the implementation of noise reduction measures.

The *Airport Land Use Policy Plan* delineates several boundaries, parts of which are located within Pleasanton's Planning Area. All the following are illustrated on Figure V-10. The General Referral Area is the area which is now or could in the future be affected by airport operations. This area is also referred to as the "airport influence area." Proposed projects within this area must also be referred to the Airport Land Use Commission (ALUC) for its review and determination of consistency with the Airport Land Use Policy Plan. This area extends west to Santa Rita Road in Pleasanton.

The ALUC has also adopted a Height Referral Area, which includes noise impacts zones and safety zones at both ends of airport runways. These boundaries and the policies that apply within them are described in detail in its Land Use Policy Plan. Within the Pleasanton Planning Area, the General Referral Area is a subset of the Height Referral Area.

In addition to the above, in 1993, the ALUC was amended to include an Airport Protection Area within which new residential development or the intensification of existing development is prohibited. This area extends generally 5,000 feet east, north, and south of the runways, and 7,000 feet west of the runways. Within the Pleasanton Planning Area, the Airport Protection Area is a subset of the General Referral Area and the Height Referral Area.

The Airport Land Use Policy Plan also delineates Airport Safety Zones for each runway that are not located within the Pleasanton Planning Area.

Pleasanton's General Plan and Stoneridge Drive Specific Plan must be consistent with the Airport Land Use Policy Plan and Airport Protection Area plan. Substantial areas within the Pleasanton Planning Area lie within the Airport's height referral area, although they are located at sufficient distances so that all uses allowed under the City's 85-foot zoning height limit for commercial and industrial uses and 40-foot limit for residential uses would be compatible. No residential land use designations are located within the Airport Protection Area.

Heliport

The Valley Care Medical Center operates a heliport at its hospital on Santa Rita Road. This heliport is operated on an as-needed basis for emergency medical transportation.

EMERGENCY OPERATIONS

As required by State law, the City of Pleasanton has adopted a comprehensive Emergency Management Plan to provide for the safety of the community in the event of a natural disaster (earthquake, flood or fire), human-caused emergencies, and technological incidents, civil disturbance, or hazardous materials spill. The Plan provides a framework for coordination of response and recovery efforts within the City in coordination with local, State and federal agencies. It also establishes an emergency organization to direct and control operations during a period of emergency by assigning responsibilities to specific personnel. (Table V-3 lists and Figure V-11 shows critical care facilities including fire and police stations, medical centers, and mass shelter sites in Pleasanton.)

Pleasanton's Emergency Management Plan conforms to the Standardized Emergency Management System (SEMS), the National Incident Management System (NIMS), and the National Response Plan

Figure V-10 Livermore Airport Referral and Protection Areas

TABLE V-3: CRITICAL FACILITIES

Emergency Facilities

1	Fire Station 1	3560 Nevada Street
2	Fire Station 2	6300 Stoneridge Mall Road
3	Fire Station 3	3200 Santa Rita Road
4	Fire Station 4	1600 Oak Vista Way
5	Fire Station 5, Ruby Hill Station	1200 Vineyard Avenue
6	Police Department	4833 Bernal Avenue
7	Valley Care Medical Center	5555 West Las Positas Blvd.
8	Kaiser P. Medical (no emergency room)	7601 Stoneridge Drive

Shelter Sites – Pleasanton Unified School District

9	Alisal Elementary School	1454 Santa Rita Road
10	Amador Valley High School	1155 Santa Rita Road
11	Donlon Elementary School	4150 Dorman Road
12	Fairlands School	4151 West Las Positas Blvd.
13	Foothill High School	4375 Foothill Road
14	Hart Middle School	4433 Willow Road
15	Harvest Park Middle School	4900 Valley Avenue
16	Hearst Elementary School	5301 Case Avenue
17	Horizon High School	245 Abbie Street
18	Lydiksen Elementary School	7700 Highland Oaks Drive
19	Mohr Elementary School	3300 Dennis Drive
20	Pleasanton Middle School	5001 Case Ave
21	Valley View Elementary School	480 Adams Way
22	Village High School	4645 Bernal Avenue
23	Vintage Hills Elementary School	1125 Concord Street
24	Walnut Grove Elementary School	1999 Harvest Road

Shelter Sites – Privately Owned and Operated

25	Saint Augustine Church	3999 Bernal Avenue
26	Faith Chapel	6656 Alisal Street
27	First Baptist Church	4100 First Street
28	Lighthouse Baptist Church	118 Neal Street
29	Trinity Lutheran Church	1225 Hopyard Road
30	Valley Bible Church	7106 Johnson Drive

Shelter Sites – City of Pleasanton Owned

31	Amador Valley Community Park (AVCP)	4301 Black Avenue
32	AVCP: Amador Recreation Center	4455 Black Avenue
33	AVCP: Cultural Arts Center	4477 Black Avenue
34	Century House	2401 Santa Rita Road
35	Fairlands Park	4100 Churchill Drive
36	Kottinger Community Park	1000 Kottinger Road
37	Mission Hills Park	600 Junipero Street
38	Moller Park	5500 Pleasanton Hill Road
39	Muirwood Community Park	4701 Muirwood Drive
40	Nielsen Park	3755 Stoneridge Drive
41	Orloff Park	1800 Santa Rita Road
42	Pleasanton Senior Center	5353 Sunol Blvd.
43	Sports & Recreation Community Park	5800 Parkside Drive
44	Tennis & Community Park	5801 Valley Avenue
45	Upper Pleasanton Field	4645 Bernal Avenue
46	Val Vista Community Park	7350 Johnson Drive

Note: *Critical Facilities* are shown on Figure V-11.

Source: The City of Pleasanton, *Comprehensive Emergency Management Plan*, Updated June 8, 2006.

Insert Figure V-11 Critical Facilities

(NRP). The City’s Plan also establishes response policies and procedures to protect life, property and the environment, outlines coordination requirements, and provides a basis for unified training and response exercises to ensure compliance.

The following plans/procedures are also included in Pleasanton’s Emergency Plan: warning and communications, evacuation, shelter and mass care, hazard assessment, terrorism annex, hazardous materials response, hazard mitigation, continuity of government, disaster recovery and family disaster preparedness. A copy of Pleasanton’s *Comprehensive Emergency Management Plan* is available at the Pleasanton Library and on line at the City of Pleasanton’s website under fire services.

The City has established its Police Department facility at 4833 Bernal Avenue as the Emergency Operations Center which is designed to function as a communications and administrative headquarters in the event of an emergency.

Table V-4 lists private and public utility emergency resources for Pleasanton.

Table V-4: PRIVATE AND PUBLIC UTILITIES EMERGENCY RESOURCES

Utility Type	Utility Provider	Address
Water	City of Pleasanton - Emergency Repair	3333 Busch Road Pleasanton, CA 94566
	Alameda County Flood Control District - Zone 7	100 North Canyon Parkway Livermore, CA 94511
Sanitation	Dublin San Ramon Services District	7399 Johnson Drive Pleasanton, CA 94588
Electricity and Gas	Pacific Gas and Electric Company	998 Murrieta Boulevard Livermore, CA 94550
Petroleum Pipelines	Petroleum Pipelines	135-S Nison Circle Concord, CA 94520

The Livermore Pleasanton Fire Department regularly conducts Community Emergency Response Team (CERT) Programs for individuals and groups; this training provides information on disaster preparedness, first aid and other skills, and information needed to be self-sufficient during the first 72 hours following a disaster.

In order to ensure continuity of business and service operations immediately following a local emergency or disaster, and to provide informational and training on disaster preparedness focused on the business community, the City has developed LEAP, the Local Emergency Action Plan. LEAP’s mission is to:

- Strengthen community emergency resources,
- Reinforce business sector emergency preparedness,
- Facilitate coordinated emergency responsiveness,
- Promote interim post-event recovery,
- Protect community financial stability, and
- Foster business to business communications and commerce.

As of June 2006, 32 businesses have joined the program representing a wide array of goods and services, including printing, fencing, healthcare, electrical contracting, engineering, computer software and food services.

Public Safety Goals, Policies, and Programs

The following goals, policies, and programs, in addition to those contained in other Elements, constitute an action program to implement the objectives described in this Element.

V. PUBLIC SAFETY GOALS, POLICIES, AND PROGRAMS

Seismic Safety

Goal 1: Minimize the risks to lives and property, and minimize the potential liability to the City due to seismic activity within the Planning Area.

Policy 1: Restrict development in areas prone to seismic safety hazards.

Program 1.1: Comply with the *Alquist-Priolo Act* and other seismic safety criteria established by the City of Pleasanton.

Program 1.2: Prohibit construction of habitable structures within at least 50 feet of an identified active fault trace where the fault has been specifically located in site-specific geologic studies.

Program 1.3: Prohibit construction of a habitable structure within at least 100 feet of the most likely line of the fault trace, if the active fault trace is approximately located, concealed or inferred. The applicant's geologist (with concurrence from the City's peer review geologist) shall identify the most likely line of the fault trace. This program applies only to new construction approved after date of adoption and does not make non-conforming those structures approved under policies and regulations allowing structures at least 50 feet from a fault trace.

Program 1.4: Prohibit construction of facilities and systems vital to the public health and safety (e.g., water facilities, fire stations, hospitals, communication facilities, etc.) within the Alquist-Priolo Earthquake Fault Zones.

Policy 2: Investigate the potential for seismic hazards during the development review process, and implement soils engineering and construction standards which minimize potential danger from earthquakes.

Program 2.1: Require site-specific soils, geologic, and/or geotechnical engineering studies prior to development approval of structures for human occupancy for any project proposed within areas shown on current Alquist-Priolo Earthquake Fault Zones Maps. For development within areas identified as severe through violent seismic shaking amplification (Figure V-3: Relative Intensity of Ground Shaking) outside of the Alquist-Priolo Earthquake Fault Zone, the site-specific soils and/or geotechnical report shall address the impacts of seismic ground shaking on proposed structures, infrastructure, and ground stability.

Program 2.2: Design and construct all structures to address potential seismic and geologic hazard conditions according to the *California Uniform Building Code (CBC)* standards or more stringent standards. All structures and facilities not addressed by the CBC shall be designed and constructed to mitigate potential seismic and geologic

hazards as recommended by site-specific soils, geologic, and/or geotechnical engineering studies.

Program 2.3: Design new utility lines that cross an active fault trace with appropriate engineering and design mitigations as recommended by site-specific soils, geologic, and/or geotechnical engineering studies.

Program 2.4: Design new bridges and retrofit existing bridges with appropriate engineering and design mitigations in accordance with CALTRANS standards.

Program 2.5: Require technical review and analysis of soils, geologic, and geotechnical studies by a qualified consulting engineering geologist reporting to the City of Pleasanton. Incorporate the recommendations of the City's consulting engineer into the project design.

Program 2.6: Require professional inspection of foundations, piers, excavation, earthwork, and other aspects of site development during construction. Ensure that all mitigations recommended by the City's consulting engineer are incorporated into the project construction.

Policy 3: Require post-earthquake construction, if needed, to conform to all City codes and ordinances.

Program 3.1: Require building permits and enforce all current building requirements and codes for post-earthquake construction.

Policy 4: Rehabilitate or remove structures in the city that are especially susceptible to seismic hazards, such as unreinforced masonry or soft-story construction.

Program 4.1: Develop guidelines and procedures for rehabilitating structures located in potentially hazardous areas.

Program 4.2: Retrofit existing critical utility lines that cross active faults with automatic shut-off devices or other means to accommodate ground movement and surface rupture.

Program 4.3: Comply with State requirements regarding the removal or retrofitting of unreinforced masonry structures susceptible to seismic hazards and damage.

Geologic Hazards

Goal 2: Minimize the risks to lives and property, and minimize potential liability to the City, due to geologic hazards within the Planning Area.

Policy 5: Investigate the potential for geologic hazards as part of the development review process, and maintain this information for the public record.

Program 5.1: Require site-specific soils studies for all new development prior to the issuance of building permits and prior to the approval of final improvement plans. Where there is risk of geologic hazards, the soil study should address seismic shaking, lateral spreading, differential settlement, lurch cracking, liquefaction, erosion, and expansive soils.

Program 5.2: Require site-specific geologic and/or geotechnical engineering studies prior to development approval where there is risk of the following geologic hazards: surface fault rupture, bank failures, rock falls, landslides, and for areas with slopes equal to or greater than 20 percent.

Program 5.3: Require measures to mitigate potential geologic safety hazards during adverse conditions such as saturated soils and ground shaking, and during grading of the site for roads, installation of infrastructure, and creation of building pads. Mitigation measures identified by the site engineering studies shall be incorporated into the project design.

Program 5.4: Require technical review and analysis of geotechnical studies by a qualified consulting geotechnical engineer reporting to the City. Incorporate the recommendations of the City's consulting engineer into the project design.

Program 5.5: Discourage development in areas with a high risk of geologic hazards as identified by a California-licensed engineering geologist representing the City. Allow development only when geologic and soils investigations demonstrate that hazards can be mitigated by accepted engineering and construction techniques. Mitigation measures identified by the investigations shall be incorporated into the project design and subject to approval by the City's reviewing geologist/engineer.

Policy 6: Restrict new development of sites with structures intended for human occupancy in any landslide-prone or unstable area.

Program 6.1: Prohibit new development of sites with structures intended for human occupancy in any landslide-prone areas unless the landslide risk can be eliminated. Permit development in landslide prone areas only when sites can be shown to be stable during adverse conditions such as saturated soils, groundshaking, and during grading of the site for roads, installation of infrastructure, and creation of building pads. Engineering studies shall demonstrate that structures in landslide prone areas would sustain no more damage due to slope instabilities than damage sustained by a similar building in the Pleasanton Planning Area constructed to current CBC standards and located on soils with a low susceptibility to failure when exposed to moderate groundshaking.

Program 6.2: Require developers to include drainage, erosion, and landslide mitigation measures to reduce landslide potential.

Program 6.3: Design irrigation systems to minimize the potential for soil saturation, excessive run-off, and other factors deemed to contribute to slope instability.

Program 6.4: Design grading plans to minimize earth moving activity and site grading in areas of potential land instability and in areas identified as having a “Moderate” through “High” landslide potential.

Program 6.5: Establish Geologic Hazard Abatement Districts (GHADs) in areas of new development where landslide risks or other geologic hazards are known to exist, to assure that ongoing monitoring and maintenance of slopes and drainage facilities occurs. GHADs should be considered for hillside development such as west of Foothill Road and other areas prone to seismic, landslide, and other geologic hazards.

Program 6.6: In unstable areas, prohibit major grading where existing slopes are 25 percent or greater.

Policy 7: Implement standards to assist City decision-makers in the evaluation of development proposals and management of geologic hazard areas.

Program 7.1: Maintain a list of pre-qualified geologic, geotechnical, soils, and structural engineering firms acceptable to the City as reviewing consultants.

Program 7.2: Review and update as necessary the City’s “Standards for Geotechnical and Engineering Reports.”

Program 7.3: Adopt updates to the *California Building Code* and other safety standards in a timely manner.

Program 7.4: Develop a grading ordinance which establishes criteria for evaluating and controlling grading due to development.

Fire Hazards and Emergency Response

Goal 3: Minimize the risks to lives, property, and the environment due to fire hazards within the Planning Area, and provide the highest quality of emergency response service feasible.

Policy 8: Provide an adequate level of fire and emergency medical equipment and personnel to protect the community.

Program 8.1: Incorporate Fire Department expansion needs into each year’s Capital Improvement Program and Operating Budget.

Program 8.2: Require new development to pay for fire safety improvement needs generated by the new development.

Program 8.3: Maintain high standards of hiring personnel and provide in-depth training of department personnel to maintain and improve knowledge and skill levels.

Program 8.4: Invest in equipment that assists emergency responders in accurately and quickly reaching the scene of an emergency.

Policy 9: Strive to respond to all emergency calls within seven minutes of the time the call for service is received 90 percent of the time.

Program 9.1: Deny proposed developments not within a five-minute travel time of a Fire Station unless acceptable mitigations are provided.

Program 9.2: Develop a system of fire hazard mitigations based on the probability of occurrence and number of people at risk.

Program 9.3: Evaluate the need for expanded services or facilities as the City grows.

Program 9.4: Maintain a current inventory of structures and their locations in the City.

Policy 10: Maintain or improve the City's existing Insurance Services Office fire-protection rating of three.

Program 10.1: Require developers to finance and construct necessary water facilities for their projects when they develop.

Program 10.2: Require that all new developments be provided with sufficient fire-flow facilities at the time of development at least at the level specified by the Fire Chief.

Program 10.3: Implement the Fire Prevention Bureau's public education programs.

Policy 11: Upgrade the level of fire resistivity in all new and remodeled structures.

Program 11.1: Continuously update and enforce the City's Fire and Building Codes as new technologies occur.

Policy 12: Require fire mitigation measures in new and existing developments that reduce the fire threat to the structure and occupants. Require development outside the five-minute travel time and in Special Fire Protection Areas to provide effective fire prevention measures.

Program 12.1: Require the installation of Building and Fire Code compliance fire-detection and alarm equipment in residential and commercial structures.

Program 12.2: Install automatic fire sprinkler protection in certain structures as required by adopted City ordinances.

Program 12.3: Provide adequate fire-equipment access to all structures in the City.

Program 12.4: Partner with the California Department of Forestry and Fire Prevention and Firewise Communities to identify measures that reduce the fire threat in Special Fire Protection Areas.

Program 12.5: Where appropriate in Special Fire Protection Areas, require development to incorporate wildland interface mitigation measures such as greenbelts, defensible space around structures, and other preventative measures.

Program 12.6: Require all projects in the Special Fire Protection Areas seeking building or planning approval to landscape with fire resistant plant materials.

Flood Hazards

Goal 4: Minimize the risks to lives and property due to flood hazards.

Policy 13: Inform the public of the Del Valle Dam evacuation system.

Program 13.1: Conduct public meetings and issue press releases regarding public evacuation procedures, as outlined in the City's *Comprehensive Emergency Management Plan*.

Policy 14: Prohibit all development within the 100-year flood zone unless mitigation measures that meet Federal Insurance Administration criteria are provided.

Program 14.1: Abide by the regulations of the National Flood Insurance Program, and continuously update related City ordinances.

Program 14.2: Support Zone 7's efforts to improve the drainage system in conformance with its *Stream Management Master Plan* for the Planning Area in order to remove properties from flood hazard zones.

Program 14.3: Cooperate with Zone 7 to preserve riparian corridors and recreation potential when making flood-control improvements.

Program 14.4: Cooperate with Zone 7 in the development of an arroyo maintenance plan, including those areas in private ownership.

Program 14.5: Improve the City's Community Rating System classification of 8 for the National Flood Insurance program by implementing required flood-related activities.

Hazardous Materials

Goal 5: Minimize the risks to lives and property due to potential exposure to hazardous materials.

Policy 15: Regulate the transportation, delivery, use, and storage of hazardous materials within the city limits.

Program 15.1: Enforce the provisions of the City's *Hazardous Materials Storage Permit Ordinance*.

Program 15.2: Require scheduled on-site monitoring of all sewer outfalls for sites permitted to store hazardous materials.

Program 15.3: Expand the Fire Department's automated data system to speed identification of hazardous materials and users in the event of an emergency.

Program 15.4: Promote the safe transportation of hazardous materials through Pleasanton by: 1) prohibiting the parking of vehicles transporting hazardous materials on City streets; and 2) requiring that new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the greatest extent possible.

Program 15.5: Require emergency response plans for all large generators of hazardous waste or users of hazardous materials to be submitted as part of land use applications.

Policy 16: Ensure that hazardous materials and potential contamination are remediated prior to development.

Program 16.1: When reviewing applications for new development in areas historically used for commercial or industrial uses, the City shall require environmental investigation as necessary to ensure that soils, groundwater, and buildings affected by hazardous material releases from prior land uses, and lead and asbestos potentially present in building materials, would not have the potential to affect the environment or the health and safety of future property owners or users.

Policy 17: Continue to encourage the reduction of solid and hazardous wastes generated within the City, in accordance with Countywide plans.

Policy 18: Ensure convenient access for Pleasanton residents for the disposal of household hazardous wastes.

Program 18.1: Support Alameda County's effort to provide a local drop-off point for household hazardous waste.

Air Navigation Hazards

Goal 6: Minimize the risks to lives and property due to air navigation hazards generated by the Livermore Municipal Airport.

Policy 19: Deny any development plan that would create any air navigation hazards due to electrical interference, smoke, glare, lighting, or other navigational hazard in the General Referral Area.

Program 19.1: Refer all General Plan amendments, specific plan amendments and rezonings proposed within the General Referral Area to the Alameda County Airport Land Use Commission (ALUC).

Program 19.2: Refer all General Plan amendments, specific plan amendments, and rezonings which lie within the Livermore Municipal Airport Height Referral Area and which may create buildings exceeding airport height standards to the Alameda County ALUC.

Program 19.3: Prohibit residential uses within the Livermore Municipal Airport Protection Area.

Catastrophic Emergency

Goal 7: Protect the public in the event of a natural or human-caused disaster.

Policy 20: Prepare and keep current City emergency procedures in the event of potential natural or human-caused disaster.

Program 20.1: Complete regularly scheduled reviews and updates of the City's *Comprehensive Emergency Management Plan*.

Program 20.2: Conduct periodic mock exercises using emergency response systems to test the effectiveness of City procedures included in the emergency management plans.

Program 20.3: Continue to monitor and respond to information and warnings provided by the Homeland Security Department and other agencies.

Policy 21: Promote public safety through public education programs.

Program 21.1: Support earthquake preparedness activities such as strapping water heaters, promoting seismic retrofit, organizing periodic earthquake drills, providing first-aid training, Community Emergency Response Team (CERT) classes, and disaster preparedness courses to neighborhoods groups, and encouraging residents and businesses to stockpile emergency food, water and medical supplies.

Program 21.2: Maintain a current copy for the City's *Comprehensive Emergency Management Plan* on the City's website and in other locations available to the public. The City's website should also contain a readily visible link to an emergency alert site with information about what people should do and where they should go during a

disaster. Program 21.3: Continue to assist the public in recognizing the risk of and preparing for potential homeland security threats.

Policy 22: Partner with the business and non-profit communities for emergency preparedness to ensure continuity of business and service operations immediately following an emergency.

Program 22.1: Working with the business and non-profit communities, continue to implement LEAP (Local Emergency Action Plan).

Police Services

Goal 8: Provide the highest quality of Police services within the City, as feasible.

Policy 23: Work in collaboration with the community to provide the highest level of Police services, making Pleasanton a safer place to live, work and play. Program 20.1: Incorporate Police Department's potential expansion needs into each year's Capital Improvement Program and Operating Budget.

Program 23.1: Require new development to pay for police safety improvements required of that development.

Program 23.2: Maintain high standards of hiring personnel, and provide in-depth training of department personnel to maintain and improve knowledge and skill levels.

Policy 24: Strive for a response time of an average of four minutes for emergency calls, and sixteen minutes for general service calls.

Policy 25: Support and practice the concepts of Community Oriented Policing.

Policy 26: Seek ways to reduce police service demands through the contemporary practice of "Crime Prevention Through Environmental Design."

Program 26.1: Incorporate crime reduction and public safety response features in the design and planning of private and public development.

Program 26.2: Submit all discretionary use permits to the Police Department for analysis of, and recommendations to reduce, impacts on police services.