City of Dublin
General Plan

Chapter 8

ENVIRONMENTAL RESOURCES MANAGEMENT: SEISMIC SAFETY AND SAFETY ELEMENT

8.1 INTRODUCTION

Government Code sec. 65302(g) requires safety elements to address the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards or geologic hazards; flooding; and, wildland and urban fires. The statute requires that seismic and geologic hazard areas be mapped. It also requires the element to address evacuation routes, military installations, peakload water supply, minimum road widths and clearances around structures for geologic and fire hazards identified in the element.

Addressing the hazards relevant to Dublin, this Seismic Safety and Safety Element provides an assessment of the risk of ground shaking, rupture, and failure due to earthquakes. The element discusses landslide, subsidence and liquefaction hazards. It also discusses flooding, and urban and wildland fires. Related discussion and analysis of these hazards is located in the Technical Supplement and the Conservation Element (Chapter 4).

The planning area offers examples of most of the geologic hazards commonly found in California, but only two—downslope movement (mainly landslides) and surface fault rupture due to earthquakes—are significant constraints on the location of urban development. Downslope movement includes landslides, rockfalls, debris flows, and soil creep. Factors affecting downslope movement are groundwater, rock and soil type, slope angle, propensity to erosion, seismic activity, vegetation, and grading or other human alterations.

The Calaveras Fault is the major active fault in the planning area with rupture potential and runs parallel to and just west of San Ramon Road. The Pleasanton Fault, near the west edge of Camp Parks, is difficult to locate precisely. The State has identified Alquist-Priolo Earthquake Fault Zones along both faults, requiring detailed studies of rupture hazards prior to construction.

Few potential building sites within the Primary or Extended Planning Areas are without geologic impact or hazard. The hazard may be actual, such as an active landslide or proximity to an active fault, or potential, such as a proposed cut that might activate a landslide. Mitigation of hazards may increase construction cost, but will reduce long-term costs to both property owners and the City.

8.2 SEISMIC SAFETY

8.2.1 ALL PLANNING AREAS

A. Guiding Policy

1. Geologic hazards shall be mitigated or development shall be located away from geologic hazards in order to preserve life, protect property, and reasonably limit the financial risks to the City of Dublin and other public agencies that would result from damage to poorly located public facilities.

B. Implementing Policies

1. Structural and Grading Requirements

    a. All structures shall be designed to the standards delineated in the Dublin Building Code and Dublin's Grading Ordinance. A "design earthquake" shall be established by an engineering geologist for each structure for which ground shaking is a significant design factor.

    b. Structures intended for human occupancy shall be at least 50 feet from any active fault trace; freestanding garages and storage structures may be as close as 25 feet. These distances may be reduced based on adequate exploration to accurately locate the fault trace.

    c. Generally, facilities should not be built astride potential rupture zones, although certain low-risk facilities may be considered. Critical facilities that must cross a fault, such as oil, gas, and water lines, shall be designed to accommodate the maximum expected offset from fault rupture. Site specific evaluations shall determine the maximum credible offset.

2. Required Geotechnical Analyses

    d. A preliminary geologic hazards report shall be prepared for all subdivisions. Any other facility that could create a geologic hazard, such as a road or a building on hillside terrain, must also have such a study. Each of the geologic and seismic hazards described in the Seismic Safety and Safety Element must be evaluated. This hazard analysis shall be prepared by a registered engineering geologist.

    e. Detailed geologic studies shall be required at the tentative subdivision map stage for all projects located within the Landslide Hazard Area Boundary as identified on the Geologic Hazards and Constraints Map (Figure 8-1), and for other proposed projects if the preliminary investigation indicates a potential geologic hazard. Proposals for mitigation shall be included at this stage. The detailed analysis for projects in the Landslide Hazard Area Boundary must consider:

        1. Cumulative effect of new development on a partially developed slide;
        2. Effects of septic leach systems, garden watering, and altered drainage patterns;
        3. Impact of a maximum credible earthquake;
        4. Where applicable, passage of the Calaveras Fault through or under landslide deposits;
        5. Debris flow and other downslope hazards (especially common in the Eastern Extended Planning Area). Care must be taken not to locate structures in the path of potential debris flows.
        6. Where published maps identify or show "ancient" or Quaternary slides on sites of proposed development, their stability must be analyzed, and effects of the proposed development on the area's stability must be evaluated by a soils engineer.

    f. If the preliminary report indicates liquefaction potential, an engineering analysis and design, if necessary, to mitigate liquefaction hazards, shall be required for all

structures planned for human occupancy.

g. Evaluation for shrink-swell potential shall be included with all soils reports and design recommendations formulated where the potential is present. These analyses and recommendations shall include public streets and utilities, in order to reduce future public repair costs.

h. A surface fault rupture evaluation, as outlined by the State of California Department of Conservation, California Geological Survey and in accordance with the Alquist-Priolo Earthquake Fault Zoning Act shall be required for all development within the identified Earthquake Fault Zones as shown on the Geologic Hazards and Constraints Map (Figure 8-1). The surface fault rupture evaluation shall be conducted as part of the development review process after building sites are specifically defined.

i. Any changes in grading or building design that would be significantly affected by geologic hazards or soils conditions, or in turn would significantly alter geologic or soils conditions, shall be accompanied by a re-analysis of those conditions. In addition, any conditions discovered during excavation or grading that significantly depart from the previously described geologic and soils setting shall be evaluated.

3. Existing Structures

   j. Post-earthquake or damage reconstruction of existing structures shall be permitted only if mitigating factors are incorporated.

4. Data Review and Collection

   k. All required reports and data shall be reviewed by the Alameda County Geologist or a consulting engineering geologist. This individual shall participate in the review process from the earliest proposal stage to completion of the project.

   l. A file of all geologic and soils reports and grading plans shall be maintained as reference material for future planning and design on each site as well as on adjacent sites.

   m. City and developer shall endeavor to fully disclose hazards to present and future occupants and property owners.

5. Earthquake Response Plan

   n. In 2004 Dublin adopted a Comprehensive Emergency Management Plan to address the City's responsibilities associated with a natural disaster, human-caused emergencies and technological incidents. The City will periodically review the Plan to prepare for and respond to seismic events.

   o. The City shall prepare and periodically review a route plan for evacuation of Dublin in the event of a major seismic event.

8.3 SAFETY

Policies relating to landslides, a significant geologic hazard, are included in this Seismic Safety and Safety Element, although not all slides are likely to be induced by earthquakes. Fire, flood, and

hazardous materials are the remaining safety concerns addressed in the General Plan.

8.3.1 EMERGENCY PREPAREDNESS GUIDING POLICY

8.3.1.1 ALL PLANNING AREAS

A. Guiding Policy

1. In 2010 the City adopted a Local Hazard Mitigation Plan as an annex to the Comprehensive Emergency Management Plan to assess hazards and mitigate risks prior to a disaster event. The City will periodically review the Plan to prepare for emergencies.

8.3.2 FIRE HAZARD AND FIRE PROTECTION

The Alameda County Fire Department serves as the fire department for the City of Dublin and as such provides all fire prevention, fire protection and First Responder Emergency Medical Services including advanced life support (paramedics) within the City.

Dublin San Ramon Services District (DSRSD) supplies water to the City of Dublin for both domestic use and fire protection purposes through a series of pipelines, pump stations and reservoirs. For fire protection, Alameda County Fire specifies the required fire flows which the DSRSD system is designed to provide. Alameda County Fire requires a minimum of 1,500 gallons of water per minute for two hours. For sprinklered buildings, up to 2,000 gallons of water per minute is needed for four hours. The DSRSD system has separate fire protection storage with an adequate volume of water for two simultaneous fires and the storage is kept full at all times.

Steep, inaccessible slopes and brush create a high fire hazard in the western hills. Additionally, areas within the Extended Planning Areas that are adjacent to open space are susceptible to fire hazards. For projects that are constructed outside a fire station service area (greater than 1.5 miles from the nearest fire station) and/or interface with open space, certain built-in fire protection measures will be necessary.

8.3.2.1 ALL PLANNING AREAS

A. Guiding Policy

1. Require special precautions against fire as a condition of development approval in the western hills and elsewhere in the Extended Planning Areas where proposed development would interface with open space.

B. Implementing Policy

1. Continue to enforce the City's wild land urban interface regulations.

8.3.2.2 WESTERN EXTENDED PLANNING AREA

A. Guiding Policy

1. It is the City's intent that a full fire station shall be provided in the Western Extended Planning Area before any substantial development proceeds beyond the general vicinity of Schaefer Ranch Road.

8.3.3 FLOODING

Figure 8-2 delineates flood prone areas in the City of Dublin. The areas shown identify the 100 and 500 year flood zones. Figure 8-2 is based on data provided by the Federal Emergency Management Agency (FEMA). Both 100 and 500 year floor zones have been identified in portions of the Primary and Eastern Extended Planning Areas; no100 year or 500 year flood zones have been identified in the Western Extended Planning Area.

Most of the areas in the 100 year flood plain have been built upon. Any new construction in flood prone areas must comply with Chapter 7.24 (Flood Control) of Title 7 of the Dublin Municipal Code including constructing the first floor above the floodplain level.

A number of channel improvements have been implemented since the early 1990's as a result of local developments partnering with Zone 7 and/or the City of Dublin, and Caltrans transportation projects. Channel improvements have been made along Tassajara Creek (Line K), Alamo Creek (Line F), and Big Canyon Creek (Line J-1). In addition to the major creeks in Dublin, several tributaries have undergone improvements as well, including the undergrounding of Line G-3 and the channel wall raising of Line G-5.

While no major flood improvement projects have clearly been identified in the City of Dublin for the future, Zone 7 is presently working on an update to their Stream Management Master Plan (SMMP), which will consider new, innovative approaches to providing regional flood protection, including options that may include the use of enhanced floodplains and vegetated stormwater channels. Areas along Chabot Canal located in Camp Parks and upland areas along Tassajara Creek will likely present partnering opportunities for Zone 7 and the City of Dublin.

8.3.3.1 ALL PLANNING AREAS

A. Guiding Policy

1. Regulate development in hill areas to minimize runoff by preserving woodlands and riparian vegetation. Retain creek channels with ample right-of-way for maintenance and for maximum anticipated flow.

B. Implementing Policies

1. Require dedication of broad stream corridors as a condition of subdivision or other development approval.
2. Protect riparian vegetation and prohibit removal of woodlands wherever possible. Replant vegetation according to the standards in the Eastern Dublin Specific Plan or other applicable standards (see also General Plan Guiding Policy 3.1.A).
3. Require drainage studies of entire small watersheds and assurance that appropriate mitigation measures will be completed as needed prior to approval of development in the extended planning areas.
4. Continue to participate in the Federal Emergency Management Agency's (FEMA) flood insurance program.
5. Prepare an annual update of flood prone areas and related issues and present to the City Council for their information and appropriate action, if any.

6. See additional policies in the Conservation Element (Chapter 7).

8.3.4 HAZARDOUS MATERIALS

Hazardous materials are transported on the freeways and some are used by Dublin industries. The Dublin San Ramon Services District, Alameda County Fire Department and the Dublin Police Department form the City's hazardous materials team.

8.3.4.1 ALL PLANNING AREAS

A. Guiding Policies

1. Maintain and enhance the ability to regulate the use, transport, and storage of hazardous materials and to quickly identify substances and take appropriate action during emergencies.
2. Minimize the risk of exposure to hazardous materials from contaminated sites.

B. Implementing Policies

1. Consider formation of a regional hazardous materials team consisting of specially trained personnel from all Tri-Valley public safety agencies.
2. As part of the City's Comprehensive Emergency Response Plan, the City has adopted a Hazardous Materials Response Plan. The City will periodically review the Plan to prepare for and respond to emergencies related to hazardous materials.
3. Periodically review and enforce the City's ordinances regulating the handling, transport, and storage of hazardous materials and hazardous waste.
4. Require site-specific hazardous materials studies for new development projects where there is a potential for the presence of hazardous materials from previous uses on the site. If hazardous materials are found, require the clean-up of sites to acceptable regulatory standards prior to development.

8.4 AIRPORT LAND USE COMPATIBILITY

8.4.1 EASTERN EXTENDED PLANNING AREA

A. Guiding Policy

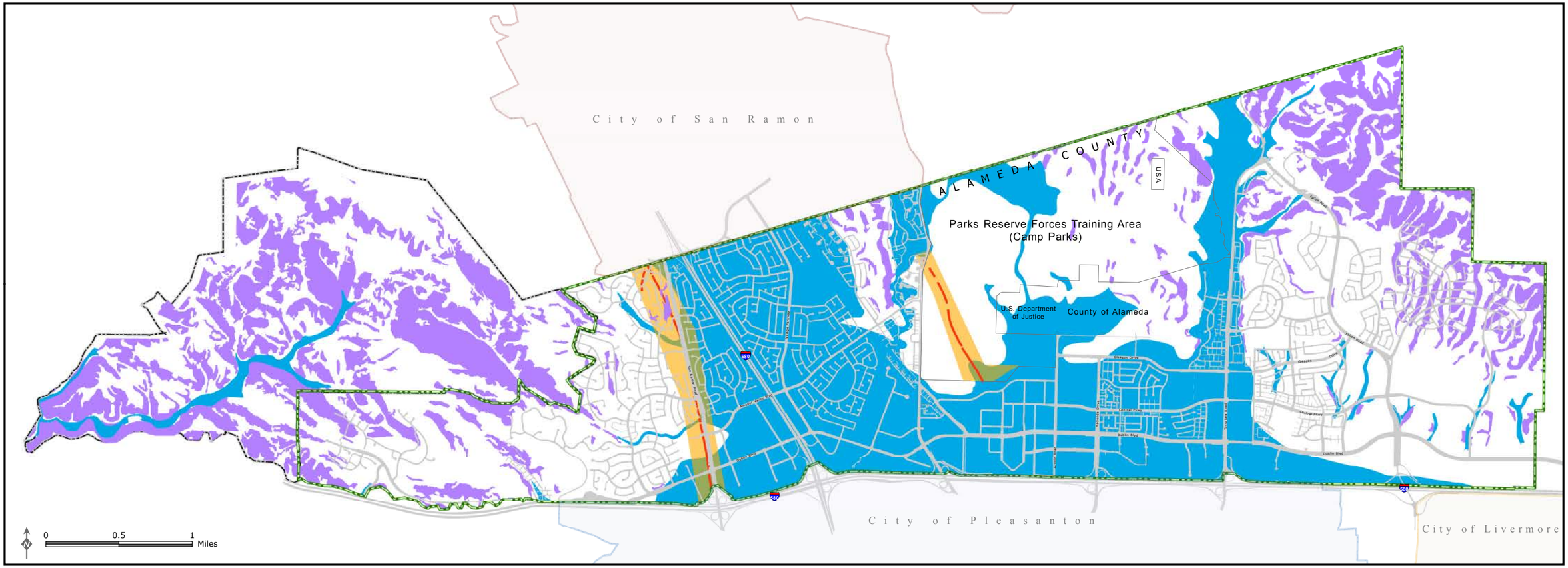
1. All proposed land uses within the Airport Influence Area (AIA) shall be reviewed for consistency with the safety compatibility policies and airspace protection policies of the Airport Land Use Compatibility Plan (ALUCP) for the Livermore Municipal Airport.

B. Implementing Policy

1. Adopt an Airport Overlay Zoning District to ensure that all proposed development within the Airport Influence Area (AIA) is reviewed for consistency with all applicable Livermore Municipal Airport, Airport Land Use Compatibility Plan (ALUCP) policies.

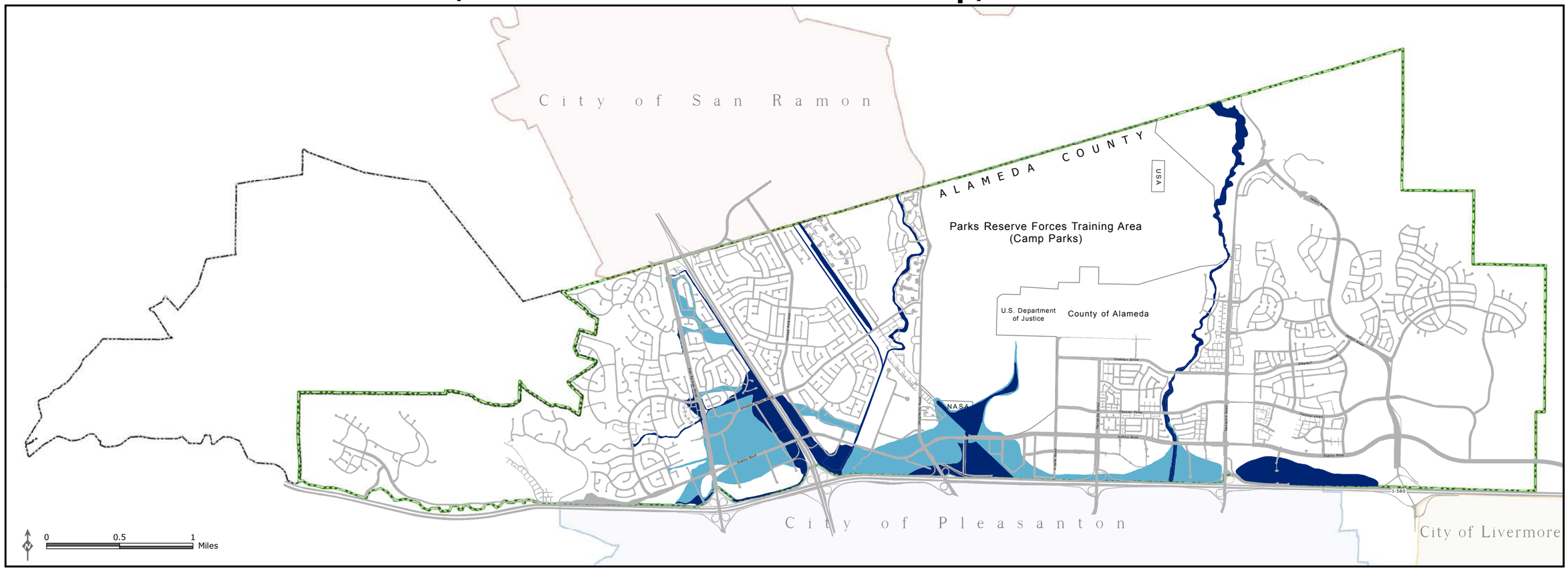
DUBLIN GENERAL PLAN
GEOLOGIC HAZARDS AND CONSTRAINTS

(Figure 8-1)
February 18, 2014



DUBLIN GENERAL PLAN
POTENTIAL FLOODING (FEMA Flood Insurance Rate Map)

(Figure 8-2)
February 2013



0.2 % Annual Chance Flood Hazard *(500 Year Flood Hazard)*

1 % Annual Chance Flood Hazard *(100 Year Flood Hazard)*

Streets

City of Dublin

Sphere of Influence