CHAPTER EIGHT





HEALTH AND SAFETY





8. Health and Safety

Residents of Granite Bay are subject to a variety of natural and human-caused hazards. Natural hazards are processes such as earthquakes, landslides, flooding, and wildfires, and have been occurring for thousands, even millions of years. These natural processes have played an essential role in shaping the topography and landscape of Placer County, and become "hazards" when they disrupt or otherwise affect the lives and property of people.

The Health and Safety section establishes policies to protect the community from natural and manmade hazards. It is intended to guide land use planning by providing pertinent data regarding noise, seismic, fire and flood hazards. The main purpose of this section is to provide standards for reducing the risk of exposure to the hazards. When distilled, the rules are quite simple: build above the floodwaters, where the fire fuel is low, and on stable ground. Police protection is also discussed in this section.

The Health and Safety section is closely linked to the Land Use and Resource chapters of the Community Plan. The Land Use section designates the general distribution of land uses within the planning area, as well as standards for population density and building intensity. To avoid unreasonable public risk, the Land Use section must take into account the public safety hazard identification and evaluation in the Health and Safety chapter. By limiting development density in areas that may be subject to significant geologic and other safety hazards, the risk of loss of life and property can be minimized. One of the purposes of the Resources chapter is to preserve open space for public health and safety, including areas that require special management and regulation because of hazardous or special conditions (e.g., flood plains, and high fire risk areas).

8.1 NOISE

A Noise Element is a mandatory component of General Plans pursuant to the California Government Code Section 65302(f). The Placer County General Plan must recognize the guidelines adopted by the Office of Planning and Research pursuant to Section 46050.1 of the Health and Safety Code.

The need for increased attention to noise in the planning process is a consequence of this potential for continued elevation of ambient noise levels, the spread of noise producing activities into formerly quiet areas, and heightened awareness of the impact of noise on human health and amenity. Noise affects both physiological and psychological well-being. In addition to causing hearing



Figure 8.1.1: Major thoroughfares in Granite Bay have the potential to generate significant noise.

loss, noise interferes with activities such as communication, sleep, and thought. Noise can be a source of great annoyance for many persons and may be a contributing factor in stress-related health disorders.

The General Plan Noise Element provides a systematic approach to identifying and appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise.

The purpose of this section of the Granite Bay Community Plan is to establish a policy framework for the identification and reduction of potential noise sources. Noise, often described as unwanted sound, can be an intrusive part of our daily lives. Therefore, it is important to determine critical noise areas and provide a means to achieve noise-compatible land uses in the vicinity of existing of planned noise producing sources.

Sound is defined as any pressure variation in the air that the human ear can detect. If the pressure variations occur frequently enough, they can be heard and hence are called sound. The decibel scale is used to measure sound. The hearing threshold is defined as 0 dB. Other sound pressures are then compared to this reference pressure and a logarithm is taken to keep the numbers in a practical range.

For planning purposes, noise is a measure using a weighted scale. Sound levels are then expressed in terms of dBA. Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise associated with a given environment; it usually is a composite of sounds from many sources, near and far. It is desirable to control ambient noise level to reduce the adverse effects of noise.

A common statistical tool to measure ambient noise levels is the average or equivalent sound level over the period of an hour. This average is expressed as Leq. A further refinement of the community noise measurement process is the day-night average level (Ldn) which is based on a 24-hour noise level average, with weighting given to nighttime noise, given the increased sensitivity to nighttime noise.

According to the State of California Office of Planning and Research General Plan Guidelines, an acoustical study may be required in cases where these noise-sensitive land uses are located in an area of 60 CNEL or greater. Any land use that is exposed to levels higher than 65 CNEL will require noise attenuation measures.

Noise Nuisances

Excessive sound and vibration are a serious hazard to the public health and welfare, safety, and the quality of life. County residents have a right to and should be ensured an environment free from excessive sound and vibration that may jeopardize their health or welfare or safety or degrade the quality of life.

Placer County prohibits unnecessary, excessive and offensive sounds. At certain levels, such sounds become noise and are detrimental to the health and welfare of the citizenry and, in the public interest, are systematically proscribed. Therefore, in 2004 the County established local community standards for noise regulation. (Ord. 5280-B, 2004) to work in concert with and supplement Penal Code Section 370 (Public Nuisances) and Section 415 (Disturbing the Peace).

The Noise Ordinance set limits for sensitive receptors and made it unlawful for any person at any location to create any sound that:

- Causes exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dBA; or,
- Exceeds the sound level standards set forth in Table 8.1.1

Table 8.1.1
Sound Level Standards (on-site)

Sound Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)	
Hourly Leq, dB	55	45	
Maximum Level (Lmax) dB	70	65	

See Ordinance 5280-B, 2004 for additional information.

8.1.1 Goals and Policies

A primary objective of this Noise section is to provide noise exposure information for use in the Land Use chapter. The regulations found in this section apply to new development in Granite Bay to determine if existing land uses will present noise compatibility issues with proposed projects. Good land use planning should be employed to insure that the quality of the noise environment in the community does not deteriorate, and whenever practical be improved. Where noise sensitive uses are proposed, appropriate noise control measures are required as a condition of approval for discretionary projects.

GOAL

1. Provide for the health, safety and welfare of the Granite Bay area residents by providing a livable environment free from excessive noise.

POLICIES

- 1. Encourage the use of greenbelts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.
- 2. Ensure compliance with noise standards adopted in the General Plan Noise Element.
- 3. Avoid the interface of noise-producing and noise-sensitive land uses.
- 4. Noise emanating from construction activity that requires a grading or building permit is prohibited on Sundays and federal holidays, and shall only occur:
 - Monday through Friday, 6 AM to 8 PM (during daylight savings)
 - Monday through Friday, 7 AM to 8 PM (during standard time)
 - Saturdays, 8 AM to 6 PM
- 5. Where proposed non-residential land uses are likely to produce noise levels exceeding County performance standards of Table 8.1.2 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design. The requirements for the content of an acoustical analysis are contained in the General Plan.
- 6. New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 8.1.3, unless the project includes effective mitigation measures to reduce exterior noise levels in interior spaces to the levels specified in Table 8.1.3.
- 7. Where noise mitigation measures are required to achieve the standards of Tables 8.1.2 and 8.1.3, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only

after all other practical design-related noise mitigation measures have been integrated into the project.

- 8. The County shall employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the project review process and, as may be determined necessary, through the building permit process.
- 9. Noise created by new proposed non-transportation noise sources shall be mitigated as not to exceed the noise level standards of Table 8.1.3 as measured immediately within the property line of lands designated for noise-sensitive uses such as residential.
- 10. Protect Placer County's agricultural resources from noise complaints that may result from routine farming practices, through the enforcement of the Placer County Right-to-Farm Ordinance.

Tables 8.1.2 and 8.1.3 explain acceptable noise exposure levels based on the standards adopted in the Countywide Noise Element.

Table 8.1.2

Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	Property Line of Receiving Use	Interior Spaces
Residential Adjacent to Industrial	60	45
Other Residential	50	45
Professional Office	70	45
Neighborhood Commercial	70	45
General Commercial	70	45
Shopping Center	70	45
Farm/Agriculture	See footnote	-

Source: Placer County General Plan Policy Document

Equivalent hourly sound level (L_{eq}) means the sound level corresponding to a steady state A-weighted sound level containing the same total energy as the actual time-varying sound level over a one-hour period.

Notes:

- Except where otherwise noted, the noise level criteria are applied at the property line of the receiving land
 use. Interior spaces are defined as any location where some degree of noise-sensitivity exists. Examples
 include all habitable rooms of residences and areas where communication and speech intelligibility are
 essential, such as classrooms and offices. The noise level criteria are generally applied at the first floor
 receiver locations.
- Where existing transportation noise levels exceed the standards of this table, the allowable Ldn shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- The noise level standards applicable to land uses containing incidental residential uses, such as home on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Tables 8.1.2 and 8.1.3. Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 8.1.2 and 8.1.3, said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
- Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within or adjacent to agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these areas is a concern, an Ldn of 70 dBA will be considered acceptable outdoor exposure at a residence. New noise-sensitive uses which may be affected by noise sources associated with agricultural operations shall be responsible for mitigating agricultural operations noise levels consistent with this Table.

Table 8.1.3

Maximum Allowable Noise Exposure Transportation Noise Sources

	Outdoor Activity Areas ^a	Interior S	Interior Spaces	
Land Use	L _{dn} /CNEL, dB	L _{dn} /CNEL, dB	L _{eq} , dB ^b	
Residential	60 ^c	45	-	
Transient Lodging d	60 ^c	45	-	
Hospitals, Nursing Homes	60 ^c	45	-	
Theaters, Auditoriums	-	-	35	
Churches, Meeting Halls	60 ^c	-	40	
Office Buildings	-	-	45	
Schools, Libraries, Museums	-	-	45	
Playgrounds, Neighborhood Parks	70	-	-	

Source: Placer County General Plan Policy Document

Notes:

Outdoor Activity Areas are generally considered to be the back yard or patio or the receiving land use. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

As determined for a typical worst-case hour during periods of use.

Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn} /CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn} /CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this Table.

In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.

8.2 SEISMIC SAFETY

The purpose of this section is to identify and appraise seismic hazards in the area and recommend goals and policies to reduce the loss of life, injuries, damage to property and economic and social dislocations resulting from future seismic activity. Also included are safety considerations dealing with the potential hazards of fire and flooding.

Seismicity refers to an area's propensity for earthquakes. Seismicity can be evaluated based on the occurrence of faults, both active and inactive. According to the 1977 Placer County Seismic and Safety Element, "the fault history of Placer County began about 140 million years ago with the folding, crushing, and faulting of marine sedimentary and volcanic deposits."

Generally the area is considered to be in a low geologic and seismic hazard category. According to studies, the plan area is located in the "low severity zone," implying a probable maximum earthquake intensity of VII (Modified Mercalli Scale). Most of the surface of the Plan area consists of deeply weathered or resistant outcrops of granitic rocks, quartz diorite and granodiorite, which range from 125 to 136 million years old. Geologic hazards are presently limited to small slumps and landslides. Naturally occurring erosion is a hazard only on a small scale.

Two faults cross the Plan area but not have been historically active, and there is no evidence of fault activity for the last 6-8 million years. There is potential for significant ground shaking as a result of seismicity associated with potentially active, regional earthquake faults however. Major faults in the area are related to the Bear Mountain Fault Zone and the Foothill-Melones Fault System located along the Sierra Nevada Mountain front. The Bear Mountain Fault Zone has been mapped approximately 20 miles east of the Granite Bay Community Plan area.

Although no active faults are found in Granite Bay, geologic investigations into the seismic safety of the defunct Auburn Dam site north of the Plan area suggest these faults are potentially active. The maximum credible earthquake for the Foothill-Melones Fault System is thought to be a 6.5 Richter Magnitude event.

8.2.1 Goals and Policies

GOAL

1. Protect the lives and property of the citizens of the Granite Bay area from unacceptable risk resulting from seismic and geologic hazards.

POLICIES

- 1. Maintain strict enforcement of seismic safety standards for new construction contained in the Uniform Building Code.
- 2. Review future developments using all available seismic data and considering recommendations from the Health and Safety Chapter of the Countywide General Plan Policy Document.
- 3. Require soils or geologic reports for construction or extensive grading in identified geologic hazard areas.

8.3 FIRE PROTECTION

Fire protection, police protection and emergency services are among the most crucial of community needs. The quality of life within the community is dependent on the adequacy of these services.

Residents of Placer County are well aware of the fire hazard problem and the destruction that uncontrolled wildfires can cause. However, sensitive land use planning and effective development regulations can go a long way toward reducing fire hazard. One critical issue that the County faces is how much development to permit in areas of extreme fire hazard.



Figure 8.3.1: South Placer Fire Station No. 19 on Auburn-Folsom Road.

According to the Placer County General Plan Background Report:

Fire hazards are identified by evaluating the type and amount of fuels, the topography, and climate. Hazards are greatest in areas with a ladder of rapidly ignitable fuels, such as grasses, that are adjacent to hotter and longer-burning fuels such as shrubs and trees. Steep slopes allow fires to preheat vegetation before climbing hillsides, which increases the rate of fire spread. Most fires start between May and October because the hot and dry weather conditions reduce plant moisture and make vegetation more susceptible to burning.

Fires can cause significant life, property and environmental losses, and can occur in both urban and rural settings. Urban fire hazards can be influenced by a variety of factors, including building location and construction characteristics, access constraints, the storage of flammable and hazardous materials, as well as inadequate supplies of fire suppression water, and response time for fire suppression personnel. Fire-related hazards in rural areas generally result from the development of residences in hillside or other areas with dense vegetation. Development that occurs in wildlands and "urban/wildland interface" areas may be subject to a significant wildfire hazard.

The combination of highly flammable fuel and long dry summers creates a significant natural hazard of large wildland fires in many areas of Placer County. Wildland fire results in death, injury, economic losses and a large public investment in fire fighting efforts. Woodlands and other natural vegetation are destroyed resulting in the loss of timber, wildlife habitat, scenic quality and recreation. Soil erosion, sedimentation of fisheries and reservoirs, and downstream flooding can also result.

The probability of large damaging fires in urban areas is affected by weather conditions and the spread of fires in surrounding wildland areas. The type of construction, preventive measures, and the extent of fire suppression services are the chief factors which determine how far these fires spread.

Fire Safe Measures

Discretionary permits for new development in fire hazard areas may be conditioned to include the following:

- Creation of defensible space around structures
- Cleared fire breaks and fuel breaks
- Long-term comprehensive fuel management program
- Secondary emergency access

The CDF Fire Hazard Severity Classification System was used to map the extreme, high, and moderate fire hazard areas in Granite Bay and throughout Placer County. While there are no extreme hazard ratings, much of the northern portion of the Community Plan area and neighborhoods adjacent to the Folsom Lake State Recreation Area are located in a 'high' hazard area. As development continues in this rural environment, the fire protection needs change. The fire protection issues focus on survivability of structures in the event of a major urban interface fire.

Fire safety standards adopted by the County include the Uniform Fire Code, National Fire Code, Uniform Building Code and companion codes, and the Zoning Ordinance. In the Subdivision Ordinance, the County already requires that special procedures be followed in fire hazard areas. Subdivision proposals in high hazard areas may be required to assess wildfire potential and construct and maintain fuel breaks or other needed mitigation measures.

Fire Agencies

The Granite Bay Community Plan area is not constant with any one fire protection agency's boundaries. Fire Protection in the Granite Bay Community Plan area is provided by three agencies. Those agencies are the South Placer Fire District (South Placer FD), the Loomis Fire District (Loomis FD) and the California Department of Forestry and Fire Protection (CalFIRE). The South Placer FD provides services to most of the Plan area with the exception of an approximate ½ square mile area north of Wells Road and west of Val Verdi Road.

The Granite Bay Community Plan area is also divided into two other distinct areas for wildland fire the responsibility, Local Responsibility Area (LRA) and State Responsibility Area (SRA). The South Placer FD and the Loomis FD are the agencies having jurisdiction (AHJ) and provide full fire and emergency services to the LRA. The South Placer FD and the Loomis FD provide full fire and emergency services to the SRA with the of wildland exception CalFire is the AHJ for wildland fire protection in the SRA and the South Placer FD and the Loomis FD provides support to CalFire for wildland fires. See Figure 8.3.2 at left.

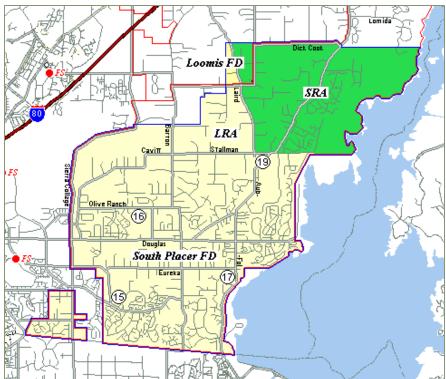


Figure 8.3.2: Fire Districts Serving the Granite Bay Community Plan area.

Currently, the South Placer Fire District provides commercial and residential structural fire protection, wildland fire protection, rescue services, emergency hazardous materials services, emergency medical services, paramedic ambulance transportation service and a variety of other non-emergency related services.

Table 8.3.1

South Placer Fire Granite Bay Station Locations

Station 15	4650 E. Roseville Parkway
Station 16	5300 Olive Ranch Road
Station 17	6900 Eureka Road
Station 19	7070 Auburn-Folsom Road
Station 20	3505 Auburn-Folsom Road (outside of GBCP area)

The Loomis Fire District FD has one fire station located at Horseshoe Bar Road and Taylor Road in Loomis outside the Granite Bay CPA. CalFIRE is located in Auburn at Bowman Road and Interstate 80 outside of the Granite Bay CPA.

8.3.1 Goals and Policies

GOAL

 Protect the citizens of the Granite Bay area from loss of life while protecting property and natural resources from fire.

POLICIES

- Ensure that all proposed developments are reviewed for compliance with fire safety standards by the applicable fire district per the California Fire Code, fire district standards and County ordinances.
- 2. Maintain strict enforcement of the Uniform Building Code and the Uniform Fire Code.



Figure 8.3.1.1: South Placer Fire Station No. 15 on E. Roseville Parkway

- 3. Continue a program whereby new development pays the cost of new capital improvements necessary to provide the fire district with new fire stations, equipment and apparatus necessary to maintain the desired level of service, and to serve new development in the Granite Bay area.
- 4. Encourage the modification of vegetation around structures and developments as encouraged by Fire Safe Standards.

Hospitals

Granite Bay is served by two high quality, comprehensive area hospitals in Roseville: Kaiser Permanente and Sutter Roseville Medical Center with a 24-hour Emergency Department and Trauma Center. Each has undertaken significant expansion and renovation projects in recent years.

8.4 FLOOD HAZARDS

Streams and riparian corridors form an integral part of the land and water related ecosystem and are a critical piece of Granite Bay's overall open space network. It is the responsibility of the County, in consultation with federal and state agencies, to ensure that the natural heritage features, functions, linkages and hazards associated with the watercourse corridors are respected. In addition to the policies included in this Community Plan, the Placer County General Plan has policies with respect watercourse protection and flood plain management.

One of the most important flood control issues facing the County concerns regulation of development in areas prone to flooding.



Figure 8.4.1: Creeks in Granite Bay are prone to flooding.

Incidences of flooding along Dry Creek and its tributaries including Miners Ravine, Strap Ravine, Linda Creek and Cirby Creek are well documented. Streams overflow banks when runoff from the watershed exceeds the capacity of the stream channel to carry it. Streams also back up at culverts and bridges, blocking roads or making them unsafe. Emergency services can also be restricted by flooded roads. Floods on small streams usually peak and recede quickly, while floods on Dry Creek or Miners Ravine may not peak for six hours or more after the start of a storm and may exceed flood stage for a day or more.

Located generally within watercourse corridors are areas which have been identified as a floodplain. These areas are usually low lands adjoining a watercourse, which has been or may be subject to flooding hazards. For current flood control programs to be effective, it is important that the flood-carrying capacity of streams and floodway areas not be impaired.

Flood hazards are estimated by the area flooded by the maximum storm event expected over a 100-year period. The Federal Emergency Management Agency (FEMA) and Federal Insurance Administration have assessed flood hazards for most major streams in the county. They have prepared maps showing the areas with a one percent chance of being flooded in any year. These areas are considered a part of the 100-year regulatory floodplain.

Development and site alteration shall not be permitted within a floodplain given the risk to public health and safety and/or property damage. Placer County has adopted a General Plan policy to "maintain natural conditions within the 100-year floodplain of rivers and streams."

8.4.1 Goals and Policies

GOAL

1. Protect the lives and property of the citizens of the Granite Bay area from unacceptable risk resulting from flood hazards.

POLICIES

- Work closely with the Federal Emergency Management Agency (FEMA) and the Placer County Flood Control and Water Conservation District in defining existing and potential flood problem areas.
- 2. Evaluate potential flood hazards in an area prior to the approval of any future development.
- 3. Land development projects should be designed to minimize potential loss of property and threat to human life caused by flooding.
- Retain natural flow conditions within the 100-year floodplain of all streams except where work is required to maintain the stream's natural drainage characteristics as determined by Placer County Flood Control District.
- 5. New construction shall not be permitted within 100 feet of the centerline of permanent streams and 50' of intermittent streams, or within the 100 year floodplain, whichever is greater.

Dry Creek Watershed Flood Control Plan

In 1992, the Dry Creek Watershed Flood Control Plan was completed by the Placer County Flood Control and Water Conservation District. The District was established in 1984 by the State Legislature as a Special District, separate from County government, to address flood control issues arising with growth through comprehensive, coordinated flood prevention planning. District boundaries are the same as Placer County boundaries and it is governed by a Board of Directors.

The purpose of the Dry Creek Watershed Flood Control Plan is to provide the District and other governmental agencies in both Placer and Sacramento Counties with the information and policies necessary to manage flood waters within the Dry Creek Watershed. The study evaluated existing drainage problems within the Dry Creek basin, considered potential impacts of flood control projects and land development regulations upon the hydrologic system, made recommendations for both structural and nonstructural flood control improvements, and looked at various funding mechanisms to achieve Plan recommendations.

Historic Flooding

Floods in the Dry Creek watershed generally occur from October through April. The floods are usually caused by a combination of prolonged rainfall leading to saturated soils, and a short period of one to six hours of intense precipitation associated with frontal convection or severe thunderstorms.

Dry Creek and its tributaries have an extensive record of flood conditions, especially in the Roseville area. Stream flow records are available for a gauge in Roseville beginning in 1950. Damaging floods occurred in December 1955, April 1958, October 1962, December 1964, March 1983 and February 1986.

The floods of 1983 and 1986 are the largest and most damaging on record before 1992. Hydrologic studies have shown that the recurrence interval of the March 1983 flood was approximately 10 years and the recurrence interval of the February 1986 flood was from 50 to 100 years, depending on the specific location in

the Dry Creek watershed. Flood events also occurred in 1995 and 2005, with the 1995 flood event causing extensive damage.

March 1983. The March 1983 event was estimated to have an average exceedance recurrence interval of about 10 years and damaged approximately 25 residences along Linda and Cirby creeks in Roseville. Portions of Royer Park were under water as well as areas in the Sierra Lakes Mobile Home Park. Dry Creek overflowed the Darling Way and Riverside Avenue bridges, disrupting traffic and flooding six businesses along Riverside Avenue.

February 1986. This event was classified as an approximately 70 year event and Placer County was designated as a Federal Disaster Area. Nearly all bridges and culverts were overtopped with 30 crossings sustaining embankment damage including Rocky Ridge Drive washing out. Two bridges over Dry Creek were damaged and street cave-ins occurred at a number of locations. Flooding caused the closure of many major streets in the watershed including Riverside Avenue, Douglas Boulevard, Sierra College Boulevard, and others.

Approximately sixteen homes along Miners Ravine in Granite Bay, in the area of Joe Rodgers Road, were flooded. Total damages within Placer County were estimated at \$7.5 million. Based upon the application for disaster assistance, 62 homes were damaged or destroyed within the watershed, although the actual number of damaged homes is thought to have been higher. One fatality was associated with this flood event.

January 1995. The January 1995 event had been classified as being approximately a 100-year event. Further analysis of available data later indicated that the event was statistically closer to a 200-year storm event rather than a 100-year event at some key locations. The January 1995 storm resulted in the most severe recorded flooding to date in the Dry Creek watershed, with Placer County being designated as a Federal Disaster Area.

The storm included two high precipitation storm events spaced about 12 hours apart. The first event delivered approximately a 10-year storm event. The second storm delivered even higher intensities of



Figure 8.4.1.1: Auburn Folsom Road at Miners Ravine, January 1995.

precipitation. As with the 1986 flood, numerous bridges were overtopped. Total damages within Placer County were estimated at \$8.3 million, with 750 damaged or destroyed structures.

January 1997. The flood events of 1997 were some of the most severe on record for the region. An isolated storm event typical for the Roseville area occurred on top of saturated soils from repetitive storm events causing a flash flood. This flooding resulted in 21 structures being inundated with floodwaters. The impact of this event was significantly reduced by a partially completed Cirby-Linda-Dry Creek Flood Control project.

February 1998. A small flood event occurred on February 3, 1998, resulting in eight structures being inundated by floodwaters in the Dry Creek Basin. This event was caused by an isolated storm event centered over the watershed.

December 2005. The December 2005 event was estimated to have an average exceedance recurrence interval of between 10 and 25 years. This event, often referred to as the "New Years Eve" event, occurred in the early morning hours of December 31, 2005. Flooding was most noticeable in the lower watershed where the overtopping of Walerga Road made news as vehicles and drivers attempting to cross the bridge during overtopping flows required emergency assistance to have their stalled vehicles pulled to safety. One driver required a helicopter rescue. Roadways that were overtopped included Barton Road on Miners Ravine.

Floodplain Management

Floodplain management in the Dry Creek watershed involves two different aspects. The first is based on controlling building in the floodplain and the second is based on controlling the changes that are made in the floodplain.

Controlling building in the floodplain is based on the assumption that it is better to keep people away from the water rather than keeping the water away from the people. Specific strategies for proper floodplain management include preventing new construction in designated floodplains or floodways. Impervious surfaces created by development, such as parking lots, roads, and roofs, can substantially increase runoff within a watershed and impede floodwater flow.

The second element of floodplain management involves controlling what changes are made to the stream channels and floodplains. One of the basic guidelines included in the General Plan is that no floodplain clearing or channel improvement will be allowed along any stream without appropriate approvals from the Department of Fish and Game. These streams are designated as natural streams and are to be open channels and are to remain in their natural state as much as possible. The County's Grading Ordinance has specific provisions which address the protection of floodplains from any development activity which would alter the flood characteristics of the stream.

Requirements

All new developments are typically required to provide local, on-site detention of storm water flows except where it is determined by the Flood Control District that local detention is either not required or not practical. Local, on-site detention should be des igned to control the peak flow leaving the property as a result of the 10-, 25 and 100-year storms, such that there is no net increase in storm water peak flows due to development.

In those situations where the District determines that topography or other factors will limit the effectiveness of local detention for a particular development, the developer is



Figure 8.4.1.2: Barton Road at Miners Ravine, December 2005.

required to make an in-lieu payment to the District. This in-lieu payment is used by the District to defray the costs of constructing regional detention storage in the Dry Creek watershed to handle undetained flows from that development.