SECTION 1: INTRODUCTION

The Environmental Resources Element addresses the related issues of resource conservation and open space, and provides a basis to evaluate existing resources and plan for their protection. The goal of this Element is to improve the long-term quality of life for Palmdale residents through the rational management of natural resources and open space lands. The Element establishes policies concerning air, water, land open space, recreation, and energy resources that relate to their conservation, preservation, and managed use. The Element has been divided into four major issue areas: open space, conservation, outdoor amenities, and scenic highways.

Open space refers to land devoted to the conservation of on-site resources, resource management, or outdoor recreation areas kept undeveloped because of public health and safety concerns. In order for residents to continuously avail themselves of the aesthetic, recreational, and public health benefits of open space, the state mandates that cities include open space and conservation elements in their general plan. These elements shall provide a comprehensive management program for the environment.

Because the earth's resources are limited, there must be conservation and managed use of local resources. Water, soil, and minerals are valuable but finite resources. Their continued use can only be possible with conservation. The protection of animal and plant habitats, especially of endangered species, is also necessary to limit disruption of ecological cycles. Landforms, geologic features, historic and archaeologic resources all contribute to the unique character of Palmdale.

Scenic highways provide the motorist with visual stimulation and passive recreation. Official scenic highways are designated by the State Scenic Highway Advisory Committee after plans have been adopted and submitted by the local jurisdiction. Highways eligible for such designation are listed in the Streets and Highways Code. Official county scenic highways are also designated by the State Scenic Highway Advisory Committee on application from the local jurisdiction. The Environmental Resources Element provides for the local designation of scenic highways and corridors and considers both official scenic highways and roadways not yet registered with the State.

The Environmental Resources Element is related to many of the other elements of the General Plan. This is due to the fact that most planning issues share components of more than one element. For example, policies relating to hillside development standards appear in the Land Use, Safety, and Environmental Resources Elements, and will appear in the Community Design Element.

In summary, the Environmental Resources Element serves the following purposes:

- The Environmental Resources Element combines the state-mandated Open Space and Conservation Elements to partially fulfill the requirements of the California Surface Mining and Reclamation Act and the regulations in Section 65530 et seq. of the Government Code of the State of California.

- The Element informs the public of the goals and policies of the City concerning conservation, open space, outdoor recreation, and scenic highways. It also provides an implementation program to serve as a guide for the day-to-day operational decisions of City staff.

- The Element evaluates the state of environmental resources in the City, and identifies concerns and opportunities. It addresses the impacts of human activities on the environment and provides management measures to prevent the loss, destruction, and neglect of the area's significant resources.

SECTION 2: GOALS, OBJECTIVES AND POLICIES

GOAL ER1: Preserve significant natural and man-made open space areas that give Palmdale its distinct form and identity.

Objective ER1.1: Create and maintain an open space network throughout the City.

Policy ER1.1.1: Utilize a variety of features, including entry points to the City, landscaped arterial roadways, bikeways, equestrian paths, hiking trails, and park sites, to create an open space network.

Policy ER1.1.2: Provide for a network of open space by linking such areas wherever possible.

Policy ER1.1.3: Incorporate the citywide multi-purpose trail network adopted under the Parks, Recreation and Trail Element of the General Plan into the regional trail system. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER1.1.4: Implement the standards adopted under the City's Hillside Management Ordinance for new development including clustering and density transfer of housing units, in order to maintain areas of scenic and other open space within hillside areas. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER1.1.5: Utilize the City's discretionary land use approval process to locate and retain areas for use as open space through dedication or other legal means. Develop criteria and guidelines to identify areas that should be so protected.

Policy ER1.1.6: Integrate natural hazard areas, such as floodways, seismic fault zones, and unstable soils, into the open space network in order to ensure public health, safety and welfare while preserving open space.

Policy ER1.1.7: Identify and utilize all available funding sources for acquisition and maintenance of open space areas for public benefit.

Policy ER1.1.8: Cooperate with private and public entities whose goals are to preserve natural and man-made open space. Develop criteria and guidelines to identify how to establish land trust open space locations.

Objective ER1.2: Protect scenic viewsheds both to and from the City of Palmdale.

Policy ER1.2.1: New development with the potential to substantially obscure or negatively alter the scenic backdrop to the City should be discouraged. "Scenic backdrop" refers to the significant ridgelines of the San Gabriels, the Sierra Pelona and the Ritter and Portal Ridges that form the City's skyline views.

Policy ER1.2.2: The following roadways are designated as City scenic highways. Apply special design standards for projects adjacent to these highways (as contained in the implementation section) in order to protect their scenic qualities. *(General Plan Amendment 98-3, adopted by City Council June 10, 1998.)*

1. Barrel Springs Road
2. Tierra Subida Avenue
3. Sierra Highway, South of Avenue S
4. Elizabeth Lake Road
5. Pearblossom Highway
6. Bouquet Canyon Road
7. Godde Hill Road
8. Antelope Valley Freeway, south of Rayburn Road

Policy ER1.2.3: Encourage all new development along scenic highways to maintain sufficient spacing between buildings, perimeter walls and large growing vegetation in order to maintain scenic view corridors of hillsides and open space to the maximum extent feasible. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

GOAL ER2: Protect significant ecological resources and ecosystems, including, but not limited to, sensitive flora and fauna habitat areas.

Objective ER2.1: Identify and preserve to the greatest extent feasible significant ecological areas.

Policy ER2.1.1: The following broadly defined areas, shown on the Overlay Map and Exhibit ER-5, will be designated as a Significant Ecological Area (SEA) overlay on the General Plan Land Use Map: Big Rock Wash, Little Rock Wash, Ritter Ridge, Portal Ridge and Alpine Butte. Biological surveys should be performed to determine the nature and extent of their ecological significance prior to any approval of new developments within the overlay area. Any development permitted in these areas must consider significant environmental resources and preserve environmental resources to the extent feasible.

Policy ER2.1.2: Promote only compatible, and where appropriate, passive recreational uses in natural areas determined to be ecologically significant, consistent with the particular needs and characteristics of each SEA, as determined by approved field observation reports.

Policy ER2.1.3: Solicit and utilize all available sources of local, regional, state and federal funds to acquire significant wetland areas, in order to minimize the disturbance and prevent damage from erosion, turbidity, siltation, a loss of wildlife and vegetation, or the destruction of the natural habitat.

Policy ER2.1.4: Preserve natural drainage courses and riparian areas where significant concentrations of ecological resources exist.

Policy ER2.1.5: Preserve and maintain significant Joshua tree woodlands and other significant habitat areas. Early in the review of development projects, the feasibility of preserving any significant vegetation present on-site should be examined.

Objective ER2.2: Ensure local compliance with State and Federal Endangered Species Acts.

Policy ER2.2.1: Cooperate with the preparation and the implementation of the West Mojave Coordinated Management Plan for protection of desert tortoise and Mohave ground squirrel.

GOAL ER3: Preserve designated natural hillsides and ridgelines in the Planning Area, to maintain the aesthetic character of the Antelope Valley.

Objective ER3.1: Establish a systematic approach to the management of land uses and development in hillside areas.

Policy ER3.1.1: Density of development shall respect and be reflective of the natural terrain, so that steeper sites are not developed to the same density/intensity as flatter sites.

Policy ER3.1.2: Adopt grading standards that respect the natural terrain, minimize earth moving activity, minimize visual effects of large cut and fill slopes, and provide for the preservation of unique and significant natural landforms where feasible.

Policy ER3.1.3: Require water-conserving revegetation of disturbed hillside areas, through standards for slope replanting and grading patterns that reduce manufactured slopes.

Policy ER3.1.4: Encourage density transfers where appropriate, in order to facilitate development in more suitable locations while retaining significant natural slopes and areas of environmental sensitivity as natural open space.

Policy ER3.1.5: Retain the integrity of the natural ridgelines of Ritter Ridge, Portal Ridge, Verde Ridge, the Ana Verde Hills, the Sierra Pelona Mountains, and the lower foothills of the San Gabriel Mountains.

GOAL ER4: Protect the quality and quantity of local water resources.

Objective ER4.1: Ensure that ground water supplies are recharged and remain free of contamination.

Policy ER4.1.1: Incorporate the use of flood control measures which maximize groundwater recharge and the use of floodways as native habitat.

Policy ER4.1.2: Restrict building coverage and total impervious area in the vicinity of natural recharge areas.

Policy ER4.1.3: Protect from pollutants or other materials which might degrade groundwater supplies, and enhance natural recharge areas such as the Little Rock and Big Rock Washes, and Amargosa and Anaverde Creeks, and ensure that no mineral resources recovery activities extend below the groundwater table.

Policy ER4.1.4: Require that all new commercial, industrial, and residential development connect to sanitary sewers as required by Policy PS2.2.4 of the Public Services Element.

Policy ER4.1.5: Cooperate with Los Angeles County Health Department and the Regional Water Quality Control Board in monitoring industrial and commercial uses utilizing hazardous or potentially polluting materials and fluids, to prevent their discharge into the groundwater aquifer.

Objective ER4.2: Minimize the impacts of urban development on groundwater supplies.

Policy ER4.2.1: Promote water conserving landscape techniques, through the use of native and drought tolerant plant species and landscape design standards.

Policy ER4.2.2: Utilize native plants or drought resistant planting materials and drip irrigation systems where feasible within the Landscape Assessment District areas.

Policy ER4.2.3: Require the use of water conserving appliances and plumbing fixtures in all new construction.

Policy ER4.2.4: Coordinate with local water agencies to monitor ground water levels, State water allocations and development approvals, to assure that development does not outpace long-term water availability. In the event applicable water agencies notify the City that ground water levels and State water allocations are insufficient to serve existing development or projected development, the City will determine whether it is appropriate to reevaluate this General Plan and take other appropriate actions, as permitted by law.

Objective ER4.3: Maintain and further the City's commitment to long-term water management within the Antelope Valley by promoting and encouraging planning for the conservation and managed use of water resources, including groundwater, imported water, and reclaimed water.

Policy ER4.3.1: Assess the feasibility of utilizing reclaimed water for landscape irrigation on a city-wide basis. Factors to be considered include the potential quantities of recliamed water as determined by the Sanitation Districts, and costs associated with developing infrastructure and delivery systems to facilitate utilization. Within those areas in which it is determined to be feasible to utilize reclaimed water, consider establishment of an ordinance requiring installation of secondary water delivery systems to service landscaped areas.

Policy ER4.3.2: Work with local water purveyors to assess the potential for capturing local run-off and utilization of imported water (water banking) for groundwater recharge within the Planning Area; through the land use planning process, ensure that important recharge areas are retained for that use.

Policy ER4.3.3: Continue to seek out long-range water management techniques as new technology is developed; promote implementation of systems which are feasible and appropriate to the Planning Area.

Policy ER4.3.4: Encourage residents and businesses to recycle water where feasible, and where water recycling does not result in health and safety concerns, within their homes and/or businesses.

Policy ER4.3.5: Participate in regional efforts to retain imported water allocations and seek out other sources as they become available.

GOAL ER5: Promote the attainment of state and federal air quality standards.

Objective ER5.1: Minimize local air pollution caused by vehicles.

Policy ER5.1.1: Reduce the number of work-related trips through such means as promoting alternate work schedules, telecommuting, teleconferencing, company-sponsored ride share and alternative fuel vehicle programs developed under the County's Congestion Management Program, the use of Metro Link trains and other alternative modes of transportation to the workplace and the creation of additional park and ride facilities. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER5.1.2: Reduce vehicle non-work trips through merchant transportation incentives, distance learning, and transit system improvements. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER5.1.3: Reduce vehicle emissions through maintaining and improving traffic flow as contained in the Circulation Element.

Policy ER5.1.4: As technology allows, reduce tailpipe emissions from City vehicles by replacing them with alternative fuel vehicles, and encourage reduction of emissions from private vehicles by requiring preferential parking for alternative fuel vehicles.

Policy ER5.1.5: To the extent practicable, require control of emissions from the future Palmdale Regional Airport.

Policy ER5.1.6: Expand the services of the existing dial-a-ride program resulting in reduced need for automobiles and parking by retired citizens.

Objective ER5.2: Minimize activities which generate dust, specifically particulates less than 10 microns in size (PM10).

Policy ER5.2.1: Reduce dust from unpaved roads and parking lots by requiring paving or vegetative stabilization of the unpaved areas; require that measures be taken at construction sites to prevent deposition of soil onto public rights-of-way.

Policy ER5.2.2: Encourage developers to maintain natural contours to the greatest degree possible, to eliminate the need for extensive land clearing, blasting, ground excavation, grading and cut and fill operations.

Policy ER5.2.3: Require erosion control measures on new development, including covering soil with straw mats or use of chemical soil and dust binders, followed by seeding and watering as soon as possible after grading to prevent fugitive dust.

Objective ER5.3: Reduce and/or eliminate unnecessary sources of air pollution.

Policy ER5.3.1: Promote the Antelope Valley Air Quality Management District's (AVAQMD) efforts to eliminate emissions from such sources as excessive car dealership cold starts, excessive curb idling, emissions from advertising vehicles, and emissions from leaf blowers, among others, through assisting with implementation and enforcement of district programs once they are adopted. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER5.3.2: Work with Caltrans and the Los Angeles County Sheriff's Department to minimize nonrecurrent congestion which contributes emissions from vehicle idling, by designing effective street systems and identifying appropriate truck routes.

Policy ER5.3.3: Reduce reactive organic gas (ROG) and particulate emissions from building materials and construction methods, by promoting the use of nonsolvent-based, high-solid, or water-based coatings, and requiring compliance with all pertinent AVAQMD rules. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Objective ER5.4: Minimize emissions of air toxins and pollutants which contribute to global warming and ozone depletion.

Policy ER5.4.1: Promote community awareness of the effects of global warming and ozone depleting gases, as well as methods to minimize the creation of those gases, by preparing and distributing educational materials, and cooperating with AVAQMD in establishing regional programs. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER5.4.2: Through the environmental review process for new development applications, ensure that emissions of air toxins as defined by Antelope Valley Air Quality Management District are minimized. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Objective ER5.5: Reduce air pollution caused by energy consumption.

Policy ER5.5.1: Encourage energy conservation from all sectors of the community by promoting the use of energy efficient appliances, processes and equipment, and promoting energy audits of existing structures.

Policy ER5.5.2: Require local government, Palmdale citizens, and local businesses and industries to recycle, as mandated by state law, and to otherwise recycle to the extent possible.

Policy ER5.5.3: Require that new construction promote the use of solar energy systems by providing maximum solar access.

Objective ER5.6: Minimize emissions from indirect sources such as commercial, residential and recreational development.

Policy ER5.6.1: Ensure that new development reduces project-related vehicle miles traveled to the maximum extent provided by law.

Policy ER5.6.2: Promote the creation of high occupancy vehicle lanes on State Route 14.

Policy ER5.6.3: Reduce the number of people commuting to the Los Angeles metropolitan area by promoting actions to increase the area's jobs/housing balance.

Policy ER5.6.4: Promote the use of the Metrolink commuter train between Palmdale and Los Angeles as a means of reducing vehicle emission along State Route 14. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

GOAL ER6: Ensure an adequate supply of mineral resources to meet long-term regional construction needs.

Objective ER6.1: Recognize the regional importance of the classified and designated mineral deposits within Palmdale's Planning Area (as described in Special Report 143, Part V, Classification of Sand and Gravel Resource Areas, Saugus-Newhall Production-Consumption Region and Palmdale Production-Consumption Region, and Designation Report No. 6, Designation of Regionally Significant Construction Aggregate Resource Areas in the Saugus-Newhall and Palmdale Production-Consumption Regions and as shown on Exhibits ER-1B and ER-1C) and discourage encroachment of incompatible land uses which could threaten the long-term viability of sand and gravel mining and processing operations in the Little Rock Wash area.

Policy ER6.1.1: Establish a Mineral Resource Extraction (MRE) designation. Permitted uses within the MRE designation shall consist of mineral resource extraction (quarrying) and quarry related uses. Non-quarry related uses shall be permitted within the MRE area only when the Planning Commission has made the following findings:

1. The proposed use is compatible with and will not be detrimental to existing and future quarrying operations; and

2. Long-term regional aggregate needs have been evaluated and available resources will remain adequate to meet the future needs of the market region.

Policy ER6.1.2: Prohibit incompatible land uses within the MRE designation. Example of incompatible land uses include, but are not limited to, residential, some public facilities, intensive industrial and commercial.

Policy ER6.1.3: Require adequate buffering measures between land uses within the MRE designation and incompatible uses outside of, and adjacent to the MRE area.

Policy ER6.1.4: The State designated Mineral Resource Areas within Palmdale's jurisdiction shall be included in the City's Mineral Resource Extraction (MRE) designation to the maximum extent feasible. In determining the boundaries of the MRE area, or in considering any proposed changes to these boundaries, the City shall weigh the following considerations:

1. The short term and long term economic importance to the region of conserving and developing aggregate resources;

2. The economic multiplier effect on industries, such as construction and trucking, derived from assuring a long-term low cost source of aggregate materials within the Palmdale Production-Consumption Region;

3. The location of State Designated Resource Areas;

4. The location of existing structures and projects under construction and the impact of quarrying operations on these uses;

5. The location of previously approved (entitled) projects and the impact of quarrying operations on these uses; and,

6. The location of property owned by entities not subject to regulation by the City.

Policy ER6.1.5: In order to assure the long term viability of present and future quarry operations, the boundaries of the City's MRE designation should be designed so as to minimize interface problems between future land uses within the MRE area and future land uses outside of the MRE area. The following physical issues should be considered in establishing the boundary for the MRE designation:

1. Noise and dust generation from quarrying operations and from the transportation of aggregate materials from the quarry sites;

2. Aesthetics/visual impacts;

3. Access to future quarry sites;

4. Protection of Significant Ecological Areas;

5. Protection of ground water recharge areas; and

6. Probable trucking routes and their impact on the regional circulation system.

Objective ER6.2: Ensure that the MRE area located within the Little Rock Wash alluvial fan is comprehensively planned.

Policy ER6.2.1: Adopt an Area Plan or equivalent comprehensive planning document for the Mineral Resource Extraction district associated with the Little Rock Wash. Prior to the preparation and adoption of a comprehensive planning document for this area, mining permits and reclamation plans may be processed in accordance with the MRE policies contained in the General Plan, the City's Zoning Ordinance and the requirements of the Surface Mining and Reclamation Act (SMARA), provided the City finds that the mining permit or reclamation plan, if approved, will not be detrimental to or jeopardize the City's ultimate ability to adopt a comprehensive plan for the area, including a master plan for the future reuse of the area. In making this finding, due consideration should be given to roadway access, arterial connectivity, proposed depth of excavation, proposed revegetation and proposed reuse. *(General Plan Amendment 93-3, adopted by City Council December 16, 1993.)* (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER6.2.2: In the Little Rock Wash area, address environmental concerns related to:

1. Ground water contamination;
2. Sensitive Ecological Areas of flora and fauna;
3. Performance standards related to dust and noise and their impacts on surrounding properties and uses;
4. Interface between mining activities and surrounding uses;
5. Aesthetics; and
6. Public safety.

Policy ER6.2.3: Establish a reclamation plan for the entire area that indicates what the various properties will be used for when mining operations cease, what the target land use designation and zoning shall be for the reclaimed lands, and how the transition to new uses shall be implemented.

Policy ER6.2.4: The area-wide reclamation plan should analyze and plan for adequate areas for groundwater recharge.

Policy ER6.2.5: Address circulation to minimize impacts on the City's existing and planned network, and or adjacent properties.

Policy ER6.2.6: Address infrastructure for the area, including appropriate means of controlling the floodway and managing the flood plain.

GOAL ER7: Protect historical and culturally significant resources which contribute to the community's sense of history.

Objective ER7.1: Promote the identification and preservation of historic structures, historic sites, archaeological sites, and paleontological resources in the City.

Policy ER7.1.1: Identify and recognize historic landmarks from Palmdale's past.

Policy ER7.1.2: Promote maintenance, rehabilitation, and appropriate reuse of identified landmarks where feasible.

Policy ER7.1.3: Require that new development protect significant historic, paleontological, or archaeological resources, or provide for other appropriate mitigation.

Policy ER7.1.4: Develop and maintain a cultural sensitivity map. Require special studies/surveys to be prepared for any development proposals in areas reasonably suspected of containing cultural resources, or as indicated on the sensitivity map.

Policy ER7.1.5: When human remains, suspected to be of Native American origin are discovered, cooperate with the Native American Heritage Commission and any local Native American groups to determine the most appropriate disposition of the human remains and any associated grave goods.

Policy ER7.1.6: Cooperate with private and public entities whose goals are to protect and preserve historic landmarks and important cultural resources.

Policy ER7.1.7: Promote recognition, understanding and enjoyment of unique historical resources within the community by identifying resources through the use of landmark designation plaques, directional signage, self-guided tours, school curriculum, programs and events. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER7.1.8: Discourage historic landmark properties from being altered in such a manner as to significantly reduce their cultural value to the community. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

GOAL ER8: Avoid the premature conversion of agricultural lands to urban uses.

Objective ER8.1: Identify significant farmlands pursuant to the State of California Important Farmlands Inventory and provide for their preservation as an interim use within the Planning Area. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER8.1: Encourage the preservation of agricultural lands in non-urban areas and as an interim use where urban development is not anticipated for several years.

Policy ER8.2: Preserve agricultural uses as a means of retaining aquifer recharge both naturally and through treated water sources.

GOAL ER9: Promote solar power as an alternative energy source while protecting natural resources. ***(General Plan Amendment 11-02, adopted by City Council December 7, 2011.)***

Objective ER9.1: Support the growth of the solar power as a renewable energy source in the City of Palmdale.

Policy ER9.1.1: Permit small-scale solar energy systems as of right within any zone as mandated by state law.

Policy ER9.1.2: Identify zones that minimize land use conflicts between existing and potential uses and utility-scale solar power generating facilities.

Policy ER9.1.3: Ensure that there is no potential conflict between the operational mission of USAF Plant 42 or other airport related uses and proposed solar facilities.

Policy ER9.1.4: Establish development standards for the design and development of utility-scale solar power generating facilities.

Policy ER9.1.5: Require all utility-scale solar power generating facilities implement a decommissioning plan that will restore the site to its natural state upon discontinuance of operations.

Policy ER9.1.6: Development of utility-scale solar power generating facilities within identified Significant Ecological Areas shall be consistent with General Plan Goal ER2.

SECTION 3: IMPLEMENTATION

Environmental resource management in the Planning Area will be accomplished through interdependent programs and standards. The implementation programs identified are discussed in detail below.

A. California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) (Division 13 of the Public Resources Code) was passed in 1970 to protect the quality of the environment. The City will continue to implement CEQA as it is amended from time to time, through adoption of City CEQA guidelines and procedures.

The program EIR for the City of Palmdale General Plan documents existing environmental conditions and provides an assessment of citywide and regional impacts expected to occur as development takes place under the General Plan. The EIR serves as the mechanism for evaluating proposed discretionary projects that may impact the area's resources and for providing appropriate mitigation measures. New implementation programs will be incorporated into the City's CEQA guidelines.

The General Plan EIR also contains a mitigation monitoring plan. In compliance with AB 3180 (Cortese), a mitigation monitoring plan must be adopted prior to project implementation. This document may be utilized to ensure that mitigation of project-specific impacts is undertaken in a timely manner. It also provides a feedback mechanism for determining the success of the City's CEQA guidelines and the effectiveness of mitigation programs.

B. Archaeological, Historical and Paleontological Measures

(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Historical, archaeological, and paleontological resource information maps have been prepared for use by City staff to identify areas with a high potential for resource sensitivity. The maps are used to evaluate the need for cultural resource surveys prior to development. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Developments in areas which are likely to contain cultural resources will be required to perform surveys and submit reports. When resources are identified, appropriate testing and preservation, mitigation, or salvage will be required.

C. Biological Measures

1. The City will require biological assessments and reports for projects in known or suspected natural habitat areas prior to project approval. These reports will be used to establish significant natural habitat areas and ecologically sensitive zones in order to prevent disturbance and degradation of these areas. Recommended mitigation measures as identified in the reports will be required to be implemented as development occurs.

2. The City will participate in a multi-jurisdictional habitat preservation plan for the West Mojave Desert area (West Mojave Coordinated Management Plan), and will implement the provisions of this Plan after adoption by the City Council.

D. Air Quality Measures

1. The City shall comply with the Antelope Valley Air Quality Management District requirements to implement the Tier I, II and III control measures described in the South Coast Air Quality Management Plan (SCAQMP), to the extent these measures apply to Palmdale. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

2. To reduce mobile source emissions the City will implement a trip reduction ordinance. The ordinance should consider the number of Vehicle Miles Travelled (VMT) estimated to be generated from each new development project in accordance with the requirements of AVAQMD, Los Angeles County Metropolitan Transportation Authority (MTA) and other affected agencies. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

3. Also, the City should support legislation that would provide tax incentives for developers to establish work centers in housing-rich Palmdale, and vanpool tax credit legislation which includes such provisions as granting tax exempt status to compensation received for specific ridesharing programs; allowing tax deductions for employees who rideshare; and special tax credits for alternative-fuel vehicles. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

4. To the extent feasible, the following measures shall be implemented to reduce emissions from Palmdale Airport (PMD):

    a. Reduce vehicle miles travelled to Palmdale Regional Airport through an Airport Ground Access Program for airport employers and passengers;

b. Reduce emissions by using ground power systems that include centralized air conditioning systems, while aircraft are parked at terminal gates;

c. Encourage the Airport Operator and AVAQUM to have all carriers use only Stage III aircraft in scheduled fleets using PMD; (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

d. Recommend a "gate hold" procedure at PMD;

e. Advocate a design for high speed taxiways that most effectively reduces emissions and conserves fuel;

f. Implement an engine shut down program if the benefit in reduction of ROG and CO emissions and energy conservation exceeds the adverse impact of increased NOx emissions;

g. Develop procedures to reduce fuel use by ground support vehicles, and ultimately to rely completely on cleaner alternate fuels.

6. To reduce emissions from natural gas combustion and electricity generation, the City will incorporate the most energy-efficient design consistent with a reasonable rate of return when retrofitting existing facilities and equipment in City buildings. In addition, the City will develop a public information program on energy conservation and cooperate with utilities to encourage energy audits of existing structures, identifying levels of existing energy uses and potential conservation measures.

7. Also, the City will analyze the potential for the alternative use of any public facility, which is slated to be closed or consolidated with another facility, as a neighborhood work center; this policy should be communicated to affected agencies, such as the school board and library commission.

8. Finally, the City will adopt appropriate ordinances relating to trip reduction, non-motorized transportation, employer rideshare and transit incentives, parking management, merchant transportation incentives, auto use restrictions, and truck routing to both achieve compliance with the Antelope Valley Air Quality Management Plan and to implement City programs and standards. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

E. Parks, Recreation and Trails Element

Parks and recreation facilities will be developed according to a master plan as contained in the City's Parks, Recreation and Trails Element. The provision of parks and recreation areas in the Planning Area will ensure a full range of active and passive recreational activities to residents and visitors alike. The City's Parks, Recreation and Trails Element contains a complete description of existing parks and criteria for siting new parks in Palmdale.

F. Trail System

The City will ensure development and maintenance of a multi-purpose (equestrian, hiking, and bicycle) trail system throughout the Planning Area. The trail system will ultimately connect existing national forest trails to parks and recreation areas in the region. This system will provide an alternative means of travel to and through natural areas and along scenic roads. Plans and implementation measures for trail systems are contained in the Parks, Recreation and Trails Element. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

G. Scenic Roadway Designations

The City shall protect scenic highways in the Planning Area. Scenic highways and roads have been identified in Policy ER1.2.2 of Section 2. They include the Antelope Valley Freeway south of Avenue R, Barrel Springs Road, Tierra Subida Avenue, Sierra Highway (south of Avenue S), and Elizabeth Lake Road, Pearblossom Highway, Bouquet Canyon Road, and Godde Hill Road. These roadways possess scenic qualities that have provided outdoor recreation experience to travelers and hikers. Exhibit ER-1 shows the location of these locally significant scenic streets and highways. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

The City should apply to the State Scenic Highway Advisory Committee for State designation of these roadways. This designation could afford visitors the enjoyment of views along the routes and provide extra protection to this resource.

The City will establish a design criteria for designated scenic highways that requires specific design standards for nearby development. These standards could include the following: height limits to preserve view corridors, limits or standards for outdoor advertising and signs, maintenance of roadside landscaping, limits on grading activities along highways, and the prohibition of overhead utility rights-of-way along scenic highways. In addition, a visual impact analysis may be required for developments within the overlay zone in order to preserve the visual qualities of scenic routes.

H. Mining Standards

In accordance with the provisions of the Surface Mining and Reclamation Act (SMARA) and subsequent amendments, the City of Palmdale has adopted an ordinance implementing mineral resource management policies. Mining within designated aggregate resource areas requires approval of a conditional use permit (CUP) before operations begin. The CUP shall be granted for a period of time as specified by the Planning Commission with renewals approved by the Planning Commission. In addition, renewal of the CUP is dependent on the success of proposed mitigation measures for residual hazards. The ordinance also requires a reclamation plan for returning the site to reusable condition following cessation of mining operations. State environmental regulations require ongoing monitoring of operations to ensure adequate mitigation of adverse impacts.

The City has developed standards for mining activity in the Planning Area in conjunction with the Mineral Resource Extraction (MRE) land use designation (Exhibit LU-2). Mineral resource extraction is appropriate in these areas, as along as it complies with the following conditions:

1. Approval of a reclamation plan in compliance with the state Surface Mining and Reclamation Act (SMARA), as amended, and City regulations.

2. Standards for development in areas adjacent to the MRE designations require that all new residential, commercial or industrial development provide buffering from quarrying operations that will conform to policies contained in the General Plan relating to noise, dust control, traffic or other impacts identified through the environmental review process. Where the Mineral Resource Extraction (MRE) land use designation is adjacent to existing or approved but unbuilt development, the responsibility for buffering impacts of quarry operations shall be upon the quarry operator. Where the MRE designation is adjacent to vacant land which has no approvals for development, the responsibility for buffering shall be shared by the future developer of the vacant property. In all cases, concentrated noise generators shall require buffering from the boundaries of the MRE designation to mitigate noise impacts on adjacent uses.

3. One of the Mineral Resource Extraction areas covers a major groundwater recharge area and there exists a potential for groundwater contamination; thus, mining is not permitted below the groundwater level or to a level as determined through environmental analysis. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

4. Noise impacts must be minimized by ensuring that the noise level at the property line is 65 dBA CNEL or less, when noise-sensitive uses or designations abut the quarry.

5. Mining areas must be fenced with a 6-foot view obstructing fence, wall, or landscaped berm along public streets or adjacent to residential areas.

6. Use of asphalt and petroleum-based materials, or other operations which may impair groundwater quality, in the Mineral Resource Extraction designation are prohibited, unless substantial evidence is provided to demonstrate that such uses will not have significant impact on groundwater or other resources.

7. Safety measures for routine operations shall be established prior to permit approval.

8. As the Little Rock Wash MRE area may potentially contain sensitive ecological habitat, and has been indicated on the General Plan Land Use map as Significant Ecological Area (SEA) overlay zone, appropriate steps shall be taken to identify, and protect any significant flora and fauna.

9. All mining operations in the Little Rock Wash area shall incorporate flood plain management provisions into their operations.

I. Native Desert Vegetation Ordinance

The City has adopted Ordinance No. 952, referred to as the Native Desert Vegetation Ordinance. This ordinance is designed to preserve a number of specimen quality juniper and Joshua trees which add to community identity, and to encourage the use of native vegetation in new development landscaping. All landscaping for new developments must conform to the requirements set forth in the Native Desert Vegetation Ordinance. In keeping with the intent of this Ordinance, the City may require preservation of significant stands through use of the Specific Plan process or equivalent planning process, and through design review processes on individual projects.

J. Landscaping Standards

The City has adopted landscaping standards which address the following needs:

1. Reestablishment of compatible native plant materials on newly graded areas;

2. Landscaping of exposed slopes and graded areas for erosion control;

3. Water and energy conservation techniques, such as drip irrigation, drought tolerant species, and alluvial rockscape;

4. Use of fire resistant vegetation and fuel modification techniques; and

5. Use of drought-tolerant plants to help in conserving water.

The City's Landscape Architect will review landscape plans for all new development to ensure compliance with the City's landscape requirements. This process allows the City an opportunity to promote native vegetation and set guidelines for landscaping and irrigation. The City has developed a listing of recommended plant species for perimeter landscaping and for use in the landscaping of new development. In addition, the City has compiled a separate listing of representative plant species found in the western Mojave Valley for use in developing "native" landscaping plans. Both listings are available to the public in the City's Planning and Engineering Departments and will continue to be utilized to ensure compliance with City landscaping standards.

K. Hillside Ordinance

The City has adopted a Hillside Management Ordinance to protect the hillsides from insensitive development. The ordinance contains standards which apply to areas with a natural slope of 10 percent or more. Development standards for hillsides are further discussed in the implementation section of the Safety Element. In addition to safety benefits, these standards will help to preserve open space and visually prominent landforms. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

L. Open Space and Conservation Plan

The City's Parks, Recreation and Trails Element includes an open space and conservation plan to plan the acquisition and maintenance of vital open space areas. This plan will help coordinate efforts to provide open space and recreation opportunities to residents, as well as preserving sensitive habitats and species, where present. The Ritter Ridge, Portal Ridge, Little Rock Wash, Big Rock Wash and Alpine Butte areas, shown on the Overlay Map and Exhibit ER-5, should be evaluated to determine the nature and extent of any significant ecological areas, and an appropriate financing mechanism to acquire those areas of particular importance. All available regional, state and federal funding will be solicited in order to acquire targeted significant ecological areas. The plan also includes criteria to identify appropriate new open space areas and to evaluate potential additions to the open space network. Additionally, the City may require dedication of open space, when appropriate, as a part of the development review process. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

M. Species of Special Concern

The City shall continue to promote the protection of sensitive, rare, threatened, and endangered species found in the Planning Area through biological surveys required as part of the CEQA review process. The City will coordinate with the California Department of Fish and Game and the U. S. Fish and Wildlife Service to determine the best means of providing protection. In addition, the City is participating in the preparation of the West Mojave Coordinated Management Plan, which will provide management prescriptions for desert tortoise and Mojave ground squirrel.

The City shall identify and inventory areas of significant sensitive ecological habitat and shall prohibit disturbance of these areas to the extent feasible.

The City shall establish preventative measures where sensitive ecological areas have been determined to occur adjacent to equestrian trails. These measures could include use of interpretive signage to discourage vandalism or relocation of the trail away from the sensitive zone.

N. Community Design Element

(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

The City will review proposed developments to ensure compliance with the policies adopted in the Community Design Element of the General Plan. The City's Community Design Element has been developed to guide public and private decisions in the process of the City's physical development. The standards encompass physical aspects including architecture, landscaping, roadways, landmarks, signage, open space and views, and the overall image of the City in relationship to its surroundings. These standards are implemented through zoning, specific plans or development plan review. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

O. Agreements with Other Entities

The City of Palmdale will pursue agreements with other jurisdictions or entities, such as local school districts, utility easement holders, and the County of Los Angeles to provide more recreational opportunities for Palmdale residents. These agreements can be formal contracts or memoranda of understanding and can help eliminate the duplication of services. Agreements can provide for public recreation on school grounds and allow for the joint use of other public and private facilities.

P. Development Fees/Park Land or Open Space Dedication

Based upon its adopted Parkland Ordinance, the City of Palmdale will require the dedication of parkland or the payment of a parks fee by new developments in the City. The fees or land must be used to provide new land for parks or to subsidize the acquisition and maintenance of parks. This measure ensures that residents of new developments will eventually have access to adequate parks and recreation facilities without overburdening the City's financial resources. Dedication may also be used to acquire open space areas. Fees and land dedication are further discussed in the Parks, Recreation and Trails Element.

Q. Park Needs Surveys

The Parks and Recreation Department will periodically assess the community's park needs and adjust park programs accordingly, by conducting surveys of park users to evaluate existing programs and types of park use (active, passive, etc.). Present and future park needs will be evaluated pursuant to the City's Parks, Recreation and Trails Element.

R. Groundwater Recharge Program

The City will cooperate with local water providers and flood control agencies to develop a groundwater recharge program. The City can contribute to this effort by ensuring that major recharge areas be kept undeveloped to aid in water recharge.

S. Water Recycling and Reuse

The City should continue to monitor, along with the Los Angeles County Sanitation District, the feasibility of expanding water reuse programs. Treated wastewater is currently used to irrigate some agricultural areas growing non-food crops. With the growing population, supplies of treated water will increase. Treated wastewater might be used to irrigate roadside and commercial landscaping, in addition to agricultural lands, to help conserve Palmdale's limited fresh water resources. The City may offer incentives to agricultural, commercial, and residential developments that use recycled water for irrigation. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

T. Master Drainage Plan

The City's Master Drainage Plan indicates natural drainage courses in Palmdale and other areas sensitive to flooding. Groundwater recharge areas are noted which could aid the City in developing water conservation programs. The City will actively pursue the construction of drainage facilities recommended in the plan and address

development restrictions in floodplain areas. The City's Master Drainage Plan is discussed in the Public Services Element.

U. Land Use Element

The City shall review proposed developments for compliance with the Land Use Element. The Land Use Element outlines the desired pattern of development for Palmdale and its sphere of influence. This land use plan can work in conjunction with other City programs to guide development to an appropriate pace and pattern. Land use approvals for individual projects will provide consistency with general development, conservation, and open space plans.

V. Cultural Resources

The City will map all known historic, archaeological, and paleontological resources and ensure the protection of these resources. The City will review plans for development in potentially sensitive areas. Development in paleontologically and archaeologically sensitive areas where impacts cannot be mitigated will be discouraged.

W. Circulation Element

The City shall implement its adopted Transportation Demand Management Plan. Transportation Demand Management (TDM) plans can reduce the use of private automobiles in the Palmdale Planning Area. The implementation of ridesharing, vanpools, and other transportation programs can reduce automobile emissions and help improve local air quality. TDM plans are discussed in the Circulation Element. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

X. Alternate Energy Sources

The City shall support programs designed to reduce energy consumption and to utilize alternative energy sources.

Y. Regional Coordination

The City shall coordinate with Los Angeles County, the City of Lancaster and the City of Santa Clarita in addressing issues which affect the Antelope Valley, such as traffic, open space, air pollution, and natural resource issues.

Z. Public Information

The Planning Department will disseminate public information on City development standards and guidelines relating to environmental resource protection.

SECTION 4: ISSUES AND OPPORTUNITIES

This Element of the Palmdale General Plan considers a wide range of issues, to ensure that future development in the City of Palmdale and its Planning Area is sensitive to the environment. This section of the Element describes existing conditions in the Planning Area and provides the supporting analysis that led to the recommended goals, policies, and implementation measures contained in previous sections. Additionally, more detailed information on each issue can be found in the program Environmental Impact Report for the General Plan.

A. The Environment

The City of Palmdale is located in the Antelope Valley, in the western portion of the Mojave Desert. The Planning Area is just north of Soledad Canyon, north of the San Gabriel Mountains, with sections of the Sierra Pelona Range bordering the Planning Area on the southwest. The Planning Area ranges in altitude from 2,450 feet to 2,700 feet with the surrounding mountains rising up to 4,000 feet above sea level. The topography varies from almost flat with occasional drainages and sand dunes on the valley floor to steep foothill and mountain areas on the south. The San Andreas Fault traverses the Planning Area parallel to and just north of the mountains. Junipers, Joshuas trees, and desert chaparral are found in scattered areas throughout the City. Natural drainage channels, including the Amargosa, and Anaverde Creek and Little Rock and Big Rock Washes run generally north and northeast across the Planning Area toward the Rosamond and Rogers dry lakes. The City is bounded on the north by the City of Lancaster. Rural unincorporated county areas characterized by a number of desert buttes extend eastward from the Planning Area.

The climate is characteristic of the southern Mojave Desert. The mountain ranges block cool, moist coastal air and create hot, dry summers and cold winters. Seasonal rains (thunderstorms) are common but creeks are dry during much of the year. Mean temperatures range from 18°F in January to 108°F in July, with a daily average range of 46° to 77°F. Annual rainfall ranges from 5 to 11 inches and occasional snow can be expected during winter.

Recent population growth has been spurred by the availability of relatively affordable housing and proximity to major employment centers, as well as annexation. In turn, the housing boom has created a demand for retail goods and service providers and new industrial development has begun to increase in the past few years. Development patterns are not concentric from the City center; rather they are generally irregular and dispersed. Existing development has generally followed an east/west pattern, extending from about 75th Street West to about 75th Street East (145 miles). This area will likely experience continued infill development over the next several years due to the approval

of several large residential specific plans in the south and southwest portions of the City as well as a resurgence in development interest posed by land owners following the recession of the 1990s. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Relative to environmental resources, population growth means the expansion and intensification of human activity and ensuing development. The state of the natural environment changes with the advent of this development. Animal and plant life is disturbed, land forms may be changed, air quality can deteriorate, and water supply and natural resources may be depleted. Population growth and development in the Palmdale area has altered natural habitats, bringing in new forms of animal and plant life, and limiting access to underlying resources. These consequences could permanently modify the ecology of the area.

To ensure that ecological balance is maintained, most projects are required to assess their environmental impacts before approval and implementation. The City encourages development to the extent that harmful effects are mitigated. At times, however, development is incremental and the consequences to the environment may go undetected. The cumulative effects of many projects magnify environmental changes considered minor for one project, sometimes resulting in biological degradation. However, at that point, projects may be in place and mitigation measures no longer easily implemented. One purpose of this Element is to identify particularly valuable open space resources and plan for their preservation on a Citywide basis.

The location and amount of open space partly determines the quality of the environment. Natural and scenic landscapes provide psychological relief to daily stresses, aside from health and safety functions. Recreation promotes physical and mental health and, thus, should be encouraged and supported. However, the pressures for development compete with the need for open spaces. The economic returns promised by intensive land uses often overshadow the public health and safety benefits of undeveloped land, particularly for the individual land owner. Yet urbanization does not necessarily mean the destruction of environmental resources; only the need to recognize and plan for a balance between development and open space preservation.

The need for environmental resource management stems from these concerns. Through guidance, regulation, and support, the City intends to promote a balance between natural and man-made environments.

B. Environmental Issues

1. Open Space

Open space is generally defined as areas that are not built upon and may include both man-made and natural landscapes. The term refers to all land and water in the Planning Area that has value for recreation, conservation, historic, or scenic purposes, and is not covered by buildings or streets. Open space can separate or unify urban functions or areas, depending on its form and location. In addition, open space provides opportunities for resource production, enjoying scenic views, conservation of habitat and natural resources, outdoor recreation, public health and safety, and development management and control.

A wide variety of open spaces currently exist within the Planning Area. The Ritter Ridge area may contain unique geologic features and plant and animal resources. Mature and significant stands of native vegetation are also found in scattered undeveloped areas. There are remnants of Palmdale's agricultural past, such as almond orchards near Godde Hill. Lake Palmdale is a cold water reservoir that offers recreational uses to members of the Fin and Feather Club. Perhaps the largest area of open space in the Planning Area is the surrounding hills and mountains, which provide a scenic backdrop to Palmdale.

The undeveloped state of private lands does not ensure long term preservation of open space areas. If a look at Palmdale shows vast open areas, this condition is directly related to the amount of vacant land and existing low-density development, not because these areas are designated open space. Much of the land currently vacant is planned for development. Unless vacant land is designated as open space, it is likely that most of it may be developed during the life of this plan.

A comprehensive plan for open space will help to retain those areas most suited to open space and to focus development elsewhere. The plan is expected to deal with significant ecological areas, park sites, and scenic highway concerns, as well. When possible, open space corridors will be designed with the intention of preserving selected riparian areas, canyons, ravines, and ridge lines. The open space network should be designed in conjunction with equestrian and hiking trails and parks, as well as natural areas. Open space areas will help to retain natural biotic communities, which contribute to the natural beauty of the City.

Open space can successfully function under the multiple-use concept. For example, land that is designated as a flood water retention basin may be used for recreational purposes such as little league fields. This shows the relationship between the preservation of open space and other resource issues addressed in this Element.

Open space in the Planning Area must be designated early to avoid land cost escalation and competition for alternative land uses. Some areas, such as the earthquake rift zones, landslide or rockslide prone areas, and areas with flooding or subsidence problems have remained undeveloped to date because of the high cost of engineering needed to meet state and federal safety standards. However, as development increases and property values appreciate, it may become feasible to develop these hazard zones as well. Building technology is also improving, allowing construction in areas where it was previously not possible.

There are two primary ways that the City can preserve open space:

- Purchase or acquisition of specific parcels with characteristics that residents want to see preserved in open space.

- Requiring the design of all new development to include open space areas.

The purchase of vacant land for open space is limited by City funds available for such purposes. Although the City and most residents agree that one of the most attractive features of Palmdale has been the vast amount of open space, this open space is difficult to preserve by regulation of development design. In the past, open spaces provided by individual developments tended to be smaller, local parks which are scattered instead of being arranged as a part of an overall system of open spaces. However, on two large specific plans recently approved by the City, more than 7,000 acres was set aside as permanent, publicly accessible open space. This concept may be utilized by other large developments as well, particularly in hillside areas.

2. Conservation

The need for the conservation of natural resources stems from their limited supply. Also, the benefits of conservation are not confined to the owners of the resource and the immediate vicinity. Indirect users and the community at large benefit from resource conservation and stand to lose from its depletion. Thus, it is in the interest of local government to promote conservation. Depending on the nature of the resource, conservation could include efficient use, managed production, or preservation.

Agricultural Resources

Currently, agricultural production in the Palmdale Planning Area primarily occurs on land within the Los Angeles Department of Airports future Regional Airport site, nearly all of which is under jurisdiction of Los Angeles County. (See Exhibit ER-1A.) According to the Los Angeles Department of Airports, about 2,250 acres are currently being used for

agriculture use, with an additional 1,800 acres planned in 2004. Most of this land is leased from the City of Los Angeles by L.A. County Sanitation District. The Sanitation District will be expanding its production of non-food crops such as alfalfa hay by more than 1,800 acres starting in the spring of 2004. Over 1,000 acres are also being farmed between the airport property and Avenue L, which would total more than 5,050 acres being farmed within Palmdale's Planning Area. Crops consist of pistachio orchards, pine and ornamental trees, alfalfa, sod, onion, carrots and tomatoes. This area is not classified by the State as prime agricultural land. Agricultural production from these parcels is not considered to be regionally significant, and is planned as an interim use until such time as the Regional Airport is developed. It is not the City's goal to preserve this area for permanent agricultural production. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Mineral Resources

Mineral resources include nonrenewable deposits of ore, stone, and earth materials. Gold, copper, lead, silver, zinc, and manganese deposits are believed to be scattered throughout the San Gabriel Mountains. The largest known resources of titanium in California are found in the western San Gabriel Mountains. The majority of these mines, however, have long been inactive.

Nonmetallic minerals of commercially significant quantities in the study area are located in widely segregated areas. These include anorthosite, apatite, asbestos, barite, borates, feldspar, fluorspar, graphite, and mica. Although their commercial production may be doubtful, the presence of these materials should be considered, to the extent possible, in land use planning as their location becomes known and mapped.

Known and potential major deposits of sand and gravel, crushed rock, clay, limestone, and dolomite have also been identified in the Palmdale area by the State Division of Mines and Geology. These mineral resources are used primarily in construction, and statewide, rank second only to fuels in economic significance. Because transportation costs are high for these materials, their value depends on proximity to the user. The area's construction industries rely on local resources for aggregate supply in the region. Sand and gravel deposits are found extensively in flood plains and stream channels located north of the San Gabriel Mountains in the Little Rock and Big Rock Wash areas. While its importance is often overlooked, sand and gravel is an essential commodity in today's society. As a construction material, sand and gravel is a key component in products such as portland cement concrete, asphaltic concrete, railroad ballast, stucco, road base and fill. The availability of aggregate deposits and their proximity to markets are critical factors in the strength of this region's economy.

Urban expansion has been the major cause of a decline in the availability or access to significant sand and gravel resources. The loss of these deposits has occurred because land use planning decisions have often been made without reference to location and importance of these resources.

In an effort to remedy this problem, the State Surface Mining and Reclamation Act (SMARA) provides for a mineral lands inventory process which the State terms "Classification - Designation". The Department of Conservation, its Division of Mines and Geology, and the State Mining and Geology Board are the State agencies responsible for administering this process. The primary objective is to provide local agencies -- such as cities and counties -- with information on the location, need and importance of mineral resources within their jurisdiction. The second objective of this process is to assure that this information will be considered in local land use planning decisions. This second objective is implemented through the adoption of local general plan mineral resource management polices.

The State Division of Mines and Geology has classified urbanizing lands within the Palmdale Production-Consumption Region by Mineral Resource Zones (MRZs) according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of Portland cement concrete (P.C.C.) grade aggregate (California Department of Conservation - California Division of Mines and Geology. 1987. Mineral Land Classification of the Greater Los Angeles Area. Special Report 143, Part V - Classification of Sand and Gravel Resource Areas, Saugus-Newhall and Palmdale Production-Consumption Regions). If a deposit contained more than $5 million worth (in 1978 dollars) of suitable material that could be extracted and marketed profitably under present technologic conditions, or those which could be estimated to exist in the foreseeable future, the deposit was classified MRZ-2. Two MRZ-2 areas were classified within the Palmdale area. These two resource areas are associated with the Little Rock Wash, the Big Rock Wash, and their respective stream beds, flood plains and alluvial fans. Additionally, the State formally established the Palmdale Production-Consumption Region, consisting of much of the western Antelope Valley, including the Lancaster and Palmdale metropolitan areas. The Palmdale Production-Consumption Region encompasses an area of about 1,103 square miles and presently contains a population in excess of 150,000.

On January 3, 1987, the State designated two (MRZ-2) areas as "regionally significant" mineral resource areas within the Palmdale area (see Exhibit LU-2) (California Department of Conservation - CDMG and State Mining and Geology Board. Designation of Regionally Significant Construction Aggregate Resource Areas in the Saugus-Newhall and Palmdale Production-Consumption Regions. SMARA Designation Report No. 6. January, 1987). Sector D on the exhibit corresponds with the Little Rock Wash alluvial fan. The State has estimated that Sector D contains about 1000 million tons of

aggregate resources. Sector E corresponds with the Big Rock Wash alluvial fan and lies almost entirely outside of Palmdale's Planning Area. (See Exhibit ER-1B and Exhibit ER-1C.) The State has estimated that the designated resource areas within the Palmdale Production-Consumption Region contain a total of about 2,155 million tons of resources. The State has estimated that consumption within the Palmdale Production-Consumption region within the next 50 years will be 122 million tons given present growth rates, etc. and barring unforeseen events such as a natural disaster.

Sand and Gravel mining is currently occurring along Avenue S, east of 70th Street East. The aggregate being extracted there is important to the construction industry in the Antelope Valley and greater Los Angeles area. In accordance with State policy, the City of Palmdale has established policies which will assure continued access to these mineral resources, ensure that development occurring in the vicinity of mining operations is adequately buffered from any adverse effects of the mining operations, and that the extraction and processing of these mineral resources occurs without competition from other incompatible land uses. Within this designation, the mixing of raw sand and gravel materials with other processed ingredients for use throughout the region will be allowed, provided safeguards are in place to prevent contamination of the ground water or damage to sensitive ecological areas within the area. The Mineral Resource Extraction (MRE) district has been designated on the Land Use Map to recognize and permit extraction and processing of mineral resources. Generally, this designation covers the area outlined by the State as the MRZ-2 area with the exception of those lands that are either already developed or have already been approved for development in prior years (see Land Use Map). The area designated for mineral resource extraction on the Land Use Map contains approximately 600 million short tons of resource reserves.

Water Resources

The Antelope Valley is an inland basin within the southwestern Mojave Desert. The groundwater system consists of a principal (upper) and a deep (lower) aquifer covering 900 square miles separated vertically by lacustrine deposits (silts and clays deposited when an inland lake covered the valley). These aquifers were formed by the uplifting of the San Gabriel and Sierra Pelona Mountain Ranges, the Tehachapi Mountains, and the Soledad Mountain upland. Subsequent erosion resulted in the deposition of up to 2,000 feet of alluvium and sediments in the Mojave Basin. The principal aquifer overlies the lacustrine deposits and supplies all water pumped from wells in the Antelope Valley. The deep aquifer underlies the deposits (see Exhibits ER-2 and ER-3). Water moves downward from the principal aquifer to the deep aquifer on the western and southern limits of the lacustrine deposits (Durbin 1978). Upward movement from the deep aquifer to the principal aquifer occurs in areas of extensive pumping of groundwater.

Older alluvium deposits consist of silt, sand, gravel, and boulders characterized by their ability to store and yield water. The complex interbedding, frequently found at depths greater than 100 feet, has been exposed in the west Antelope Valley. In certain areas, the deposition of sediments has resulted in impervious layers which block the downward movement of irrigation and recharge toward the aquifers. This impervious sedimentary layer has resulted in a temporary perched water condition around Lancaster, where irrigation-recharge water is retained above the water table.

Younger alluvium deposits make up the alluvial fans found at the base of the San Gabriel Mountains. These deposits are up to 100 feet thick but can be found at lesser thickness, as far into the basin as the "playas". They act as conveyors of water, but generally do not store a significant quantity. Silts and clays that are not deposited in the alluvial fans are transported to lower sections of the basin by infrequent major storms. The result of this deposition is the dry lake bed, or "playa".

The Mojave Basin consists of the Fremont and the Lancaster sub-basins, which are divided into 15 sub-units. Sub-units have been isolated by differences in groundwater elevation (caused by faults or consolidated rock masses) and in some instances, by convenient, arbitrary boundaries. The Lancaster sub-basin contains six sub-units that are wholly or partly in Los Angeles County.

The Lancaster sub-unit, largest of the sub-units, supplies the majority of groundwater to the Planning Area. Groundwater movement is generally northeasterly from the foothills of the San Gabriel and Sierra Pelona Mountains towards the Rosamond and Rodgers Dry Lakes. Distorted movement occurs due to pumping depressions found at Antelope Acres, Hi Vista, Quartz Hill, and Edwards Air Force Base. Water levels in these areas have been observed to decline as much as 80 feet from 1952 to 1980; however, available studies on groundwater supply within the Antelope Valley contain conflicting information on groundwater levels. The cities of Palmdale and Lancaster, Los Angeles County, and local water purveyors are undertaking a comprehensive groundwater study which will further clarify this issue.

Perched groundwater often occurs at depths of less than 50 feet and may approach depths of less than 25 feet after heavy rains or intensive irrigation. A perched condition occurred extensively in the Lancaster area due to the presence of an alluvium-filled lake bed. At one time, this condition resulted in artesian water in Lancaster. Due to extensive pumping, however, artesian wells no longer occur.

A second subunit, referred to as the Pearland sub-unit, is located along the base of the San Gabriel Mountains extending from Palmdale to Llano, with groundwater movement from southeast to northwest toward the Lancaster sub-unit. There are no known

pumping depressions or perched conditions. Water is from 100 to 250 feet below the surface.

The Buttes sub-unit is north of the Pearland sub-unit. Groundwater in the unit moves northwest into the Lancaster sub-unit. Depth to water ranges from 50 to 250 feet. Data from 1965 to 1982 show declines in water level of as much as 50 feet over this period. Exhibit ER-4 shows the aquifer boundary and groundwater elevations during the spring of 1984. The contours indicate the flow of groundwater within the aquifer. Groundwater in the Buttes and Pearland sub-units migrate generally northwest toward the north-central part of the Lancaster sub-basin. On the southern part of the Planning Area are areas which are made up of consolidated bedrock that contain limited groundwater. There are few wells in these areas and no data on water levels has been collected. Because these areas are at a relatively higher elevation, they are sources of recharge to the Lancaster sub-unit.

The chemical quality of the groundwater in the Mojave Basin is generally satisfactory for domestic use and irrigation, as well as for most commercial and industrial uses. Total dissolved solids range from 200 to 800 milligrams per liter, with hardness as high as 1950 milligrams per liter near Rogers Dry Lake. Although the present quality is satisfactory, there is a trend toward poorer groundwater quality, due to urban runoff, septic tank failures, declining water tables, and the perched condition in Lancaster.

The Antelope Valley is not part of the larger county recharge area. The surrounding mountains funnel water towards the valley floor, thus providing the valley with a self-contained water cycle. The total recharge is the quantity of water that goes back to the underground basin or water source. Natural recharge of groundwater in the area is through the percolation of surface water. The percolation of storm runoff in the alluvial fans of the Amargosa and Anaverde Creeks, and Big Rock and Little Rock Washes provides recharge to the Lancaster sub-basin. Recharge rates in the area are subject to the fluctuation of winter rains. Occasional severe storms result in high runoff volumes that flow across the valley floor on impervious soils and are lost to evapotranspiration. The Little Rock and Lake Palmdale Reservoirs have been constructed to conserve a portion of this excess runoff.

Overdrafting or pumping in excess of the recharge is prevalent in the Antelope Valley. Groundwater wells serve 80 percent of Palmdale's water needs and the California Aqueduct provides the remaining 20 percent. Groundwater recharge through the ground seepage of rainwater, however, is limited to an average of 9 inches of annual rainfall (although local rainfall only averages 5.15 inches annually, rainfall in the higher portions of the watershed is greater). With evaporation, the actual amount of water that reaches the basins by percolation is even less.

The continued reliance on groundwater to meet current and increasing demands for water due to rapid urbanization in the Valley has lowered the water table continuously. Rates of decline ranging from 1-foot per year in non-pumping areas to 12 feet per year in existing pumping depression drawdowns are not uncommon during the summer pumping season. Although no current data are available, USGS estimates a 200 foot decline in the water table in the last 60 years. Some water districts serving the Planning Area have reported 6 foot declines per year in their wells. To counteract overdrafting, the Los Angeles County Department of Public Works has established recharge programs in the region. In 1987-88, 2,927.1 acre feet of local water was spread in the Big Rock area to reduce the groundwater overdraft. Still, groundwater levels have declined steadily in the Lancaster Basin.

Although Palmdale is considered dry desert land, there are surface water sources in the area. Local streams are formed from rain and melting snow on the mountains. Ran and snow, in the form of run-off, pass through canyon streams and into the valley. The Amargosa and Anaverde Creeks, and Little Rock Wash are not perennial streams. Surface flows occur only during occasional storms. Sheet wash is common over flat areas as new water ways and channels are made when a storm Is unusually heavy. Water ponds are found in winter, but dry up in summer due to evaporation. The Lake Palmdale and the Little Rock Reservoirs serve as runoff catchment and storage areas to help meet local water needs. They provide recreational opportunities to the public as well. Surface waters in the Planning Area serve as biological habitats, recreational resources, and a flood hazard.

Localized flooding in Palmdale occurs occasionally due to the runoff velocity from the steep slopes. The high velocity does not allow substantial ground seepage and causes intermittent floods in the flat lands. The velocity also makes the runoff erosive and hazardous. Developed areas and some areas with impervious soils experience increased runoff which overflow existing flood control facilities. This condition has raised concerns for public health and safety.

Some areas in Palmdale have been developed using individual septic systems for each home rather than being connected to a public sewer system. Septic systems are still used in the non-urbanized portions of the Planning Area and in some of the developed county island areas. Septic systems must be maintained in order to avoid contamination of the water in surrounding areas. Installation of an adequate public sewer system may be necessary in order to preserve the quality of the groundwater resource.

Biological Resources

The biological composition of the Palmdale area presents a transition zone from montane plant communities to communities more commonly found in desert conditions (see Exhibit ER-5). Naturally occurring wetlands in the area are either associated with the existing stream courses of the Amargosa and Anaverde Creeks, the Little Rock and Big Rock Washes, or upwelling groundwater along the San Andreas fault rift zone. For example, the wetlands near Lake Palmdale were caused because the San Andreas Fault interrupts underground water flow, diverting water to the surface.

Vegetation in the Planning Area consists of six plant communities: desert scrub, junipers/Joshua tree woodland, ruderal, chaparral, oak woodlands, and riparian. Desert scrub consists of widely-spaced evergreen and deciduous scrubs occupying gentle and steep slopes that have gravelly to sandy soils. Sparse annual grasses and herbaceous species grow in the understory. The junipers/Joshua tree woodland areas feature California junipers and Joshua trees 10 to 15 feet in height and accompanied by a diverse flora. Junipers are found on higher ground and Joshua trees on north-facing slopes and the lower plains. Rapid development in the Palmdale area has raised concerns about the destruction of large numbers of Joshua trees.

Ruderal communities are composed of weedy species on areas with loose soils, high temperatures, intense light, and low moisture. Abandoned agricultural fields and over-grazed desert scrub areas support ruderal plant species. Chaparral plants can be found on dry, hot slopes with thin and rocky soil. These woody, thick-leaved shrubs, 4 to 8 feet in height, are adaptive to low moisture and fire. They can be found on the slopes of the Sierra Pelona Mountains, integrated with the junipers and desert scrub communities.

Oak woodlands are found in the Ritter Ranch area on higher north-facing slopes. They are relatively dense and plant species diversity is high. The woodlands are dominated by blue oaks, canyon live oaks, and desert scrub oaks. Understory plants are predominantly shrubs associated with chaparral communities.

Riparian plant communities occur around drainage and low areas. Desert alluvial wash, desert olive arroyo/canyon woodland, willow and cottonwood woodlands, and freshwater alkali marsh are the major types of riparian communities in the Planning Area.

Wildlife in Palmdale includes a variety of native and introduced species. Amphibians are seasonally abundant in willow and cottonwood woodlands and freshwater marsh habitats. Reptiles, small mammals, and a number of bird species also occur in the Planning Area. Several sensitive animal species may be present in the area as

indicated by their preferred habitats. These include the Mohave ground squirrel, desert tortoise, pale big-eared bat, white-eared pocket mouse, Le Conte's thrasher, sharp-shinned hawk, Cooper's hawk, golden eagle, prairie falcon, and, less commonly, the burrowing owl, tri-colored blackbird, long-eared owl, northern harrier, black-shouldered kite, American badger, and San Diego horned lizard.

Although these areas are currently being considered for expansion, Los Angeles County has identified five sensitive ecological areas (SEA) in the Planning Area (see Exhibit ER-5). One is Little Rock Wash, which runs from the San Gabriel Mountains to the Mojave Desert. It contains shadescale scrub, creosote bush scrub and desert riparian habitats and provides a nesting habitat for birds and a variety of mammals. Little Rock Wash supports diverse wildlife, serves as a migration corridor, and helps in the seed dispersal of desert plants. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Another SEA is Ritter Ridge, found between the Sierra Pelona foothills and the Antelope Valley. Ritter Ridge has a mix of Joshua trees and California junipers on the northern slopes; creosote bush scrub in the desert floor; and desert chaparral on the southern slopes. The area is a refuge for migratory birds and a habitat of 97 vertebrate species. The combination of desert and foothill plant species makes it a valuable ecological area.

The third SEA is Portal Ridge, which is northwest of Ritter Ridge. The area is relatively large, supporting diverse plant species from both desert and montane types. Portal Ridge provides an excellent resource for educational and scientific study.

Another sensitive ecological area is the Alpine Butte. Although it is largely located outside the Planning Area, a portion covers the easternmost area between Avenues M and P. The butte has sandy and rocky habitats with Joshua trees and creosote bush scrubs. Birds roost and nest in the butte and large mammals forage and use the site for denning. Presence of the Mojave ground squirrel, an endangered species, is possible at the butte.

The fifth sensitive ecological area is Big Rock Wash, just south of Alpine Butte and also largely outside the Planning Area. Like Little Rock Wash, it supports a variety of birds and mammals, serves as a migration corridor, and helps maintain the plant and animal diversity of the region.

The native plants and wildlife of the Antelope Valley have adapted to the arid climate and quick-draining, sandy soils. However, the expanding human settlement of the region has upset this natural balance. Development has resulted in replacement of the existing desert species with landscaping materials not native to the region that require regular watering to survive. Development has also blocked access to and eliminated foraging and nesting areas, and introduced air and water pollution that can adversely

affect habitat quality. Past development patterns have created habitat “islands”, isolating populations of species, thereby reducing their local long-term viability.

The landscaping style prevalent in the United States is based on British tastes and climate--a cool region with plentiful rainfall. In order to maintain the green lawns and shrubbery, irrigation is necessary. Excessive watering literally drowns native plants. However, alternative landscape styles from drier climates are not common in the United States--even in drier regions--and as a result may be more expensive to install and less attractive to buyers. Public education and design assistance about drought tolerant and native landscaping is needed.

State and federal environmental protection laws require the review of individual projects to mitigate their potential impacts on existing biological resources. Two approaches are typically chosen:

- Attempt to preserve significant natural features and incorporate them in the proposed development. (This approach usually fails because of the different cultural requirements of the native as opposed to the introduced species.)

- Preservation of significant resources in "open space area" where development is restricted. (This approach results in islands of "undisturbed" areas that are not connected in a natural system as they were previously, and are frequently subject to vandalism or intrusion of urban activities, such as off-road vehicle use.)

These approaches can only succeed when there is an overall approach to development that emphasizes native, drought-tolerant landscaping and the establishment and protection of a system of natural open space areas in the City.

Cultural Resources

Cultural resources in Palmdale are derived from the rich and colorful history of the Antelope Valley. Evidence from the Barrel Springs site dates human occupation of the Palmdale area back 5,000 years before present (Love 1989:15). Cultural groups known to have occupied the area in and around the Antelope Valley in late prehistoric and early historic times include the Kitanemuk, Kawaiisu, Tatavium and Serrano/Vanyume.

The amount of existing cultural resources directly determines the extent of conservation that can be realized. While a number of archaeological, historical, and paleontological sites have been identified, the Planning Area is largely undeveloped and, for the most part, has not been surveyed for cultural resources. Resources are most often discovered during the environmental assessment of a proposed development project. In the last few years, rapid urbanization has resulted in an increased number of site

surveys for these resources and a substantial number of newly identified cultural resources.

Existing state laws dealing with the preservation of archaeological, historical, and paleontological resources can ensure that identified cultural resources are preserved or investigated and mitigated through prudent and acceptable means. Public awareness and involvement often act as catalysts for aggressive resource preservation as historical and archaeological organizations become vanguards of the community's cultural resources.

The conservation of the area's cultural resources must be promoted by increasing the appreciation of residents for the valley's history. Public awareness programs and conservation ordinances will help bring about community pride and identity.

Historical Resources

A listing of potential historic structures has been compiled by the Antelope Valley Historical Society. Table ER-1 provides the listing and Exhibit ER-6 shows their general location. The list is based solely on the structure's existence for at least 50 years. Historical significance should not be inferred from this listing until such time as these (and perhaps other) structures are evaluated to determine their importance. In addition to age, the following factors should be considered when evaluating a structure's significance:

1. Architectural features unique to the region, such as:

    a. Outstanding example within the region of an architectural style or of a particular architect's work.

    b. Use of construction techniques or materials unique to the region.

2. Importance of the structure in the history of Palmdale.

3. Existing or restorable condition of the structure.

4. Physical and economic feasibility of possible relocation.

5. Physical and economic feasibility of possible restoration.

6. Potential reuse for the structure following restoration/relocation.

TABLE ER-1

POTENTIAL HISTORIC STRUCTURES

Structure	Age	Comments
Single-Family House (Wolf House) 536 E. Palmdale Blvd.	Early 1930	Now: Antelope Valley Mobile Home Sales
Single-Family Houses Ave. Q between 5th Pl. and 6th St. E	1920s to 1930s	
Ice Storage South of Ave. R between 6th St. E. and railroad	1918	Ice Storage for fruit and ice; now Bekins Storage
Two-Story Barn-Like Structure 37352 N. Sierra Highway	1920s	Now: Church of the Open Bible
Metal Building 38126 N. Sierra Highway	1920s	Part of L.A. County Maintenance Yard
Concrete Block House 932 E. Ave. R	1918	Imitation rock face probably made by Sadler Block Company (1915)
Six Woodframe Houses Southwest corner of 9th St. E and Ave. Q-10	1920s	"Edison Company House" for company employees
Single-Family House 816 Ave. Q-9	1910s	
Single-Family House 911 Ave. Q-9	1935	
Concrete Block House 927 Ave. Q-9	1920s	Imitation rock face probably made by Sadler Block Company (1915)
Single-Family House 942 Ave. Q-9	1920s	
Single-Family Houses, South side of Ave. Q-10 between 10th St. E and 9th St. E	1913 to 1930's	
Single-Family Houses 38211, 38147, and 38107 10th St. E	1930s	
Old Palmdale Cemetery Southeast corner of 20th St. E and Ave. R-12	1880s	
Ranch House in alfalfa fields 1818 E. Palmdale Blvd.	1920s	Now: Spanky's
Old Schoolhouse in McAdam Park 30th St. E and Ave. R	1900	
Single-Family House 38457 9th St. E	1920s	
Moore's Hall 38414 8th St. E	1918	Now: Ace Swimming Supply
Bank of Italy Northeast corner of 8th St. E and E. Palmdale Blvd.	pre-1918	First bank in Palmdale
Safeway Store, Sierra Highway	1930s	Now: Apollo Tire
Craig Wilson Chicken Ranch Northeast corner of 12th St. E and Ave. Q		Now: Mountain Muffler
Old Leona Schoolhouse 8367 Elizabeth Lake Rd.	1914	
Store Building Southwest corner of Elizabeth Lake Rd. and 90th St. W	1920s	

Source: Antelope Valley Historical Society 1989; Palmdale Planning Department 1992.

Archaeological Resources

The majority of archaeological investigations in the Antelope Valley have been conducted in the past 20 years. Results from these investigations point to a lengthy prehistoric tradition. Archaeologists have learned that the Antelope Valley has been inhabited for the past 5,000 years, and may have been occupied many thousands of years before that (Love 1989:15).

The prehistoric cultural tradition in the Antelope Valley most probably follows that of the Mojave Desert. The earliest cultural period for which there is evidence is the Pinto Period, which dates back to at least 6,000 years ago. During this period of time, the climate of the Mojave Desert was becoming arid, and available food resources in the region were decreasing.

An archival record search in 1989 produced 38 recorded archaeological sites within the Planning Area. Two of these sites are of a historic date, while the remainder are of prehistoric time periods. In addition, recent surveys of the City Ranch Specific Plan area and the Ritter Ranch Specific Plan identified a total of 49 new prehistoric archaeological sites and 7 historic archaeological sites. The 28 prehistoric sites in the City Ranch survey include "lithic scatters, hunting blinds, bedrock milling features, and, in two instances, rock art". The rock art at the City Ranch site is composed of cupule boulders (Van Horn et al 1989), and a survey of the Amargosa Creek area (Wessel et al 1989) identified one historic trash scatter (LAn-1554H). The Ritter Ranch survey identified 21 prehistoric sites and 6 historic sites. The prehistoric sites include "10 cupulae (cupules are man-made circular indentations in boulders or rock outcroppings) petroglyph/bedrock milling sites, 7 isolated finds of stone tools and waste flakes from tool manufacturing, 1 grouping of rock lined pit ovens, 1 lithic scatter, and 1 hunting blind constructed of tubular schist slabs" (LSA Associates, Inc. 1989). There are 14 prehistoric sites and 4 historic sites which were identified for preservation.

For purposes of archaeological classification, the Palmdale Planning Area was divided into three primary physiographic environment types: the rift zone, the foothill areas, and the desert floor. The grid layout of streets was also extended throughout the Planning Area to facilitate site location.

Plotting the recorded site locations within the grid system resulted in 7 sites (3 historic and 4 prehistoric) on the desert floor area, 26 sites in the foothill areas, and 37 sites in the rift zone area (see Exhibit ER-7). The sites identified in City Ranch add 28 prehistoric and 1 historic archaeological sites to those identified in the foothills and 1 historic site to those identified on the desert floor.

Given the number of sites recorded in the rift zone, along with the availability of water and food resources, it can be suggested that this is an area of high archaeological sensitivity, and there is a high probability of more sites existing in this area.

The foothill areas are located both north of and south of the rift zone, in the southwestern section of the Planning Area. The recorded sites in the foothill area include bedrock milling sites, habitation sites, quarries, rock art, hunting blinds, and numerous lithic scatter sites. Other archaeological sites identified include hunting blinds and cupule sites. Many of the creeks and streams found in the rift zone begin in the foothill areas, and provided generally reliable sources of water for the prehistoric inhabitants of the area. Springs and marsh areas in the rift zone also provide additional food resources. The probability of more sites existing in the foothill areas is high.

The recorded prehistoric sites found on the desert floor areas of the Planning Area include a bedrock mortar, lithic scatters, food processing stations, and possible habitation sites. Sites on the desert floor are widely distributed and are generally located on the perimeter of the area. The two historic sites are located approximately in the center of this area. The probability of discovering additional prehistoric and historic sites appears to be moderately high.

Paleontological Resources

A Paleontologic Sensitivity Study for the Palmdale area was prepared in April 1990 by Robert E. Reynolds, the curator of Earth Sciences at the San Bernardino County Museum. Twelve rock units were identified and categorized into three classifications. The three classifications, high sensitivity/potential, unknown sensitivity/potential, and low sensitivity/potential for resources were based on the assessment of the identified and potential paleontological resources in the rock units.

1. High Potential: The Palmdale Planning Area encompasses five sedimentary rock units ranging in age from 12 million to 10,000 years. These rock units have produced significant non-renewable plant and vertebrate paleontologic resources and have a high potential to produce future resources. These units include, chronologically, the Punchbowl, Ana Verde, Harold Formations, the Nadeau Gravels/Pleistocene Old Alluvium, and pleistocene Lacustrine and Fluvial Sediments. Table ER-2 presents characteristics of each.

2. Unknown Potential: There are two rock units in Palmdale which have an unknown potential for producing paleontological resources, the Vasquez Formation and the Pleistocene Alluvium. The Vasquez Formation is approximately 38 million to 22.5 million years old dating it back to the Oligocene Age. The Pleistocene alluvium which is of high potential is covered by a thin

layer of recent alluvium. This layer has an unknown potential for producing paleontologic resources.

3. Low Potential: There are five igneous and metamorphic rock units in Palmdale which have a low potential to produce significant paleontologic resources. These units include: Precambrian Pelona Schist, mesozoic metavolcanics, Mesozoic granite, quartz monzonite, and diorits.

A paleontology records search showed that vertebrate paleontology localities have been recorded between the intersection of Pearblossom Highway and the California Aqueduct and Little Rock Wash. The sites produced fossil horse teeth, mammoth tooth fragments, and rabbit, bird, carnivore, and rodent tooth and bone fragments. The Ana Verde formation along the San Andreas rift zone was found to be an ancient lake deposit containing fossil plants. The City's low-lying areas consist of Quaternary alluvium which is known to contain numerous vertebrate fossils. Although no other paleontological resources have been recorded in the Planning Area, their existence should not be precluded or dismissed. Exhibit ER-8 indicates the paleontological sensitivity of the Palmdale Planning Area.

3. Air Quality

One of the benefits enjoyed by the citizens of Palmdale is the relatively clean air of the high desert. Unlike the Los Angeles basin, rarely in the Antelope Valley do pollution levels reach the point where smog alerts are issued. However, Antelope Valley air often exceeds the state and federal standards set for two air pollutants: ozone and small particulates less than 10-microns in size (PM_{10}). The consequences of allowing the continued degradation of local air quality include the increase of serious health effects, property damage from oxidizing agents such as ozone, and reduced visibility which affects the aesthethic value of the area. Therefore, improving local air quality is among the goals of the community.

To protect public health and well being, the State and Federal governments have established thresholds for a number of pollutants. Four pollutants most likely to affect the Antelope Valley are continuously monitored in Lancaster by the Antelope Valley Air Quality Management District. These pollutants include ozone, carbon monoxide, nitrogen oxides, and PM_{10}. Table ER-3 shows that federal standards for ozone were exceed on 22 occasions over the past five years. State standards for ozone are exceeded on 183 occasions. State standards for PM_{10} were exceeded 6 days in 2000; 5 days in 2001; and 1 day in 2002. These reflect significant reductions over the prior five-year period. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

TABLE ER-2

HIGH POTENTIAL PALEONTOLOGIC RESOURCES IN PALMDALE

Rock Formation	Characteristics
Punchbowl	Formation is from the late Miocene period, approximately 12 million years ago. Extinct horses, camel, antelope, mustellid, and bear have been identified.
Ana Verde	Formation is approximately 8 million years old. Seven localities for fossil plants are identified. One site produced 19 plant species. Vertebrate fossils have also been discovered.
Harold	Formation is approximately 800,000 years old. Six sites have been identified. One major site produced vertebrate fossils including; mammoth, mastodon, horse, camel, meadow mouse, wood rat, lizard, and snake.
Nadeau Gravels and Pleistocene Old Alluvium	Deposits are 500,000 years old. There are over 120 sites identified on Edwards Air Force Base. Four sites have produced vertebrate fossil remains.
Pleistocene Lacustrine and Fluvial Sediments	Deposits are approximately 10,000 years old. There are over 180 resource localities identified on Edwards Air Force Base. There are vertebrate fossils and late Pleistocene fauna in these sediments, including; gastropods, clams, fish, lizards, snakes, birds, cottontail, jack rabbit, pocket mouse, kangaroo rat, gopher, deer mice, wood rat, meadow mice, and ground squirrel.

The Antelope Valley lies within the Mojave Desert Air Basin (MDAB). This air basin is bounded by the Colorado River to the east, the crest of the San Bernardino, San Gabriel, and San Jacinto Mountains to the south and west, and the northern Kern County boundary to the north. The MDAB contains both high desert areas such as Palmdale and Victorville, and low desert regions including the Palm Springs area. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

The MDAB air mass interacts with that of the South Coast Air Basin to the southwest. The South Coast Air Basin air mass often contains large amounts of emissions and reacted air pollutants that originate from vehicular, commercial and industrial sources in Los Angeles, Orange, Riverside and San Bernardino Counties. Particularly during the summer, polluted South Coast Basin air often moves north into the Antelope Valley. This imported air often arrives with a pollutant load that exceeds the National Ambient Air Quality Standards (NAAQS). It has been determined that ozone air quality standards are exceeded in the Palmdale area by virtue of emissions that are generated outside of the Antelope Valley. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Wind blown dust represents a major source of PM10 emissions in the Antelope Valley. Disturbance by man of the desert environment increases the amount of wind-blown dust. This dust contributes to unhealthful PM10 levels as well as reducing visual range and degrading the aesthetic quality of the area.

While much of the area's pollutant load is generated by sources beyond local control, it is important to point out that the community is also a source of air pollutants. Vehicles cause the bulk of emissions produced locally. These emissions subsequently react under the influence of sunlight, other pollutants and moisture to form reactive contaminants including ozone. While many of these pollutants disperse in the expansive air basin, as local emissions increase, the effect on downwind communities will become more pronounced. Residents of Palmdale directly contribute air pollutants to both the South Coast and the Mojave Desert air basins when they commute between homes in the high desert and jobs in the Los Angeles area. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Mobile sources in the Palmdale area are comprised of conventional vehicles and aircraft. Present and future airport facilities will produce emissions from aircraft, support vehicles and from vehicles of the employees and customers of the facilities.

TABLE ER-3

SUMMARY OF AIR QUALITY STANDARD VIOLATIONS
LANCASTER AIR QUALITY MONITORING STATION

	1998	1999	2000	2001	2002	2003
Ozone (O_3)						
State standard (1-hr avg 0.09 ppm)						
Federal standard (1-hr avg 0.12 ppm)						
Max. 1-hr ambient concentration (ppm)	0.16	0.10	0.14	0.15	0.16	.16
# of days state standard exceeded	24	1	35	37	46	50
# of days federal standard exceeded	8	440	2	3	5	4
Carbon Monoxide (CO)						
State standard (1-hr avg >20 ppm)						
Federal standard (1-hr avg >35 ppm)						
Max. 1-hr amibent concentration (ppm)	5.4	7.2	8	6.1	04	3.2
# of days state standard exceeded	0	0	0	0	0	0
# of days federal standard exceeded	0	0	0	0	0	0
Nitrogen Dioxide (NO)						
State standard (1-hr avg > 0.25 ppm)						
Federal standard (00.0534 AAM in ppm)						
Max. 1-hr ambient concentration (ppm)	0.08	0.08	0.07	0.08	0.10	.07
# of days state standard exceeded	0	0	0	0	0	0
# of days federal standard exceeded	0	0	0	0	0	0
Particulates (TSP)						
Max. 24-hr ambient concentration (ug/m^3)	NM	NM	NM	NM	NM	NM
Suspended Particulates (PM10)						
State standard (24-hr avg > 50 ug/m^3)						
Federal standard (24-hr avg > 150 ug/m^3)						
Max. 24-hr ambient concentration (ug/m^3)	80	85	110	64	74	N/A
days exceeding state standard	2	2	6	5	1	
days exceeding federal standard	0	0	0	0	0	

AAM = annual arithmetic mean
NM = not measured
ppm = parts per million
ug/m^3 = micrograms per cubic meter

Source: Antelope Valley Air Quality Management District, California Air Quality Data – Lancaster site, yearly summaries – 1998 through 2002
California Air Resources Board, California Air Quality Data, 1998 through 2003

(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

The air quality on any given day is the result of complex interactions between air pollutant emissions and meteorological forces. Therefore, on each day, the local air quality is different; an emission source may affect residents at one time or day and not on another. Several physical factors can affect air quality, including prevailing wind patterns, topography, average wind speeds by time of day and by season, and the frequency with which temperature inversions occur in the affected area. Air quality in a given locality also depends both upon emissions in the area and upon the transport of air pollutants from upwind areas. For this reason, inland areas of Southern California, such as Palmdale, have the poorest particulate and ozone air quality. Therefore, Palmdale, like other inland communities, is at a relative disadvantage in terms of the effort required to achieve good air quality.

At the present time, the Antelope Valley portion of the MDAB is under the regulatory authority of the Antelope Valley Air Quality Management District (AVAQMD). This agency establishes rules, regulations, and policies for activities, which impact air quality throughout the Antelope Valley and Southeast Desert air basins. In compliance with federal and State law, AVAQMD has prepared an Air Quality Management Plan (AQMP) for the South Coast Air Basin to meet clean air standards. Since this plan was adopted in 1989, SCAQMD has applied the document to both the South Coast Air Basin and the Mojave Desert Air Basin. If, in the future, an attainment plan is prepared specifically for the Southeast Desert air basin, then the provisions of that plan will be applicable to Palmdale and the rest of the Antelope Valley. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

The AQMP, last amended in 2003, contains "control measures" that when implemented, will improve air quality throughout the region. These measures are organized into three tiers: Tier I measures can be implemented at the present time with the current technology available; Tier II measures will be implemented in the near future as technology allows; and Tier III measures require advancements in technology that will not be available for many years to come. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

At the present time, the AQMP contains approximately 40 Tier I control measures which affect local governments. These control measures range from eliminating leaf blowers to implementing trip reduction programs. Involvement by local government to implement these measures varies, but includes providing enforcement of future district rules, adoption of ordinances, and modifications of local general plans.

The AQMP recognizes that there will be population and economic growth in the area and has recommended that air pollution control strategies take this into account. Downwind areas, such as Palmdale, should be allowed the same opportunities for relative growth as other areas in the two air basins. It is also assumed in the AQMP that equal control efforts will be exerted by all communities. The result of this approach

is that all areas within the AQMP will need to achieve a higher level of emissions control, if air quality standards are to be attained.

4. Outdoor Recreation and Amenities

Many types of outdoor recreation take place in a natural setting, and their value depends primarily on the scenic or natural qualities of the environment. Hiking and camping are examples of such resource-oriented recreation. At the other end of this scale are activities requiring user-oriented facilities, such as an urban or local park. Of primary concern related to urban parks is the equitable distribution of these facilities throughout the urban area.

The City of Palmdale Parks and Recreation Master Plan discusses existing and proposed facilities, as well as policies for the enhancement of recreational opportunities. In more detail, the following sections briefly address other outdoor recreational amenities. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Bikeways

Bikeways can serve as corridors connecting parks and natural areas around the community. They help satisfy the requirements for open space and parks and can serve as emergency access routes. Bikeways also encourage the use of the bicycle as an alternative mode of transportation. Well maintained bikeways can provide routes for both recreational and utility purposes throughout the City. Bikeway plans are discussed within the Parks, Recreation and Trails Element. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Equestrian and Hiking Trails

Equestrian and hiking trails, which are separated from vehicular traffic, ideally lead through park-like natural areas. In urban areas, many of these trails are combined with flood control rights-of-way, or buffered from development by landscaped or natural areas. These trail systems must accommodate a variety of users and provide a variety of experiences. Safety and health concerns must be addressed during design and maintenance. Priority funding shall be based on user demand and multi-use facilities. Handicapped accessibility to trails should also be considered.

The City may offer incentives to developers for dedicating land or allowing public access to private land to continue and expand the trail network. Possible incentives could include the reduction or elimination of park fees for the development (if residential), reduction or elimination of landscaping assessment district fees, and density bonuses.

Plans for a multi-use trail system are included in the City's Master Parks and Recreation Plan. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

Scenic Areas

Scenic areas include open space and landscaped corridors and viewsheds. They provide visual enhancement and pleasure and are worthy of preservation for aesthetic, historical, topographical, cultural, or biological reasons.

The Lamont Odett Vista Point, just off the Antelope Valley Freeway, provides a view of Lake Palmdale and the City. The Godde Hills Road winds up the Portal Ridge Mountains and overlooks the entire Antelope Valley. Bouquet Canyon Road is well-known for its tree-lined canyon and winding stream. Juniper Hills Drive is a circular road lined with junipers and tamarisks and rises up to 4,000 feet above sea level. These scenic areas are among many in the valley that include the Angeles National Forest south and west of the Planning Area and wildlife reserves east of the area.

Major Landscapes

Landforms in and around Palmdale form three major, distinct landscape types. Each of these landscapes represents a combination of potential recreation resources for residents of the Palmdale area. The location of these landscapes relative to Palmdale is shown on Exhibit ER-9.

1. **The Mountain Areas.** Most of the mountain areas are within the jurisdiction of the Angeles National Forest. These areas are managed, wherever possible, to include a variety of recreation opportunities compatible with the primary goal of watershed protection.

2. **The Desert Slope and San Andreas Rift Zone.** At present, landforms of the desert slope and the rift zone of the San Andreas Fault provide open space resources for the entire region. They form the scenic backdrop for the Antelope Valley, and at the same time, they support outdoor recreation use. Resources in the area are linked together by the California Aqueduct and the trail that parallels it. (The trail is not open to the public at this time.) Increasing recreation uses and development pressure near this high amenity area call for careful management.

3. **The Desert Plains and Buttes.** The Antelope Valley, with its high desert plain, buttes, and alkali sinks, offers a great variety of opportunities for recreation. In the western portion of the valley, Antelope Buttes and Fairmont Buttes offer considerable potential for interweaving compatible recreation and natural

resource preservation areas. In the east, this potential is presented by the unique landform and habitat areas surrounding the Saddleback Buttes State Park. The West Alpine and Alpine Butte Wildlife Sanctuaries can also be found in this same area.

5. Scenic Highways

A primary component of many outdoor recreation activities is movement or travel. One of the most popular forms of outdoor recreation in southern California is driving for pleasure and the travel to and from recreation areas is considered a major part of the experience. Thus, the moving landscape, or scenic corridor, is a part of the landscape system, both as a connecting element and as a landscape in its own right.

A scenic highway presents opportunities for visual stimulation for automobile passengers. In North Los Angeles County, the view from the road is characterized by panoramic vistas of rugged mountains, steep canyon slopes covered with native chaparral, extensive areas of the Mojave Desert, and rural or small-town settings. Thus far, development has not significantly reduced scenic potential and there is an opportunity for public investment to ensure the future maintenance of this visual resource. Although many roadways in the North Los Angeles County area may be considered scenic, only the Angeles Crest Highway (Route 2) from the La Canada/Angeles National Forest boundary to the San Bernardino County Line has been officially designated a scenic highway by the California Department of Transportation. Official scenic highways are designated by the State Scenic Highway Advisory Committee.

There are no hard and fast regulations defining the visual characteristics which qualify a road as a scenic highway, but the following considerations may be utilized:

- Visibility. The vehicle occupants should be able to view expansive scenery without having to stop.

- Landforms. The roadway transverses areas dominated by the physical characteristics of the natural corridor, such as gently rolling hills or rugged cliffs, streams, geologic formations, and distant ridges.

- Vegetation. The roadway abuts areas with distinctive vegetation within view, such as row crops, orchards, chaparral, or woodlands.

- Structures. Buildings may be included in scenic corridors and may add to scenic quality.

- Panoramas. Scenic overlooks with panoramic views of urban, rural, or natural areas should be included when available.

With proper design and management of these corridor landscapes, scenic highways can not only enhance the quality of the recreation experience, but also provide the kind of "open space system" that organizes and communicates the coherence and identity of the region. Scenic natural areas must be preserved where they are found and cannot be evenly distributed like parks. Their enjoyment may require travel.

Development of this type of area depends on the availability of a quality landscape and the opportunity to enjoy it. Controlling the visual environment and preventing its overuse are, therefore, the critical design and management problems. Adopted scenic roadways are shown in Exhibit ER-1. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

C. Constraints

Constraints to effective environmental resource management include ecological, governmental, economic and political factors. The area's finite resources and their interdependence with other aspects of the ecosystem determine their suitability for management and control. City regulations may have unintended side effects on the preservation and prudent use of resources. Economic constraints and pressures are often felt by private owners in planning the use of development on their land, as well as by public agencies attempting to preserve open space and develop parks and recreation facilities. Constraints that may affect environmental resource management in Palmdale are discussed below.

1. **Development Pressure and Rising Property Values:** The preservation of open space is constrained by the rising property values and strong development pressures that cause rapid development. Construction has boomed in Palmdale; an average of approximately 900 housing units were added each year between 2001 and 2003. As property values have appreciated, development has become financially feasible in such hazardous building zones as landslide areas, areas of ground subsidence, and flood risk areas, further increasing pressure to reduce open space in the Palmdale area. Development pressures also reduce the amount of land available for mining and excavation of mineral resources. Continuing development may limit these uses to marginal areas where no other uses are allowed--airport crash zones, flood plains, and earthquake rift zones. *(General Plan Amendment 04-01, adopted by City Council April 14, 2004.)*

2. **Limited City Resources:** Limited financial resources also restrict the City's ability to purchase land for open space preservation and parks and recreation needs. City funds are more likely to be spent first on high priority items, such as providing infrastructure and public services to residents. In addition to limited funds available for the purchase of land and facilities for parks and recreation programs, rising park development and maintenance costs have curtailed parkland expansions in recent years. Even if parkland can be acquired, the costs of developing and operating the park facilities can be prohibitive.

3. **Uncoordinated Development:** Uncoordinated development on scattered sites or development occurring at various times without a logical phasing sequence can contribute to the lack of a unified open space system in the Palmdale area. Open space areas provided by individual developments tend to be small, and these areas often don't relate to neighboring parks, trails, ridgelines, or other open space areas.

4. **Existing Development and Zoning:** The extraction of mineral resources is restricted by existing development on or near prime resource deposits and by incompatible zoning designations on adjacent property. The regional market for sand and gravel resources may make mining in these areas profitable, but mining may not be allowed because of land use restrictions. Existing development could also restrict access to underlying mineral resources.

5. **State and Federal Regulations:** State and federal laws relating to flood control, water resources, and habitat preservation can act as regulatory constraints to mining activities. Sand and gravel resources in Palmdale are located primarily in the Little Rock Wash area, which is subject to state and federal wetland resource habitat preservation, Fish and Game regulations, as well as surface mining regulations.

6. **Insufficient Sewer Infrastructure:** Some of the older portions of Palmdale have been developed using individual septic systems for each house rather than a public sewer system. Septic systems must be maintained in order to avoid contamination of the surrounding area. Some parts of the Planning Area have already experienced septic system failure, possibly contaminating local water supplies.

7. **Rate of Population Growth:** The physical changes brought about by human settlement of the region have made it difficult for native plant and wildlife species to survive. Development has introduced non-native plant species to the area that require regular watering to survive. Development can also block access to or eliminate foraging and nesting areas, and introduces air and water pollution that

can damage or destroy wildlife habitats. Many desert plants and animals do not adapt well to urban development--for example, Joshua trees cannot tolerate much disturbance of their root zones or the irrigation typical of residential landscaping.

8. **Lack of Information:** One obstacle to the preservation of cultural resources is the lack of resource surveys of the Planning Area. Palmdale and its sphere of influence are largely undeveloped and have not been surveyed extensively for the presence of archaeological, paleontological, and historic resources.

9. **Geographic Setting:** Constraints to clean air include the Palmdale area's topography and patterns of wind movement. Wind, atmospheric stability, terrain, and sunshine contribute to the atmosphere's ability to dilute pollutants. Atmospheric stability also suppresses vertical dilution of pollutants. Air pollutants generated south of Palmdale in the Los Angeles metropolitan area are transported to the Antelope Valley by air currents, adding to the pollutants generated within the valley.

10. **Imbalance Between Jobs and Housing:** The Palmdale area's current imbalance between employment opportunities and housing increases vehicle emissions generated by residents driving to other areas to work.

11. **Governmental Complexity:** Finally, the process of preservation or resource management itself can deter efforts to protect some resources. For example, the local designation of scenic highways must begin with a study of potential candidates for designation, and proceed through staff recommendations to City Council adoption and to state designation by the State Scenic Highways Advisory Committee. The time and commitment requirements of this process can limit the protection of scenic resources.

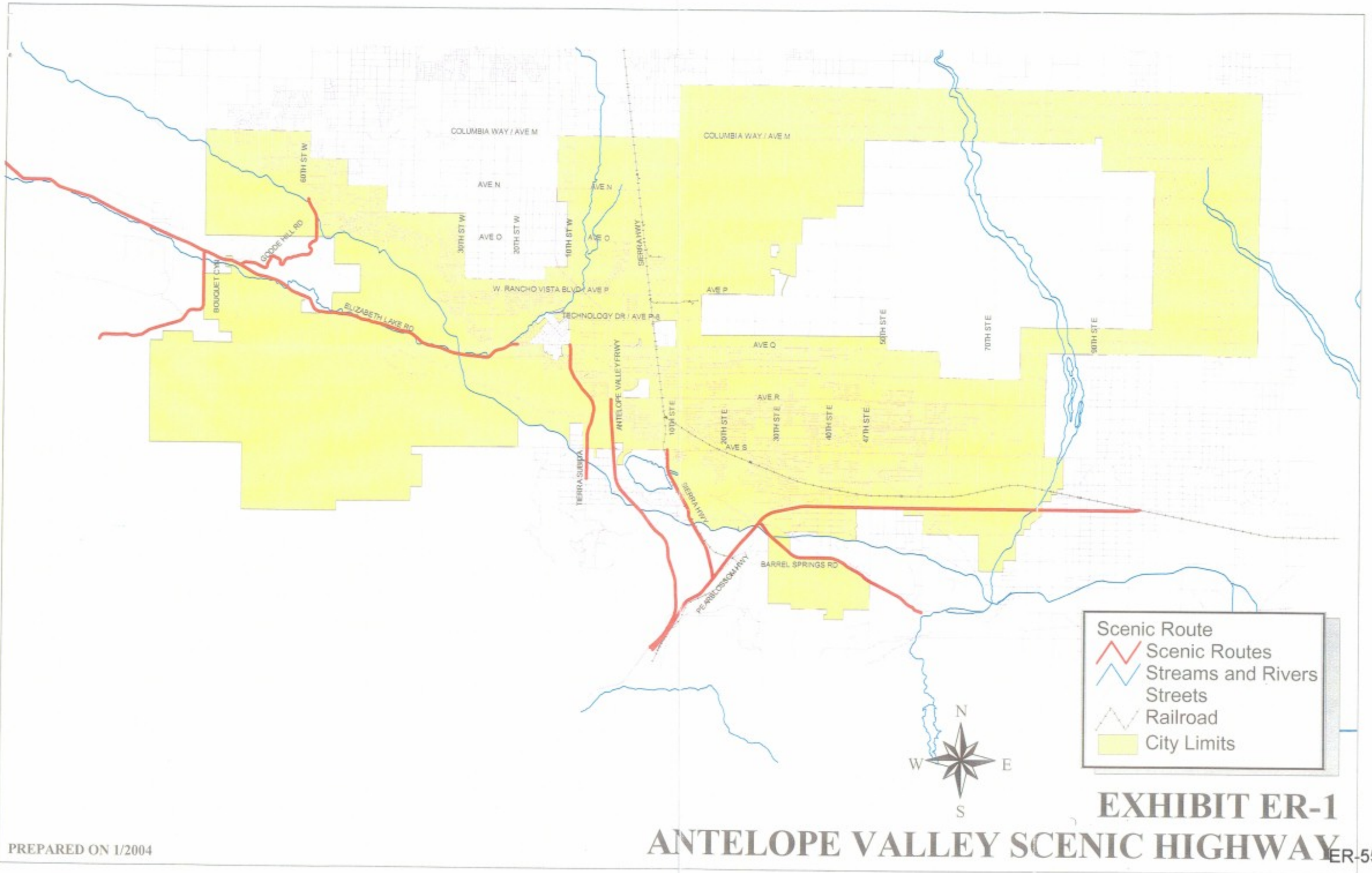


EXHIBIT ER-1

ANTELOPE VALLEY SCENIC HIGHWAY

PREPARED ON 1/2004

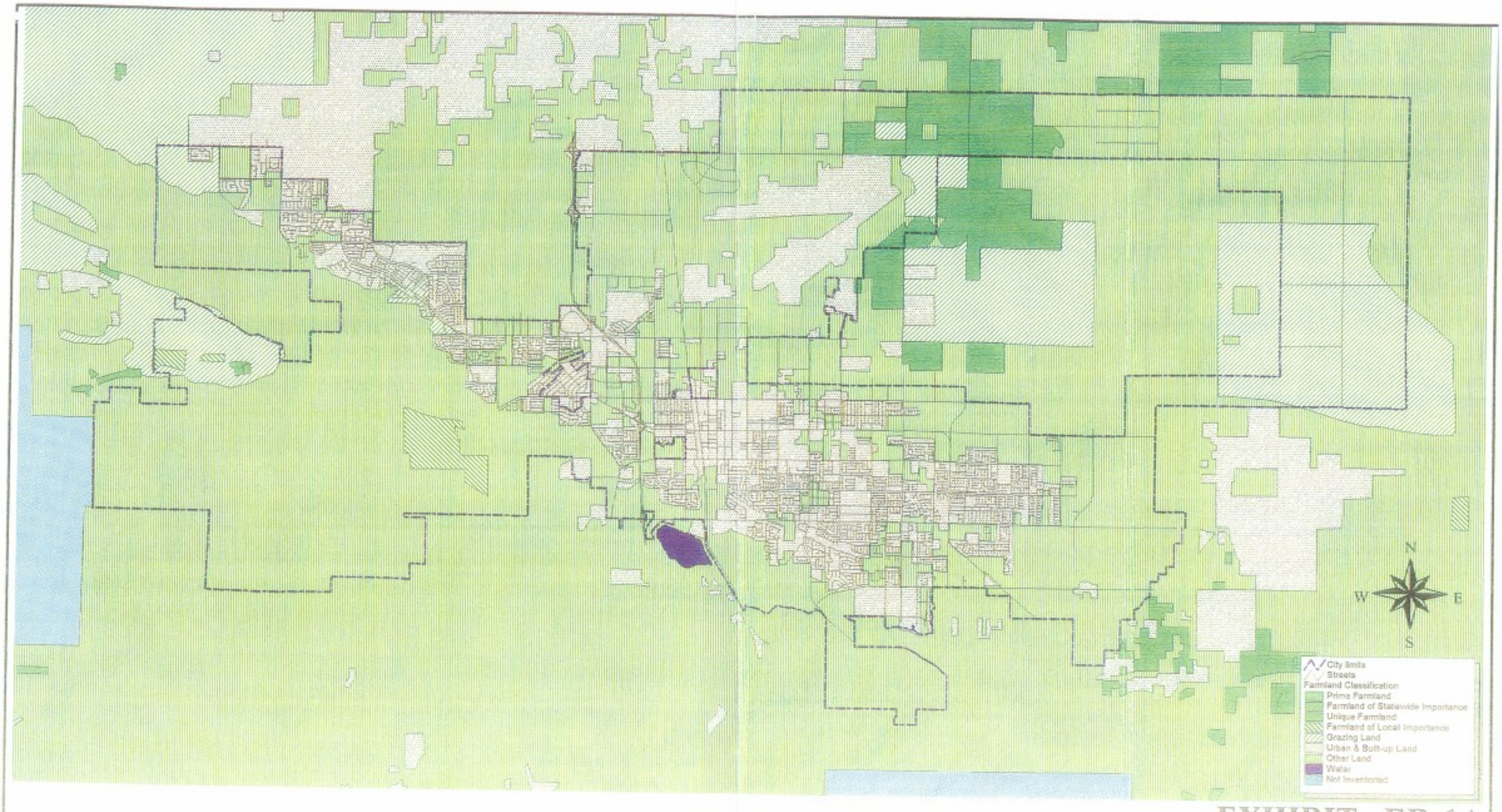
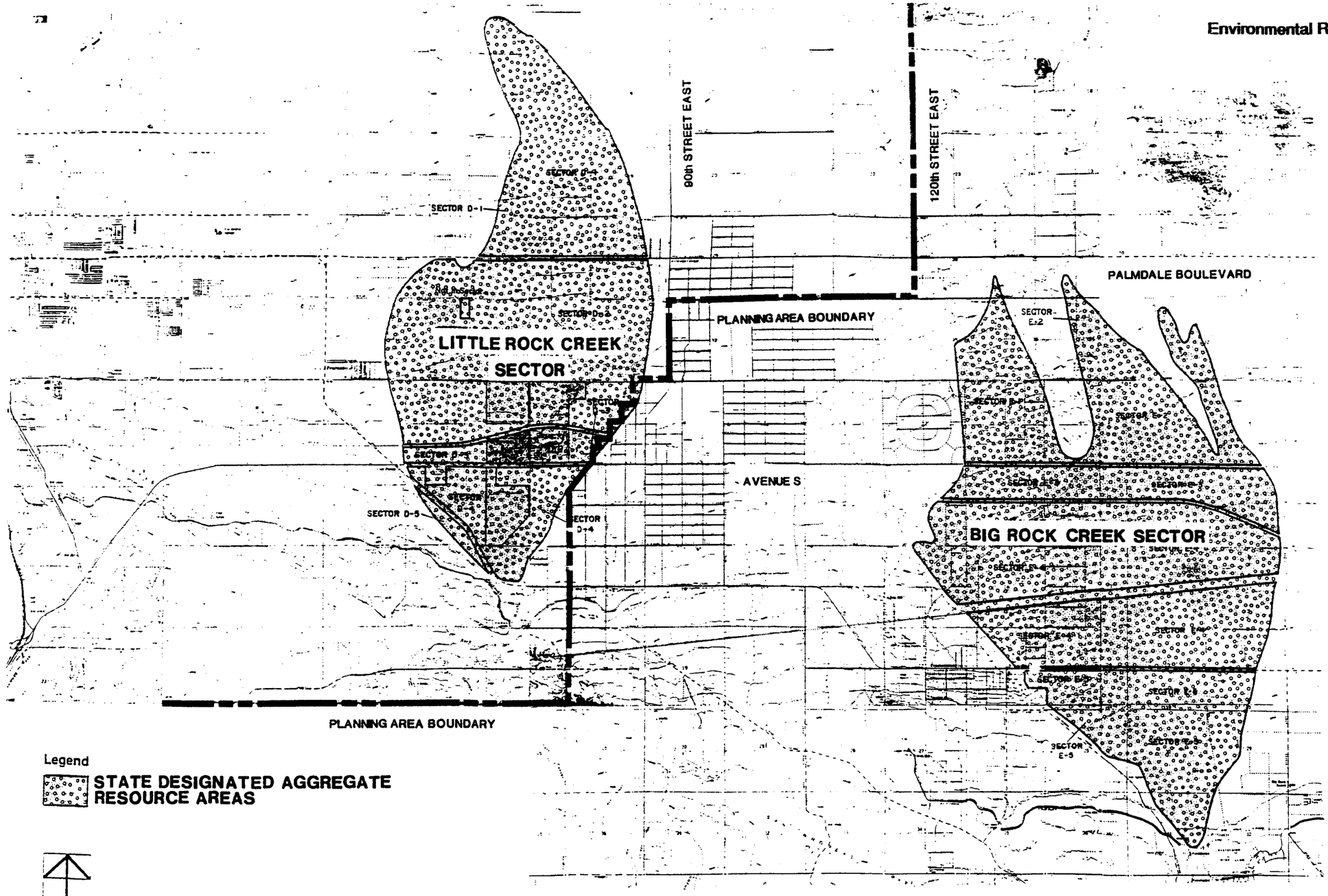


EXHIBIT ER-1A
FARMLAND MAP CATEGORIES

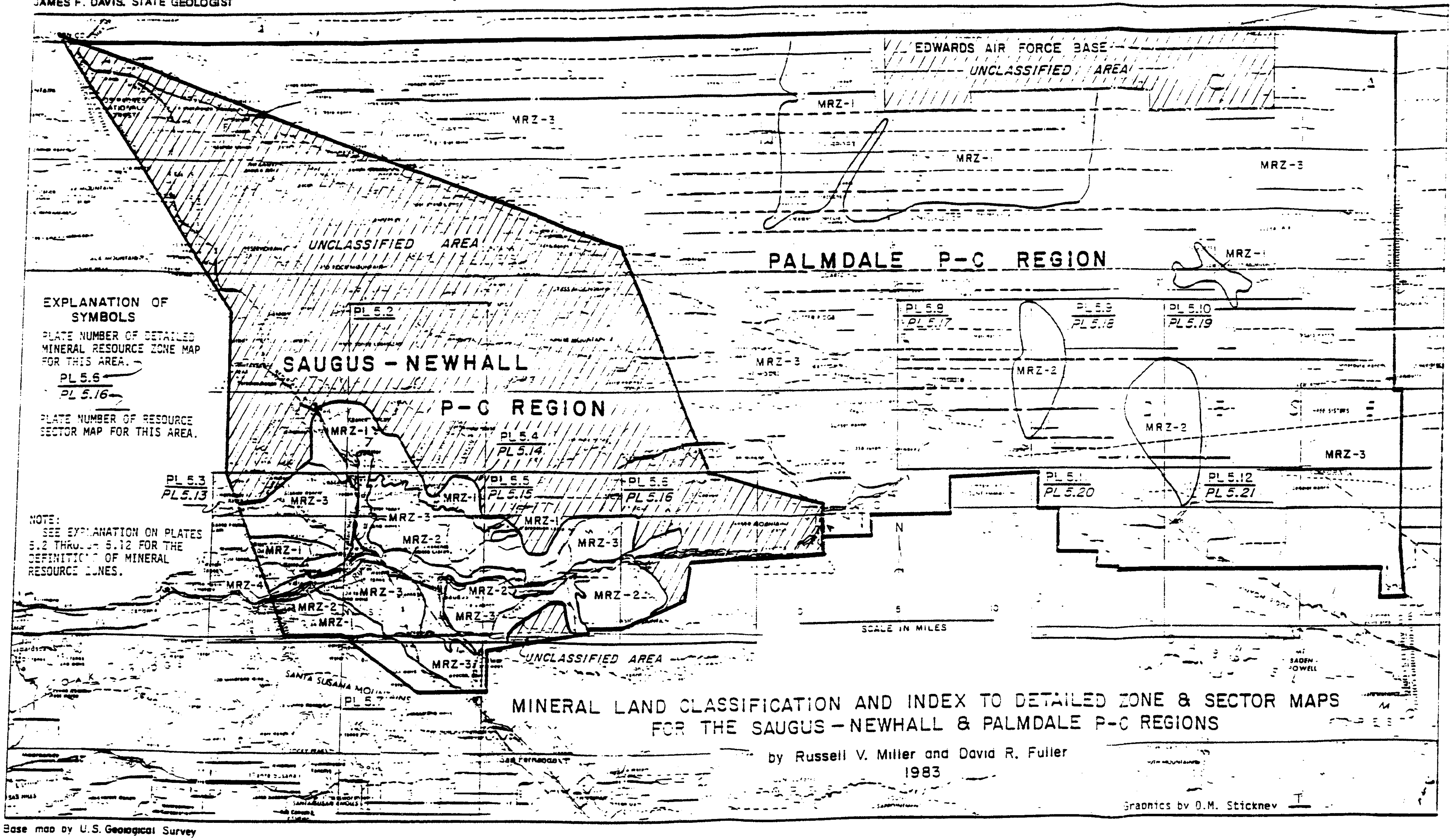


SOURCE: State Mining and Geology Board, September, 1985.

REGIONALLY SIGNIFICANT CONSTRUCTION AGGREGATE RESOURCE AREAS

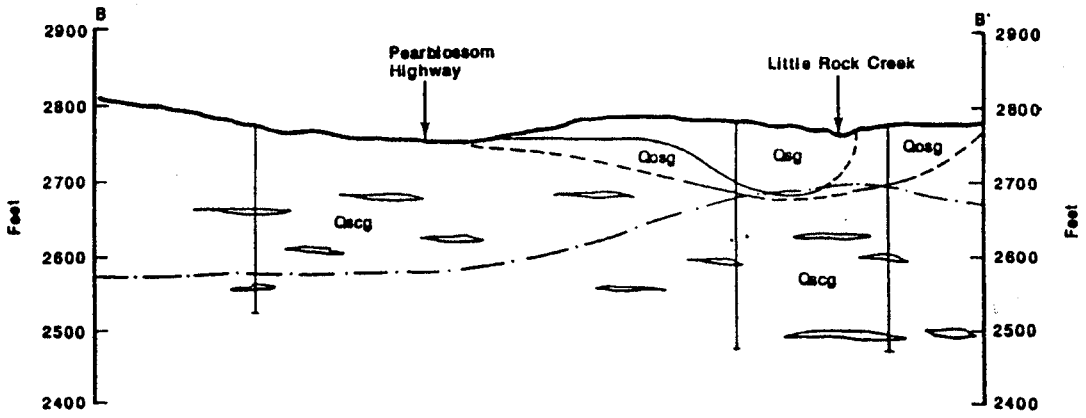
EXHIBIT ER-1B

(SPECIAL REPORT 143 PLATE 5.1)



STATE-CLASSIFIED MINERAL RESOURCE DEPOSITS

EXHIBIT ER-1C



Legend

Qsg	Sand and Gravel
Qosg	Predominantly Sand and Gravel
Qscg	Predominantly Sand with Lenses of Clay and Gravel
	Contact: Dashed Where Inferred, Queried Where Conjectural
	Water table
	Drill Hole

NOTES:

1) Geology taken from: Ponti, D.J..Burke,D.B..1980, Map Showing Quanternary Geology of the Eastern AntelopeValley and Vicinity, California: U.S. Geology Survey, Open File Report 80-1084

2) Water Table Data Obtained From Well Log Information, Aggregate Plant Information, and Visual Inspection.

3) Refer to Exhibit ER-2 for Location of Section Line.

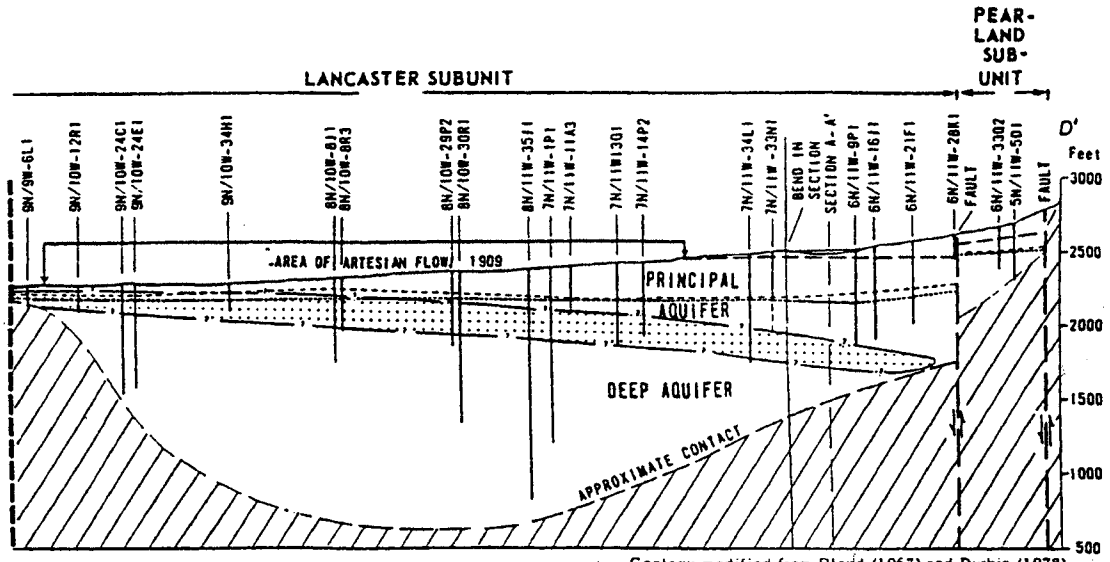
Source: DMG, SMARA Report No. 6

March 1990
VERTICAL EXAGGERATION 20 - 1

Generalized Geologic Crossection of Littlerock Creek Fan
Palmdale General Plan

0 2400 4800 FEET

EXHIBIT ER-2



Geology modified from Bloyd (1967) and Durbin (1978).
Lacustrine deposits shown diagrammatically

Legend

- UNCONSOLIDATED DEPOSITS
- LACUSTRINE DEPOSITS
- CONSOLIDATED ROCKS
- FAULT—Approximately located; arrows indicate direction of relative vertical movement
- 9N/15W-11K1 — WELL--Dashed where perforated
- WATER LEVEL, 1909
- WATER LEVEL, 1964
- WATER LEVEL, 1982

Source: United States Geological Survey, Geohydrology of the Antelope Valley Area, California, and Design for a Ground-Water-Quality Monitoring Network, 1987.

Cross Section of Lancaster Subunit
Palmdale General Plan

EXHIBIT ER-3

LANCASTER SUBUNIT

BUTTES SUBUNIT

PEARLAND SUBUNIT

HARD ROCK AREA

HARD ROCK AREA

2175

2150

2175

2150

2175

2200

2400

2400

2500

2400

2500

2600

2600

2700

Legend

AQUIFER BOUNDARY

2200 GROUNDWATER ELEVATION IN FEET ABOVE SEA LEVEL

CONSOLIDATED ROCK (NOT INCLUDED IN SUBUNIT)

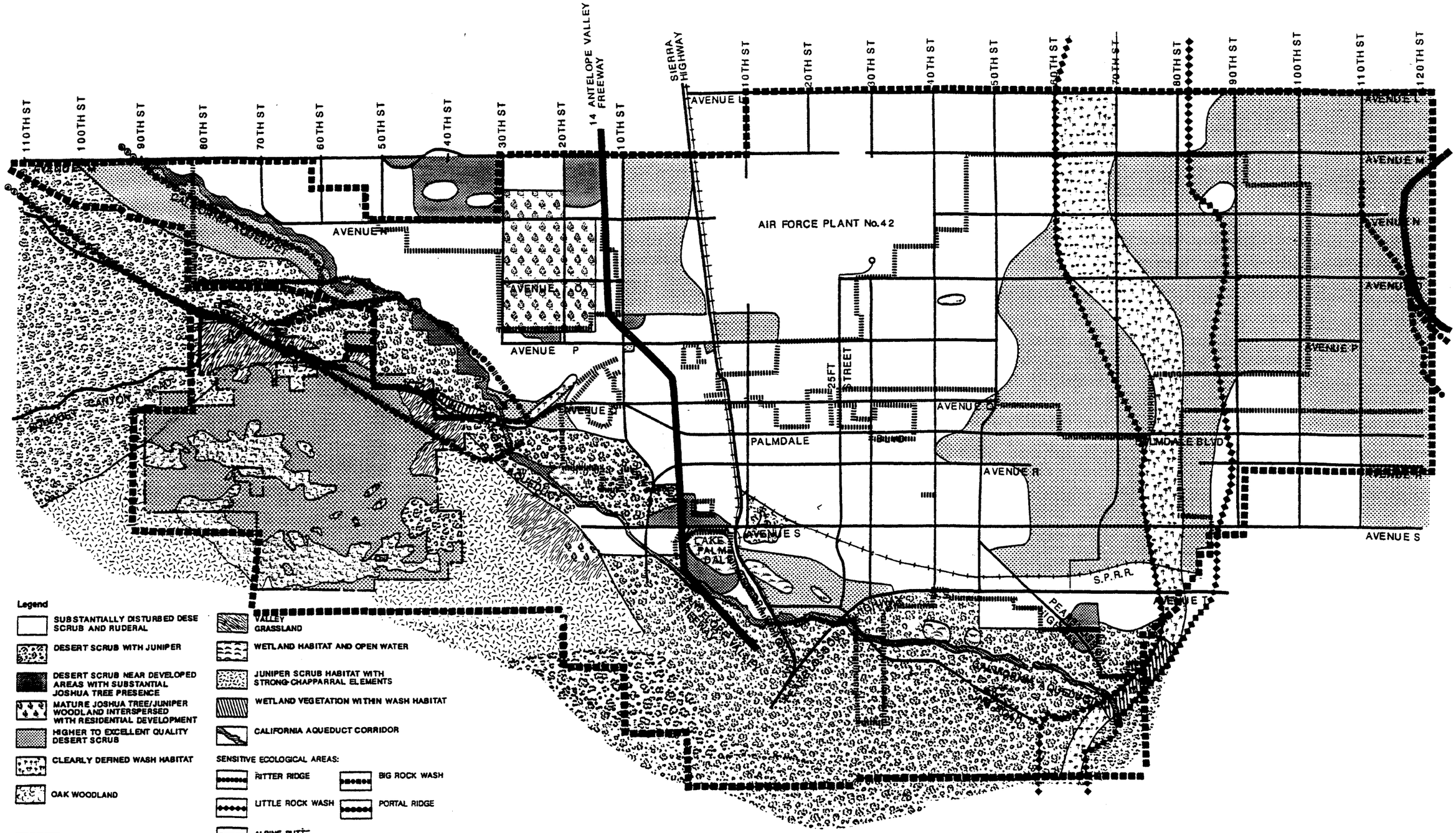
North

0 4000 8000 FEET

Aquifers and Groundwater Surface (Spring 1984)

Palmdale General Plan

Adopted by City Council 1/25/93 EXHIBIT ER-4

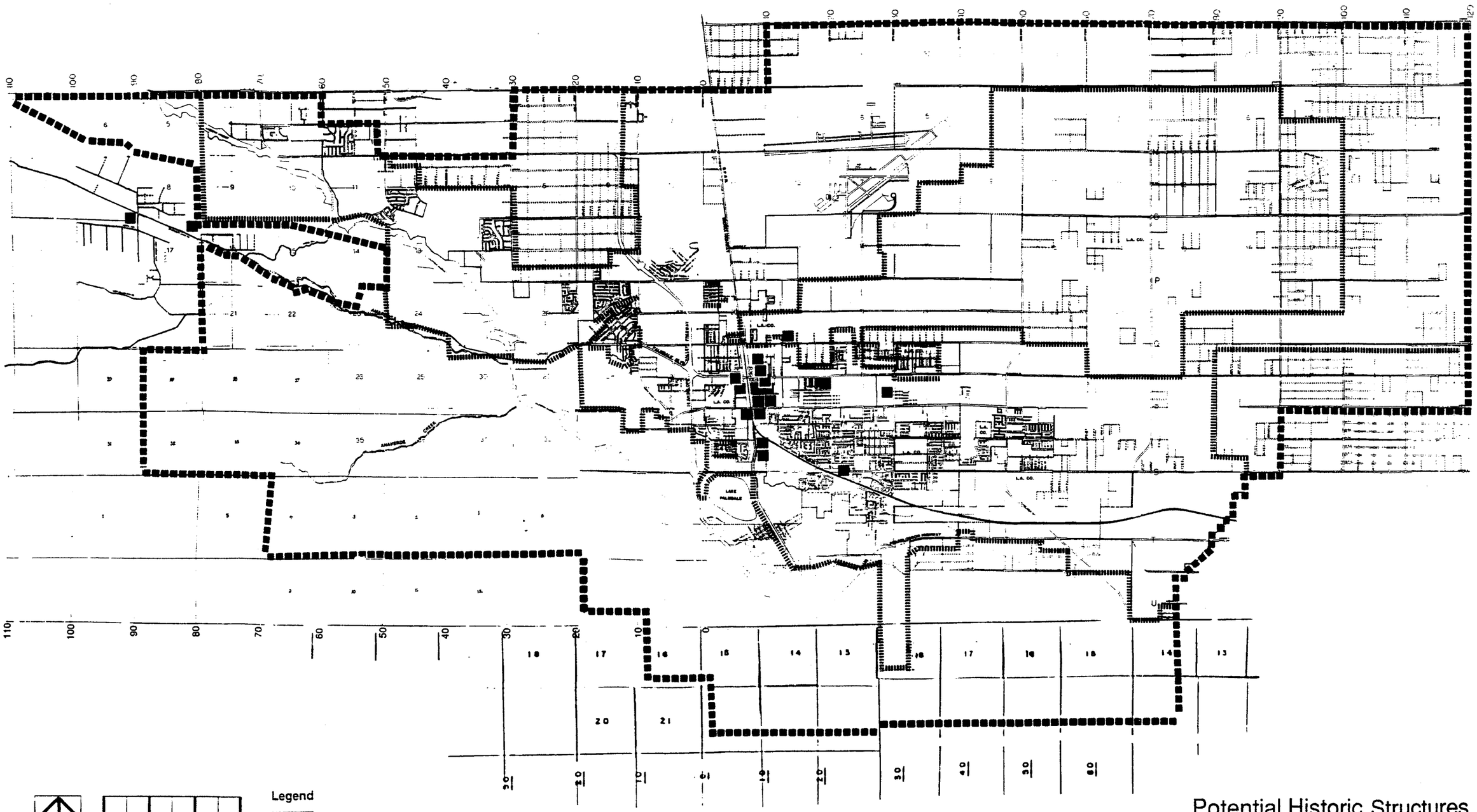


Area Vegetation

Palmdale General Plan

Adopted by City Council
1/25/93

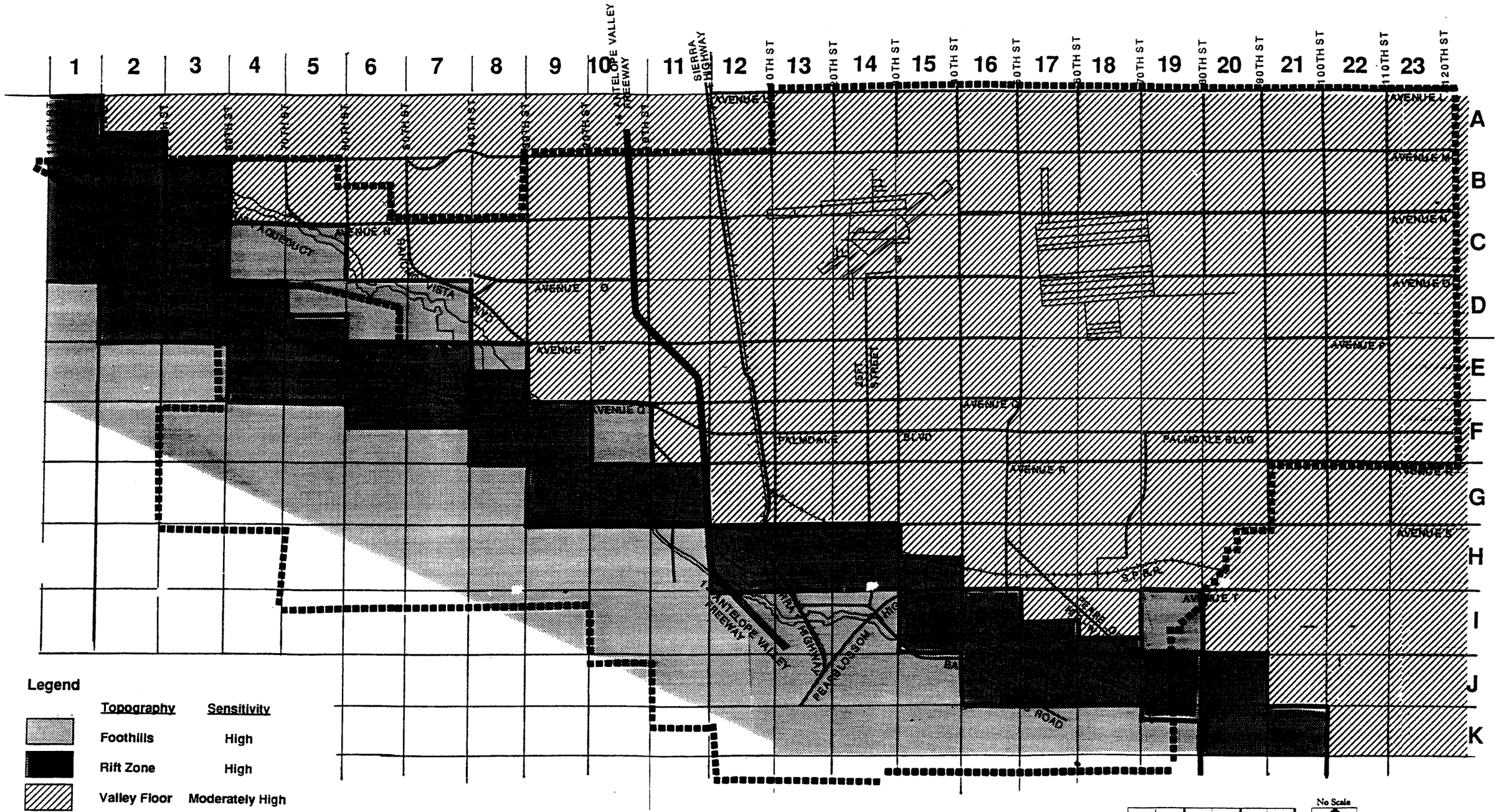
EXHIBIT ER-5



Potential Historic Structures
Palmdale General Plan

Adopted by City Council
1/25/93

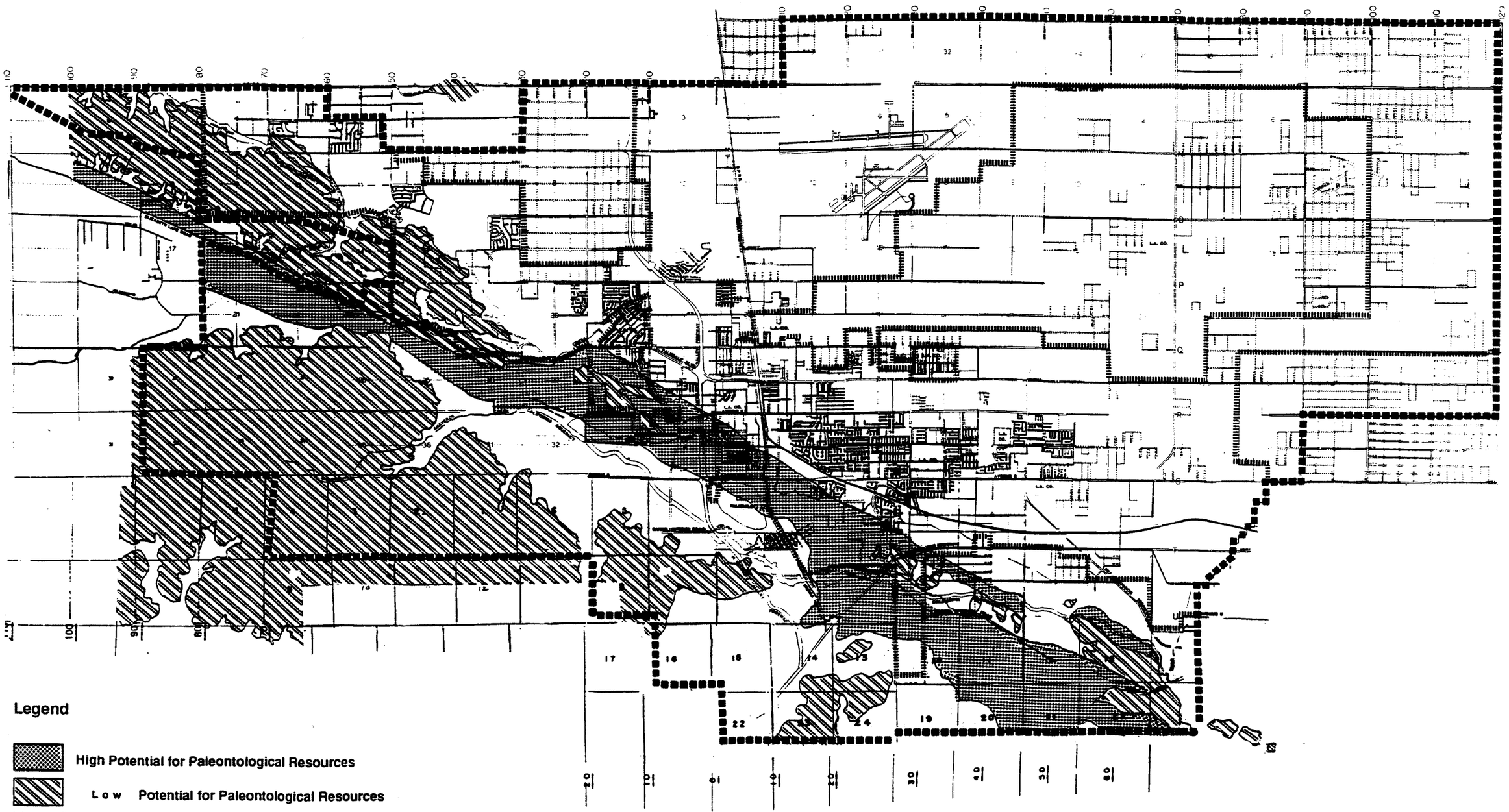
EXHIBIT ER-6



Archaeological Sensitivity Map
Palmdale General Plan

Adopted by City Council
1/25/93

EXHIBIT ER-7



Legend

- High Potential for Paleontological Resources
- Low Potential for Paleontological Resources
- Undetermined

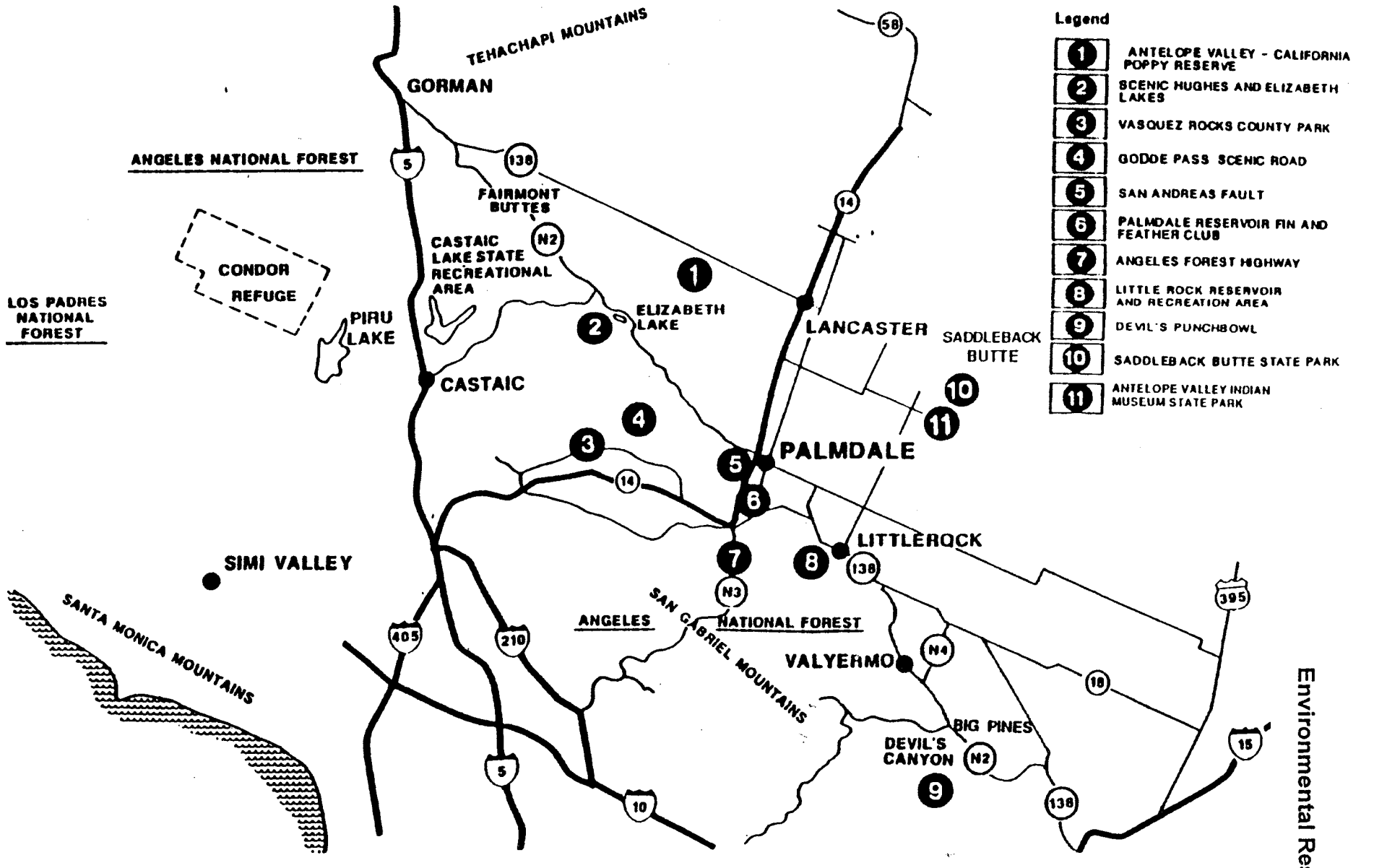
0 4000 9000 Feet

North

Paleontological Sensitivity Map
Palmdale General Plan

Adopted by City Council
1/25/93

EXHIBIT ER-6



Regional Scenic and Recreational Opportunities

Palmdale General Plan

EXHIBIT ER-9

Environmental Resources