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DRAFT
GENERAL PLAN UPDATE
ENVIRONMENTAL IMPACT REPORT

CITY OF ANTIOCH
CONTRA COSTA COUNTY, CALIFORNIA

LSA

July 2003

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GENERAL PLAN UPDATE
ENVIRONMENTAL IMPACT REPORT

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CONTRA COSTA COUNTY, CALIFORNIA

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LSA

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B - CULTURAL RESOURCES
C - HIGHWAY CAPACITY MANUAL EXHIBITS
D - SAND CREEK RESOURCE MANAGEMENT PLAN

1.0 EXECUTIVE SUMMARY

This Executive Summary has been prepared for the proposed Antioch General Plan in accordance with Section 15123 of the *CEQA Guidelines*. This program EIR has been prepared by the City of Antioch to analyze the proposed project's potential impacts on the environment, to discuss alternatives to the proposed project, and to propose mitigation measures that would offset, lessen, or avoid significant environmental impacts. A detailed description of the proposed project is presented in Section 3.0, Project Description. A description of the environmental setting, impacts, recommended mitigation measures, and alternatives to the proposed project are presented in Section 4.0, Environmental Impacts, and Section 6.0, Alternatives to the Proposed Project.

1.1 SUMMARY PROJECT DESCRIPTION

The City of Antioch is in the process of a comprehensive revision and update of the 1988 *Antioch General Plan*. The *General Plan* is the City's most important statement regarding its ultimate physical, economic, and cultural development within the given time period and will be used by officials and others to guide decisions governing development and management of human and natural resources. The *General Plan* uses text, maps, and illustrations to document the organization of physical, environmental, economic, and social activities desired by the City's residents in order to create and maintain a healthful, functional, and desirable community. The *General Plan* addresses immediate and long-term issues including traffic, expansion of the local employment base, provision of public services, and environmental constraints. The goal of the General Plan is to provide a consistent policy guide, which incorporates public health, safety, and "quality of life" considerations.

1.2 PROJECT LOCATION AND SETTING

The City of Antioch is located in eastern Contra Costa County at the juncture of the San Joaquin and Sacramento Rivers, at the western edge of the San Joaquin-Sacramento Delta. The City is bordered on the north by the San Joaquin River, on the west by the City of Pittsburg; and on the east by the Cities of Oakley and Brentwood. The southern border of the City is adjacent to farmland and open space areas on the flanks of Mt. Diablo. The City encompasses approximately 50 square miles, including the area of its jurisdictional boundaries as well as its sphere of influence.

The City is situated between the San Francisco Bay Area and the Central Valley. State Highway 4, which runs east to west, bisects the City and connects it to Interstate 680 and western Contra Costa County. East of the City, Highway 4 connects to Highway 160 or continues east and connects to Interstate 5 and the Central Valley. The majority of land uses in the City are single-family residential (3,871 acres, 23%), followed by industrial uses (831 acres, 3.8%) and commercial uses (456 acres, 2.7%)

1.3 PROJECT OBJECTIVES

The proposed project, as defined by CEQA, is an update of the City's existing General Plan, subsequent amendments to the zoning ordinance, and adoption of implementation measures to achieve consistency with the updated General Plan.

As mandated by the State, a *General Plan* must serve to:

- Identify land use, circulation, economic, and social goals and policies for the City and its planning area as they relate to land use and development;
- Provide a framework within which the City's Planning Commission and City Council can make land use decisions;
- Provide citizens the opportunity to participate in the long-range planning and decision-making process; and
- Inform citizens, developers, decision-makers, and other agencies, as appropriate, of the City's basic rules, which will guide land development and environmental management decisions within the City.

Specific objectives of the *Antioch General Plan* are as follows:

- Provide a broad range of housing that will enable the City to meet it "fair share" of the housing need as determined by ABAG.
- Improve the jobs/housing balance within the City.
- Promote economic vitality, create an expanded employment base, provide entrepreneurial opportunities, and diverse shopping and commercial services.

1.4 ENVIRONMENTAL IMPACTS

Table 1.A summarizes the potential environmental impacts and mitigation measures identified in this Draft EIR for the *General Plan.* For each potential impact, mitigation measures are recommended that would reduce the level of significance of the impact. With the following exceptions, these mitigation measures would reduce the impact to a less-than-significant level. The impacts listed below are considered significant unavoidable adverse impacts that would result from implementation of the *General Plan.*

- Air Quality
- Traffic and Circulation

1.5 ALTERNATIVES TO THE PROJECT

In compliance with CEQA Section 15126.6, an EIR must describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most project objectives, and would avoid or substantially lessen significant effects of the project. The EIR need not consider

every conceivable alternative, rather it must consider a reasonable range of potentially feasible alternatives. An EIR must evaluate a "No Project" alternative, in order to allow decision-makers to compare the effect of approving the project to the effect of not approving the project.

Alternatives for the General Plan were generated through a Community-Wide Workshop, One-on-One Interviews with Antioch City Council and Planning Commission members, and input from a Steering Committee and City staff. From this input the following alternatives were generated and are analyzed in this Draft EIR:

1.5.1 Alternative 1: No Project, No Build Alternative

With this alternative, the proposed General Plan would not be adopted, and no further building would occur within the City of Antioch. This prohibition would compel any subsequent development to occur in the unincorporated areas of the County or in adjacent cities, resulting in any incremental growth in population, housing, or employment opportunities to occur in these areas. The No Build alternative represents a baseline against which the impacts of the proposed General Plan can be measured.

1.5.2 Alternative 2: No Project, Existing General Plan Alternative

As required by Section 15126.6(e) of the CEQA Guidelines, Existing General Plan Alternative describes build out of Antioch in accordance with existing zoning and General Plan land use designations under the policies and implementing strategies of the current General Plan.

Implementation of this Alternative assumes that ultimate build out of the existing General Plan would occur. Under the No Project, Existing General Plan Alternative, the City's population and jobs would increase consistent with development allowed under the existing General Plan and would be consistent with ABAG projections.

1.5.3 Alternative 3: Rural Alternative

Under the Rural Alternative, the City would adopt the proposed General Plan with the exception that future urban development outside of the City's existing sphere of influence and the County's Urban Limit Line would be eliminated and the Sand Creek Focus Area Option B would be implemented. Thus, with the Rural Alternative, urban development within the Roddy Ranch and Ginochio Property Focus Areas would not occur and the Sand Creek Focus Area would build out at a lower residential density and with less commercial and industrial development.

1.5.4 Alternative 4: Reduced Density Alternative

With the Reduced Density Alternative**,** the City would adopt an updated General Plan, but with lower development intensities than those that are currently proposed. For example, the mixed use, pedestrian-oriented uses that are described in the proposed General Plan would be developed with either moderate density conventional residential uses or with lower intensity business park uses. Residential densities for future development would be reduced as compared to the proposed General Plan as follows:

- The density of conventional single-family subdivisions would be reduced by 0.5 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- Medium density development would be reduced by 1.0 dwelling unit per acre (du/ac) as compared to the proposed General Plan.
- High-density development would be reduced by 2.0 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- Floor Area Ratios for new non-residential development would be reduced by 0.5.

1.6 ISSUES TO BE RESOLVED

1.6.1 Areas of Controversy

Section 15123(b)(2) also requires that the EIR Summary identify areas of controversy, including issues raised by other agencies and the public. Potential areas of controversy identified for the General Plan include the proposed development of the southern portion of the Planning Area and the location and intensity of future urban development.

1.6.2 Comments Received on the Notice of Preparation

A Notice of Preparation (NOP) for the Draft EIR was distributed to State, regional, and local agencies on March 26, 2003. In addition, the NOP was mailed to organizations considered likely to be interested in the project and its potential impacts. Comments received on the NOP were used to help identify impacts that could result from implementation of the *General Plan.*

Comments on the NOP were received from the following agencies:

- Bay Area Air Quality Management District
- Contra Costa County Community Development Department
- Contra Costa County Flood Control District
- East Bay Municipal Utility District
- East Bay Regional Park District
- Greenbelt Alliance
- State of California Department of Transportation

Copies of both the NOP document and the agency response letters are located in Appendix A of this EIR.

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.1 AESTHETICS AND VISUAL RESOURCES		
Potentially Significant Impacts		
Affected Views to Scenic Vistas and Scenic Resources **Impact 4.1.1.** The proposed General Plan would increase the development of urban uses, causing a loss of open space and change in aesthetic character. This could have a significant adverse impact on existing and future scenic vistas and scenic resources.	Polices: 5.4.2, 5.4.14 No additional mitigation is required.	Less than significant
Light and Glare **Impact 4.1.2.** Light and glare resulting from new development associated with implementation of the proposed General Plan could adversely affect day or nighttime views of Antioch.	**Mitigation Measures** **4.1.2A.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require that sources of lighting within the General Plan area be limited to the minimum standard required to ensure safe circulation and visibility. **4.1.2B.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: Within rural areas the City of Antioch shall require street lighting to be limited to intersections and other locations that are needed to maintain safe access (e.g., sharp curves). **4.1.2C.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require exterior lighting for buildings to be of a low profile and intensity. **4.1.2D.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require that commercial and industrial development provide design features such as screened walls, landscaping, setbacks, and lighting restrictions between the boundaries of adjacent residential land use designations to reduce the impacts of light and glare.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.2 AIR QUALITY		
Less Than Significant Impacts		
Local Carbon Monoxide Hot Spot Impacts The project area and the entire Bay Area have been in attainment of the Federal and State CO standards. The ambient CO concentrations monitored at all Bay Area monitoring stations have low to moderate CO levels that have sufficient margins before the standards would be exceeded. It is not anticipated that future ambient CO concentrations, with the proposed General Plan, would violate either the State or Federal CO standards. No mitigation measures are required.	No mitigation required.	Less than significant
Potentially Significant Impacts		
Construction Impacts **Impact 4.2.1.** The BAAQMD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. The BAAQMD has identified a set of feasible PM_{10} control measures for construction activities. The "Basic Measures" should be implemented at all construction sites, regardless of size. The "Enhanced Measures" should be implemented at larger construction sites (greater than 4 acres) where PM_{10} emissions generally will be higher. The "Optional Measures" may be implemented if further emission reductions are deemed necessary by the Lead Agency. The BAAQMD's Enforcement Division should be consulted prior to commencing demolition of a building containing asbestos building materials. The demolition, renovation or removal of asbestos-containing building materials is subject to the limitations of BAAQMD Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing. Compliance with this procedure would be considered to have a less than significant project impact.	Policy:10.5.2.a. No mitigation required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Regional Emissions Associated with Vehicular Trips **Impact 4.2.2.** The proposed General Plan would result in more daily vehicular trips within the Planning Area. Fehr & Peers Associates (FPA) provided the daily vehicle miles traveled (VMT) and average vehicle speed under the existing and future with the proposed General Plan conditions. The build out year for the proposed General Plan is assumed to be 2030. Based on the latest EMFAC 2002 model released by the California Air Resources Board (ARB), emission factors for the existing (2003) and future build out year (2030) were determined. Future emissions would be lower when compared to their corresponding existing emissions, except PM_{10}. The reduction in future vehicular emissions, even when the VMT is projected to increase from its corresponding existing level, is due to much lower emission factors from vehicle exhaust as a result of advanced technologies and improved fuel content. The proposed General Plan would generate NOx emissions, which would exceed the project level operations threshold established by the BAAQMD. However, as the project is a General Plan that affect the entire City, the project level operations thresholds are not considered applicable criteria for the evaluation of project impacts.	Policies:10.5.2.b, 10.5.2.c. No mitigation required.	Significant and unavoidable
Consistency With Clean Air Plan Population and VMT Assumptions **Impact 4.2.3.** Based on the projected average daily traffic (ADT) volumes and average trip lengths for the existing setting and the proposed General Plan, total VMT were calculated.	Policies: 10.5.2.b, 10.5.2.c. No mitigation required.	Significant and unavoidable
Stationary Source Emissions **Impact 4.2.4.** The proposed General Plan would potentially result in increased stationary sources emissions from non-residential development, new industries having the potential for emitting toxic air contaminants, and wood-burning stoves and fire places.	Policies: 10.5.2.d, 10.5.2.e, 10.5.2.f. No additional mitigation measures are required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.3 BIOLOGICAL RESOURCES		
Potentially Significant Impacts		
Impacts to Sensitive Species and Sensitive Natural Communities **Impact 4.3.1** Implementation of the proposed General Plan may result in impacts to species identified as a candidate, sensitive, or special status species, as well as riparian, wetland or other sensitive natural communities.	Policy: 10.4.2. No mitigation required.	Less than significant
Impact 4.3.2 Alteration or loss of habitat of listed proposed, or candidate species that inhibits or compromises recovery efforts that could otherwise lead or contribute to the delisting of the species.	Policy: 10.4.2. No mitigation required.	Less than significant
Impacts to Migratory Wildlife Corridors **Impact 4.3.3** Implementation of the proposed General Plan could interfere with the movement of wildlife species or with migratory wildlife corridors.	Policies: 10.4.2, 10.3.2. No additional mitigation required.	Less than significant
Impact 4.3.4. Future development adjacent to existing preserved land could impact habitat connectivity and the biological value of such preserved lands.	Policy: 10.4.2. No mitigation required.	Less than significant
4.4 CULTURAL		
Less Than Significant Impacts		
Adverse Change in the Significance of an Historical Resource **Impact 4.4.1.** Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands and possible conversion of existing structures into various land uses (e.g., historic homes into office space). Development allowed by implementation of the proposed General Plan could cause the destruction of or loss of an historical resource, as defined in CEQA Guidelines, Section 15064.5.	Policies: 5.4.6, 5.4.11, 10.7.2. No additional mitigation is required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Destruction of a Known Archaeological Resource **Impact 4.4.2.** Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands. Development allowed by implementation of the proposed General Plan could cause the destruction of known archaeological resources, as defined in CEQA Guidelines, Section 15064.5.	Policies: 10.7.2a and b **Mitigation Measures** **4.4.2A.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: If avoidance and/or preservation in the location of any cultural resources is not possible, the following measures shall be initiated for each impacted site: a. A participant-observer from the appropriate Indian Band or Tribe shall be used during archaeological testing or excavation in the project site. b. Prior to the issuance of a grading permit for the project, the project proponent shall develop a test level research design detailing how the cultural resource investigation shall be executed and providing specific research questions that shall be addressed through the excavation program. In particular, the testing program shall characterize the site constituents, horizontal and vertical extent, and, if possible, period of use. The testing program shall also address the California Register and National Register eligibility of the cultural resource and make recommendations as to the suitability of the resource for listing on either Register. The research design shall be submitted to the City of Antioch for review and comment. For sites determined, through the Testing Program, to be ineligible for listing on either the California or National Register, execution of the Testing Program will suffice as mitigation of project impacts to this resource. c. After approval of the research design and prior to the issuance of a grading permit, the project proponent shall complete the excavation program as specified in the research design. The results of this excavation program shall be presented in a technical report that follows the City's outline for Archaeological Testing. The Test Level Report shall be submitted to the City for review and comment. If cultural resources that would be affected by the project are found ineligible for listing on the California or National Register, test level investigations will have depleted the scientific value of the sites and the project can proceed. d. If the resource is identified as being potentially eligible for either the California or National Register, and project designs cannot be altered to avoid impacting the site, a Treatment Program to mitigate project effects shall be initiated. A Treatment Plan detailing the objectives of the Treatment Program shall be developed. The Treatment Plan shall contain specific, testable hypotheses relative to the sites under study and shall attempt to address the potential of the sites to address these research questions. The Treatment Plan shall be submitted to the City for review and comment.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
	e. After approval of the Treatment Plan, the Treatment Program for affected, eligible sites shall be initiated. Typically, a Treatment Program involves excavation of a statistically representative sample of the site to preserve those resource values that qualify the site as being eligible for the California or National Register. At the conclusion of the excavation or research program, a Treatment Report shall be developed. This data recovery report shall be submitted to the City for review and comment.	
Destruction of a Unique Paleontological Resource or Site **Impact 4.4.3.** Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands. Therefore, development as a result of implementation of the proposed General Plan could potentially destroy directly or indirectly a unique paleontological resource or site.	Policies: 10.7.2a and b. Mitigation Measure **4.4.3A.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: When existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor site grading activities with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate reposition, and file a report with the Community Development Department documenting any paleontological resources found during site grading.	Less than significant
4.5 GEOLOGIC AND SEISMIC HAZARDS		
Potentially Significant Impacts		
Ground Shaking **Impact 4.5.1.** The City of Antioch has and will continue to be subject to ground shaking resulting from activity on local and regional faults. Future development permitted by the proposed General Plan may increase the potential for property loss, injury, or death resulting from this ground-shaking hazard. Impacts associated with this issue are potentially significant.	Policies:11.3.2, 11.8.2. Mitigation Measures **4.5.1A.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: as determined by the City of Antioch Building Division, a site-specific assessment shall be prepared to ascertain potential ground shaking impacts resulting from development. The site-specific ground shaking assessment shall incorporate up-to-date data from government and non-government sources and may be included as part of any site-specific geotechnical investigation. The site-specific ground shaking assessment shall include specific measures to reduce the significance of potential ground shaking hazards. This site-specific ground shaking assessment shall be prepared by a licensed geologist and shall be submitted to the City of Antioch Building Division for review and approval prior to the issuance of building permits. **4.5.1B.** The policy stated in Mitigation Measure 4.5.1A shall apply to any structure or facility that undergoes expansion, remodeling, renovation, refurbishment or other modification.	Less than Significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Liquefaction **Impact 4.5.2.** Portions of Antioch are susceptible to liquefaction, a destructive secondary effect of strong seismic shaking. Future proposed General Plan development within Antioch would increase the potential for the placement of structures and facilities in or near areas susceptible to liquefaction. Impacts associated with this issue are potentially significant.	Policies: 11.3.2-i and k. Mitigation Measure **4.5.2A.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: Where development is proposed within an identified or potential liquefaction hazard area (as determined by the City), adequate and appropriate measures such as (but not limited to) design foundations in a manner that limits the effects of liquefaction, the placement of an engineered fill with low liquefaction potential, and the alternative siting of structures in areas with a lower liquefaction risk, shall be implemented to reduce potential liquefaction hazards. Any such measures shall be submitted to the City of Antioch Building Division for review prior to the approval of the building permits.	Less than Significant
Landslides and Rockfalls **Impact 4.5.3.** Landslides and rockfalls can be expected to occur in the southwest corner of the planning area, as a result of seismic activity and other natural processes, or as the result of human activity. Future proposed General Plan development within the City would increase the potential for the placement of structures and facilities in areas susceptible landslides or rockfalls. Impacts associated with this issue are potentially significant.	Policies:5.4.14-a and b; 11.3.2-a, g, h, i, and j, No additional mitigation is required.	Less than Significant
Soil Erosion/Loss of Topsoil **Impact 4.5.4.** Areas exposed during development activities would be prone to erosion and/or the loss of topsoil. The potential for substantial soil erosion or the loss of topsoil is considered potentially significant.	Policies: 8.7.2, 10.6.2. No additional mitigation is required.	Less than Significant
Unstable Geologic Conditions **Impact 4.5.5.** Implementation of the proposed General Plan could facilitate new development in areas that may become unstable and potentially result in landslides, lateral spreading, subsidence, liquefaction, or collapse. Impacts to this issue are potentially significant.	Policy: 11.3.2-a, i, j, and k. Mitigation Measures **4.5.1A** and **4.5.1B**.	Less than significant
Expansive Soils **Impact 4.5.6.** Future development within Antioch would increase the potential for the placement of structures and facilities in areas susceptible to damage resulting from expansive soils. Impacts associated with expansive soils are considered potentially significant.	Policies:11.3.2-a and k. No additional mitigation is required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.6 HAZARDOUS MATERIALS		
Potentially Significant Impacts		
Hazardous Materials Use, Generation and Transport **Impact 4.6.1.** Build out of the proposed general plan may result in increased risk of upset associated with the routine use, generation, and transportation of hazardous materials, which may potentially pose a health or safety hazard.	Policy:11.7.2. No additional mitigation is required.	Less than significant
Impair an Emergency Response Plan **Impact 4.6.2.** Build out of the Proposed General Plan may impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Policy:11.8.2. No additional mitigation is required.	Less than significant
Wildland Fire Hazards **Impact 4.6.3.** Implementation of the proposed General Plan may expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas.	Policy:8.10.2. No additional mitigation is required.	Less than significant
Mine Hazards **Impact 4.6.4** Collapse of historic coal mine tunnels could result in subsidence of lands located above the mines, potentially causing damage to foundations or other improvements.	Policy: 11.3.2. No additional mitigation is required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.7 HYDROLOGY AND WATER QUALITY		
Less Than Significant Impacts		
Impacts to Groundwater Supplies. The City of Antioch receives water from the San Joaquin River and the Sacramento-San Joaquin Delta. Although the City is located within the Tracy sub-basin in the Greater San Joaquin Basin, no municipal water is pumped from groundwater. Therefore, implementation of the Proposed General Plan would not contribute to the depletion of groundwater supplies or reduce the amount of water available for public water supplies. Furthermore, implementing proposed General Plan Policy 10.6.2-c would require the protection of groundwater recharge areas. Policy 10.6.2-a requires that adequate long-term water supplies are available prior to the approval of new development. To further assist in the conservation of water supplies, Policies 10.6.2-b and 10.6.2-f require new development to be designed with water conservation devices and utilize drought-resistant landscaping.	Policies: 3.5.9.2, 3.7.2, 8.7.2,10.3.2, 10.6.2, and 11.8.2. No mitigation required.	Less than significant
Impacts to Water Quality. Impacts associated with new development can include erosion and sedimentation associated with groundbreaking and clearing activities. Additionally, stormwater runoff from urban areas contains a variety of pollutants that may reduce the quality of groundwater resources when introduced into groundwater aquifers. To mitigate for the potential violation of water quality or waste discharge standards set by the RWQCB and the degradation of surface or groundwater quality, the proposed General Plan contains Policies 8.7.2-e and 8.7.2-f that would require new development to provide erosion and sedimentation control measures and Best Management Practices (BMPs) when designing new drainage systems. Additionally, implementation of Policy 10.6.2-b would protect groundwater recharge areas. Policies 10.6.2-d through 10.6.2-f would require that proposals are opposed that could degrade water quality in the Delta; stormwater pollution is reduced, and BMPs are implemented to minimize erosion and sedimentation. Implementation of these proposed policies will reduce impacts to water quality to less than significant.	Policies: 3.5.9.2, 3.7.2, 8.7.2,10.3.2, 10.6.2, and 11.8.2. No mitigation required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Risk of Seiche, Tsunami or Mudflows. The City of Antioch is located over 50 miles from the Pacific Coast and is surrounded by moderate hillsides to the south. Due to this geographic location, implementation of the proposed General Plan would not expose people or property to flooding associated with seiches or tsunamis. Additionally, the hillside topography surrounding the City to the south is generally stable and is not prone to mudflows. As stated in the proposed General Plan Policy 3.5.9.2-a, all future development would be subject to project specific environmental review in accordance with the local, State and Federal environmental analysis requirements. Environmental review required for new development would address the potential impacts that could result from mudflow hazards within the City of Antioch. Potential impacts and applicable mitigation measures would be identified on a project-specific basis. Implementation of policy 3.5.9.2-a will reduce potential impacts to a less than significant level.	Policies: 3.5.9.2, 3.7.2, 8.7.2,10.3.2, 10.6.2, and 11.8.2	Less than significant
Risk of Dam Failure. The City of Antioch is located below the Contra Loma Reservoir. The Bureau of Reclamation Division of Dam Safety determined that "safe performance of the dam can be expected under all anticipated loading conditions, including the maximum credible earthquake and probable maximum flood events."[1] The overall safety classification of the dam is registered as satisfactory. To mitigate the potential flooding hazard related to dam failure, the proposed General Plan provides Policy 11.8.2-f that requires regular review and clarification of emergency evacuation plans in the event of dam failure. Implementation of policy 11.8.2-f will reduce potential impacts to a less than significant level.	Policies: 3.5.9.2, 3.7.2, 8.7.2,10.3.2, 10.6.2, and 11.8.2.	Less than significant

[1] Bureau of Reclamation, Dam Safety Division, 1983. Safety Analysis of the Contra Loma Reservoir.

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Potentially Significant Impacts		
Increased Stormwater Runoff **Impact 4.7.1.** Future development under the proposed General Plan would likely result in a net increase in impervious surfaces (i.e., roads, parking lots, buildings). An increase in impervious surface reduces the amount of rainfall that can infiltrate into the subsurface. Increases in runoff can amplify drainage volumes and velocities causing storm drainage facilities that are at or near capacity to fail during peak events, causing localized ponding and flooding. Therefore, the implementation of development in accordance with the proposed General Plan may result in significant impacts related to existing drainage facilities.	Policy: 11.4.2. No additional mitigation is required.	Less than significant
Flood Hazards **Impact 4.7.2.** Implementation of the proposed General Plan would contribute to an increase in development within the City. Development has the potential to increase the risk of flooding, which leads to damage to structures and risk to the health and safety of people. This is a potentially significant impact of the implementation of the proposed General Plan.	Policy:3.5.6.2. No additional mitigation is required.	Less than significant
Alteration of the San Joaquin River **Impact 4.7.3.** Revitalization and development of Rodgers Point, including a proposed marina and a new access road, may substantially alter a portion of the San Joaquin River. This is a potentially significant impact due to implementation of the proposed General Plan.	**Mitigation Measure.** The City shall modify the proposed General Plan to incorporate a policy with the following provision: Prior to or concurrent with approvals of any development applications, a Master Plan for Rodgers Point and the Rivertown/Urban Waterfront Focus Area shall be prepared and approved by the City. The Master Plan shall provide detailed guidance for environmental review, project-related land use, provision and financing of required public services and facilities, open space preservation, community design, recreational amenities, and community improvements.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.8 LAND USE		
Less Than Significant Impacts		
Physically Divide an Established Community. The physical arrangement of proposed land use designations within the City is proposed to be changed with implementation of the proposed General Plan. The proposed General Plan is designed to protect existing neighborhoods. The proposed General Plan will guide where and in what manner future development may occur. Because the proposed General Plan provides policies reflective of the unique combination of conditions within each area of the City, implementation of the proposed General Plan will not disrupt or divide the physical arrangement of any established neighborhood. No significant impacts related to this issue will occur.	No mitigation required.	Less than significant
Potentially Significant Impacts		
Changes in the Pattern of Land Use **Impact 4.8.1**. Implementation of the proposed General Plan would alter the amount of land designated for various types of urban, rural, and open space uses. Changes in the pattern of land uses would result in the development of structures or facilities within areas that are currently undeveloped. Relative to adjacent land uses, this intensification of development may contribute to or create significant land use impacts.	Policies: 4.3.2, 4.4.4.2, and 5.4.12. No additional mitigation is required.	Less than significant
Development Outside Urban Limit Line **Impact 4.8.2**. The General Plan proposes urban development within areas that are currently outside of the County's urban limit line. Such development might not be consistent with the provisions of the Contra Costa County 65/35 Land Preservation Plan.	Policy: 4.3.2. No additional mitigation required.	Less than significant
Consistency with ABAG Growth Projections **Impact 4.8.3**. The General Plan proposes employment-generating development in excess of that which is projected by ABAG.	Policies: 3.8.2, and 4.4.4.2 No additional mitigation is required.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Consistency with ABAG Growth Projections **Impact 4.8.3**. The General Plan proposes employment-generating development in excess of that which is projected by ABAG.	Policy: 4.4.6.5. No additional mitigation is required.	Less than significant
4.9 NOISE		
Potentially Significant Impacts		
Short-Term Construction Noise Impacts **Impact 4.9.1.** Noise levels from grading and other construction activities would potentially result in noise levels reaching 91 dBA L_{max} at off-site locations 50 feet from the site boundary. This would result in potentially significant noise impacts to off-site sensitive receptors adjacent to the individual construction site. Compliance with the City's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level.	Policy: 11.6.2. Mitigation Measures **4.9.1A**, and **4.9.1B**.	Less than significant
Long-Term Vehicular Noise Impacts **Impact 4.9.2.** The implementation of the proposed Antioch General Plan would result in potential project-related long-term vehicular noise than could affect sensitive land uses along the roads. New development, particularly residential uses along and adjacent to major transit corridors, could be exposed to excessive traffic-related noise levels.	Policy: 11.6.2 No additional mitigation is required	Less than significant
Long-Term Stationary Noise Impacts **Impact 4.9.3**. New development associated with implementation of the proposed General Plan could expose existing and/or new sensitive uses to stationary noise sources, such as industrial and/or commercial uses.	Policy: 11.6.2 No additional mitigation is required	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Long-Term Railroad Noise Impacts **Impact 4.9.4.** Although the proposed General Plan would not necessarily result in potential project-related increases in railroad noise, there could be new proposed sensitive land uses along and adjacent to the railroads that would be affected by high noise levels from railroad operations.	Policy: 11.6.2 No additional mitigation is required	Less than significant
4.10 POPULATION AND HOUSING		
Potentially Significant Impacts		
Population and Housing Projections are exceeded **Impact 4.10.1.** Build out of the City of Antioch due to implementation of the proposed Housing Element will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. A General Plan is, by definition, growth inducing in that it provides a plan for accommodating future increased in population, housing, and employment. It also provides a plan for ensuring that adequate infrastructure is available to serve that growth. The effects of the growth that will be induced by the proposed General Plan are potentially significant.	Policy: 3.6.2. No additional mitigation is required.	Less than significant
4.11 PUBLIC SERVICES		
Potentially Significant Impacts		
Police Protection **Impact 4.11.1.** Increases in population and employment anticipated with the proposed General Plan would increase the need for police protection and police services, requiring additional emergency responses and the need for additional police personnel and related support facilities. This increased demand for officers and facilities is considered a significant impact.	Policy: 3.5.3, 3.5.3.1, 3.5.3.2, and 8.11.2 No additional mitigation is required	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Fire Protection **Impact 4.11.2.** Implementation of the proposed General Plan will result in a substantial increase in population and residential and non-residential structures, increasing the need for fire emergency services and facilities. Based on increased population figures and current staffing levels, development associated with the proposed General Plan would require additional on-duty firefighters. Therefore, the proposed General Plan could result in significant impacts on existing fire protection services and require expansion of fire protection services.	Policies: 3.5.2.1, 3.5.2.2, and 8.10.2 No additional mitigation is required	Less than significant
Schools **Impact 4.11.3.** Implementation of the proposed General Plan will result in increased development and associated student population throughout the City. School districts may be unable to meet future needs resulting from projected growth.	Policies: 3.5.8.1, 3.5.8.2, and 8.8.2 No additional mitigation is required	Less than significant
Parks and Recreation **Impact 4.11.4.** Build out within the City of Antioch will result in a substantial increase in population, potentially increasing the use of existing parks and recreation facilities. Based on this increased population, development associated with the proposed General Plan will require additional parkland and recreational facilities. Therefore, the proposed General Plan could result in significant impacts on existing parks, as well as recreation services and facilities. These impacts will require the expansion of existing facilities and recreation programs or the construction of new parks and recreational facilities. An increase in staff and/or equipment will be needed to maintain the new parkland and recreational facilities.	Policy: 8.9.2 No additional mitigation is required	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
4.12 UTILITIES		
Potentially Significant Impacts		
Water Supply **Impact 4.12.1** The population increases projected for the City of Antioch with implementation of the proposed General Plan will increase the demand for water beyond that which currently exists. A significant impact will occur when and where the demand for water exceeds supply.	Policies: 8.4.2, and 10.6.2. No additional mitigation is required.	Less than significant
Water Quality **Impact 4.12.2.** Implementation of the proposed General Plan will result in reliance on a higher percentage of lower quality water from the San Joaquin River and may increase the level of pollutants that occur in water reserves. Either of these conditions would result in the deterioration of the quality of drinking water in Antioch and would be a significant impact.	Policy: 10.6.2. No additional mitigation is required.	Less than significant
Wastewater **Impact 4.12.3.** Implementation of the proposed General Plan would generate increases in population and housing, in addition to increases of commercial, and industrial land uses. This growth would incrementally generate wastewater, which will necessitate increased wastewater treatment capacity. Due to the projected growth, this increase is considered substantial and may result in a significant impact on existing wastewater service and facilities.	Polices: 8.5.2, 3.5.5.1, 3.5.5.2, 3.5.9.2, and 3.6.3. No additional mitigation required.	Less than significant
Gas Services **Impact 4.12.4.** Build out of the City will result in a substantial increase in population and residential and non-residential structures, potentially increasing the use of and need for natural gas. Due to the growth involved in the proposed General Plan, this increase may potentially impact existing natural gas facilities.	Policies: 3.6.2, and 9.4.1. Mitigation Measures **4.12.4A**, and **4.12.4B**.	Less than significant

Table 1.A - Summary of Impacts and Mitigation Measures

Environmental Impacts	Policies and/or Mitigation Measure	Level of Significance After Mitigation
Electric Services **Impact 4.12.5.** Build out of the City will result in a substantial increase in population and residential and non-residential structures, potentially increasing the use of and need for electricity. Due to the growth involved in the proposed General Plan, this increase may potentially result in an impact on existing electrical generating facilities.	Mitigation Measures **4.12.4A** and **4.12.4B**.	Less than significant
Solid Waste Services **Impact 4.12.6.** Increases in population and employment with the proposed General Plan could result in the incremental increase of solid waste throughout Antioch. This could increase the need for solid waste disposal, requiring additional landfill capacity and related support facilities. This increase is considered substantial and could result in a significant impact on existing solid waste facilities.	Policy: 8.6.2. Mitigation Measures **4.12.6A**, **4.12.6B**, and **4.12.6C**.	Less than significant
4.13 TRANSPORTATION/TRAFFIC		
Potentially Significant Impacts		
Potential to Degrade Roadway Levels of Service **Impact 4.16.1.** Future growth occurring as the result of implementing the proposed Antioch General Plan will increase area-wide traffic volumes with the potential to degrade roadway performance below applicable performance standards.	Policies: 3.4.4, 3.4.5, 7.3.2 Mitigation Measure. Because the significant impacts that have been identified will occur on roadways that not under the City's jurisdiction, and will occur even in the absence of future growth in Antioch, there are no feasible mitigation measures that the City could adopt to reduce traffic impacts to a less than significant level.	Significant and unavoidable

2.0 INTRODUCTION

2.1 PURPOSE

In compliance with the California Environmental Quality Act (CEQA), this Draft Environmental Impact Report (EIR) describes the environmental consequences that may result from the proposed update of the Antioch General Plan. It also discusses alternatives to the proposed General Plan, and proposes mitigation measures that will offset, minimize, or otherwise avoid significant environmental impacts. This EIR has been prepared in accordance with CEQA, California Resources Code Section 21000, *et seq.*; the *Guidelines for California Environmental Quality Act* (California Code of Regulations, Title 14, Chapter 3); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Antioch.

The EIR assumes full realization of all proposed General Plan policies through a build out year estimated to be 2030. This EIR is designed to fully inform City staff, the Planning Commission, City Council, other responsible agencies, and the general public of the proposed General Plan and the potential environmental consequences of its approval.

2.2 CONTACT PERSON

Questions regarding the preparation of this report, its assumptions, or its conclusions, should be referred to the following person:

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Antioch, California 94531-5007

2.3 CEQA REQUIREMENTS

According to Section 15002 of *CEQA Guidelines*, the basic purposes of CEQA are to:

- Inform government decision-makers and the public about the potential significant environmental effects of proposed activities;
- Identify ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governing agency finds the changes to be feasible; and

- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

This EIR is a "Program EIR," which evaluates the broad-scale impacts of the proposed General Plan. Program EIRs are typically prepared for an agency plan program, or series of actions that can be characterized as one large project, such as a general plan. Tiering refers to the concept of a multi-level approach to preparing environmental documents (*CEQA Guidelines*, Section 15152). A General Plan EIR, addressing the impacts of countywide and local policy decisions, can be thought of as a "first tier" document, evaluating the large-scale impacts on the environment that can be expected to result from the adoption of the General Plan, but does not necessarily address the site-specific impacts that each subsequent development project may have. CEQA requires each of those subsequent development projects be evaluated for their particular site-specific impacts. These impacts are typically encompassed in "second-tier documents," such as Project EIRs, Focused EIRs, or (Mitigated) Negative Declarations, which typically evaluate the impacts of a single activity undertaken to implement the overall plan.

According to the *CEQA Guidelines* (Section 15168(a)), a State or local agency should prepare a Program EIR, rather than a Project EIR, when the Lead Agency proposes the following:

- Series of related actions that are linked geographically;
- Logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program; or
- Individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

In this case, the Program EIR will address the General Plan, which is the proposed project. This EIR considers a series of actions needed to achieve the implementation of the proposed General Plan. Further actions or procedures required to allow implementation of the proposed General Plan include the processing of zoning plans, specific plans, tentative tract maps, site design plans, building permits, and grading permits. Future projects within the City will continue to be subject to CEQA, and subsequent environmental documents will be prepared to analyze the environmental impacts of specific development projects.

In a Program EIR, CEQA allows the general analysis of broad environmental effects of the program with the acknowledgment that subsequent site-specific environmental review may be required for particular aspects of portions of the program at the time of project implementation. The Program EIR would serve a valuable purpose as a first-tier environmental analysis. The Program EIR can be incorporated by reference into subsequently prepared environmental documents to address issues, such as cumulative impacts and growth inducing impacts, allowing the subsequent documents to focus on new or site-specific impacts (*CEQA Guidelines*, Section 151168(d)).

Although the legally required contents of a Program EIR are the same as those of a Project EIR, in practice there are considerable differences in level of detail. Program EIRs are typically more conceptual and abstract. They contain a more general discussion of impacts, alternatives, and mitigation measures. The analysis in this Program EIR is not intended to be a substitute for site-specific environmental analysis for future development projects (e.g., determining the level of service

for intersections within the City or specific biological impacts for future development projects)[1]. This EIR provides a macro-scale analysis that can be used to focus environmental review for future development projects on site-specific, project-related issues. Thus, the General Plan EIR will provide a long-term, cumulative analysis for these developments. For example, the biological resources analysis determines the cumulative impacts that will occur to biological resources that will occur from implementation of each of the development projects that can be expected occur as part of implementing the Antioch General Plan, but is not based on the detailed site-specific surveys that would be expected of subsequent development projects.

Overall, the Program EIR will help determine the significance of need for subsequent environmental documentation. Parameters by which a Lead Agency can determine the need for additional environmental documentation are contained in the *CEQA Guidelines* (Sections 15160 to 15170).

2.4 PREVIOUS ENVIRONMENTAL DOCUMENTATION

As stated in Section 15150 of the State CEQA Guidelines, "An EIR or negative declaration may incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public." Section 15150(b) further states that all documents incorporated by reference shall be made available to the public for inspection at a public place or public building and requires that the EIR state where the incorporated documents will be made available for public inspection. Section 15150(d) requires the EIR to include the state identification number of any previous EIR or negative declaration which has been incorporated by reference. The following document has been incorporated by reference:

Sand Creek Specific Plan and Four Associated Development Plans Draft Environmental Impact Report (Mundie & Associates and the City of Antioch, August 2002)

This EIR was utilized for the discussion of mine hazards contained within Section 4.6. Information from the Specific Plan EIR was used to describe the history of mines within the Antioch Planning Area, the location of the mines, and the hazards associated with these abandoned mines. The mitigation recommended within this document was also utilized in the analysis of the hazards associated with mines and the effect of the proposed General Plan.

2.5 INTENDED USE OF THIS PROGRAM EIR

The City of Antioch, as the Lead Agency for the project, has the responsibility for preparing the EIR for the General Plan update, as well as for reviewing and approving the proposed project. The City has prepared this Program EIR as a stand-alone document; it is not tiered from any previously certified environmental document(s). The EIR will be used to provide decision-makers and the general public with relevant environmental information to use in considering adoption of the Antioch General Plan by the City Council. This EIR may also be used for future actions to implement the General Plan, including the review and approval of statutory specific plans and implementing Zoning

[1] Where site-specific information is available that provides insight into cumulative, General Plan level issues, such information has been incorporated into the General Plan EIR. An example of the incorporation of site-specific information is the Framework Plan for the Sand Creek focus Area, which can be found in Appendix D.

Ordinance amendments. This EIR may also serve as the basis for focusing the scope of subsequent environmental review for actions that require additional environmental analysis, such as the specific development proposals that are consistent with the General Plan.

Table 2.A - Responsible Agencies and Future Discretionary Actions

Agency	Action
City of Antioch	Amendment of Zoning Ordinance
City of Antioch	Modifications to water and sewer master plans
City of Antioch	Preparation of a Specific Plan for the "A" Street Focus Area

Source: LSA Associates, Inc. 2002.

2.6 INITIAL STUDY AND NOTICE OF PREPARATION

To further the basic purposes of CEQA, the environmental review process requires the preparation and public circulation of several documents. These include, in addition to the General Plan Program EIR, a Notice of Preparation (NOP), and an Initial Study (IS).

The City of Antioch formally initiated the environmental process with circulation of an NOP, which was sent to responsible agencies and interested individuals for a 30-day review period from March 27 to April 27, 2003. An NOP is a brief notice that the Lead Agency plans to prepare an EIR for a project. The purpose of the NOP is to solicit guidance from agencies and individuals as to the scope and content of the environmental information to be included in the EIR. Within 30 days after receiving the NOP, responsible agencies are to provide the Lead Agency with specific detail about the scope and content of the environmental information related to the responsible agency's area of statutory responsibility. This information must be included in the draft Program EIR. The NOP and the responses to the NOP from agencies and individuals are included in Appendix A.

An IS for the proposed General Plan was presented to the public on March 27, 2003, and circulated with the NOP. Where, as here, it is known that an EIR will be prepared, an IS is not required. Nonetheless an IS is helpful in identifying the likely potential environmental impacts that should be studied in the EIR. The full range of potential environmental effects associated with the implementation of the General Plan, as identified in the IS, is contained in Appendix A.

2.7 FOCUS OF THE PROGRAM EIR

This Draft EIR focuses on the areas of concern identified in the NOP and comments submitted on the NOP. The following environmental topics are addressed in this EIR:

1. Aesthetics and Visual Resources
2. Air Quality
3. Biology
4. Cultural Resources
5. Geology, Soils and Seismicity
6. Hazards
7. Hydrology and Water Quality

8. Land Use
9. Noise
10. Population and Housing
11. Public Services
12. Utilities
13. Transportation and Circulation

2.8 AREAS OF PUBLIC CONCERN OR KNOWN CONTROVERSY

During the proposed General Plan preparation process, meetings were held by the City to solicit input from the City Council, the Planning Commission, and the community. A General Plan Steering Committee, consisting of members of the City Council, Planning Commission, Parks and Recreation Commission, and Design Review Board, as well as a representative from the Antioch Unified School District Board met in public sessions over an 18 month period. Members of the public were invited to, and participated in the more than 20 meetings held by the Steering Committee. In addition, one-on-one interviews were conducted with City Council and Planning Commission members. A web page with information on the General Plan and the update process was posted to the City's web site and included information on the General Plan, a summary of the one-on-one interviews, notes from a field tour of Antioch prior to development of the General Plan, a General Plan Alternatives Report, and information on a Community-Wide Workshop related to the update of the General Plan.

From these various meetings and interviews, the following areas were identified as topics of public concern or known controversy:

1. Compatibility of proposed development of the Sand Creek Focus Area with adjacent existing natural habitat areas; and
2. The relationship of proposed development south of the existing Antioch City limits to the existing Contra Costa County Urban Limit Line.

2.9 EIR MITIGATION MONITORING

A Mitigation Monitoring and Reporting Program (MMRP) will be prepared to comply with the requirements of State law (Public Resources Code, Section 21081.6). State law requires the adoption of an MMRP when mitigation measures are required to avoid significant impacts. The monitoring program is intended to ensure compliance during implementation of the program. An MMRP will be adopted by the City Council concurrent with certification of the Final EIR for the Antioch General Plan.

2.10 DOCUMENT FORMAT

This EIR is organized into the following sections:

- *Section 1.0 – Executive Summary* provides a summary of the Program EIR document; identifies potentially significant impacts and mitigation measures; describes the level of significance of each impact following mitigation; and summarizes the program alternatives with a relative comparison of impacts.

- *Section 2.0 – Introduction* provides a discussion of the EIR's purpose, focus, legal requirements, and an outline of the documents format and content.

- *Section 3.0 – Project Description* provides a description of the General Plan in terms that are relevant to this environmental review.

- *Section 4.0 – Setting, Impacts and Mitigation Measures* includes a description of existing setting and the environmental analysis (impacts and mitigation measures) for each environmental topic. The description of existing conditions (existing setting) includes a list of applicable regulatory policies (Federal, State, and local). The environmental analysis section for each environmental topic describes the elements of the proposed project (i.e., the proposed General Plan polices) that are applicable to the subject environmental topic; provides an analysis of potential environmental impacts and their level of significance; and recommends mitigation measures to mitigate identified impacts.

  Each impact is categorized *before* and *after* implementation of any recommended mitigation measure(s). Potential impacts that will require the implementation of mitigation measure(s) to be reduced to a less-than-significant level are identified as significant prior to mitigation and less than significant after mitigation. Potentially significant impacts that cannot be mitigated to a less-than-significant level are identified as significant and unavoidable after mitigation.

- *Section 5.0 – Additional Topics required by CEQA* provides the required analysis of the overall impacts of the proposed project, including: effects found not to be significant; growth-inducing impacts; the relationship between short-term uses of the environment and the enhancement of long-term productivity; significant irreversible and unavoidable impacts; and cumulative impacts for the environmental issues found to have significant effects.

- *Section 6.0 – Alternatives* provides an evaluation of alternative development scenarios to the proposed General Plan.

- *Sections 7.0 through 9.0 – Organizations and Persons Consulted, References, List of Preparers* identify the reference documents, publications, and literature reviewed and cited, and provide a summary of those involved in report preparation.

3.0 PROJECT DESCRIPTION

3.1 PROJECT LOCATION

The City of Antioch is located in eastern Contra Costa County, approximately 40 miles northeast of Oakland. Adjacent cities include Pittsburg to the west and Oakley and Brentwood to the east and southeast, respectively. The City and its General Plan study area are bordered by the San Joaquin River to the north and unincorporated Contra Costa County to the south.

The Antioch General Plan study area encompasses all of the City of Antioch and its sphere of influence, as well as additional lands to the south of the City that, in the opinion of the City, bear a relationship to its long-term planning. State law permits the inclusion of such lands within a community's General Plan. However, the Antioch General Plan asserts land use control only over lands actually within the corporate limits of the City. Until such time, that lands currently outside of the City of Antioch may be incorporated into the City, the Contra Costa County General Plan will remain the lead land use planning document for existing unincorporated territory.

3.2 PROJECT OBJECTIVES

The primary goal of the Antioch General Plan is to provide residents of the City with a "blueprint" for public and private development. The General Plan will act as the foundation upon which City leaders will make all land use and new development-related decisions. The proposed General Plan expresses the community's goals with respect to man-made and natural environments, and sets forth the policies and implementation measures to achieve those goals. The objectives of the Antioch General Plan include the following:

- Meet the requirements of State General Plan law by providing a long-range plan for Antioch that:
  - Serves to develop Antioch into a balanced community in which people can live, work, shop, and have recreation without needing to leave the City;
  - Minimizes conflicts between various land uses, and promotes rational utilization of presently undeveloped and underdeveloped land;
  - Expands the local employment base to provide a balance between local employment and housing opportunities;
  - Maintains a moderate rate of residential growth to ensure that the expansion of public services and facilities keeps pace while meeting the needs of all economic segments of the community with an appropriate range of housing opportunities, including executive housing, traditional single family neighborhoods, middle to upper end attached housing products, and affordable housing;
  - Improve ongoing traffic congestion problems;

  - Balances the provision of diverse housing options with local employment opportunities, attracts investment, and increases the local tax base in a manner that provides sufficient municipal revenues to cover the cost of high quality municipal services and facilities; and
  - Reestablishes the Rivertown area and waterfront as a distinctive part of the City's identity.
- Define what makes Antioch a special place, delineate a vision for its future, and set forth action-oriented programs to achieve that future.
- Provide for the maintenance of a high quality of life for Antioch residents, including:
  - Enhancing family-oriented activities by reducing commute times to work and providing a broad range of recreational lands and activities within the community;
  - Facilitating mobility via public transit, automobile, bicycle, and pedestrian modes of transportation; and
  - Working with local school districts to provide high quality educational facilities and services.
- Maintain a clear linkage between growth and development within the City and expansion of its service and infrastructure systems, including transportation systems; parks, fire, police, sanitary sewer, water, and flood control facilities; schools; and other essential municipal services, so as to ensure that the provision of public services and facilities supports the community's determination of desirable land uses, intensity, character, and rate of growth.
- Create a community design theme and a visual identity for Antioch, recognizing its locale as "Gateway to the Delta."
- Achieve and maintain a balanced, safe, efficient transportation system that:
  - Improves present traffic flows and provides easy and convenient access to all areas of the community;
  - Is safe for all modes of motorized and non-motorized transportation;
  - Reduces dependence on single-occupant automobile travel by providing a high level of pedestrian, bicycle, and public transit travel opportunities; and
  - Preserves a sense of comfort and well-being throughout the community by reducing the intrusiveness of commercial, business park, and industrial traffic, rail traffic, and regional traffic on neighborhood streets and residents' quality of life.
- Provide for the timely expansion of high quality public services and infrastructure to serve existing and future residents, businesses, recreational facilities, and other facilities within the City of Antioch.
- Conserve and enhance the unique natural beauty of Antioch's physical setting, and control the expansion of urban development by protecting open space where it is important to preserve natural environmental processes and areas of cultural and historical value.
- Minimize the use of water and energy resources so as to ensure a sustainable long-term supply.

3.3 PROJECT CHARACTERISTICS

Antioch's updated General Plan describes the projected growth and development within the City over the long-term, and acts as a "constitution" for public and private development, the foundation on which City authorities will make development and other land use-related decisions. The General Plan is meant to express the City's goals with respect to both the man-made and natural environments, and sets forth the policies and implementation measures to achieve them for the welfare of those who live, work, and do business in the City.

State law requires each city and county to adopt a General Plan that contains, at a minimum, seven elements. State law permits cities and counties to organize the information, goals, policies, and programs included in their General Plans in the manner best suited to the needs of the city or county. Thus, the seven mandatory elements of a jurisdiction's General Plan need not be specific chapters or sections, provided that all the subjects required by State law, are in fact, addressed. The seven mandatory elements are as follows:

- The **LAND USE ELEMENT** designates the general distribution and intensity of uses of the land for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses.
- The **CIRCULATION ELEMENT** is correlated with the land use element, and identifies the general locations and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities.
- The **HOUSING ELEMENT** provides comprehensive assessment of current and projected housing needs for all economic segments of the community, as well as groups having special housing needs (e.g., homeless, elderly, handicapped). In addition, it embodies policy for providing adequate housing and includes action programs for this purpose.
- The **RESOURCE MANAGEMENT ELEMENT** addresses the use, management, and protection of environmental resources, including open space, biological resources, air quality, water resources, cultural resources, and energy resources. Combined, these topics cover all major aspects of Antioch's natural setting, and encompass state requirements for preparation of General Plan Open Space and Conservation Elements.
- The **NOISE ELEMENT** identifies and appraises noise problems within the community and forms the basis for land use distribution.
- The **SAFETY ELEMENT** establishes policies and programs to protect the community from risks with regard to seismic, geologic, flood, and fire hazards.

State law permits cities and counties to adopt other elements in a General Plan to address issues in addition to those included in the seven mandated elements. The Antioch General Plan includes three "optional" General Plan elements. Although State law does not mandate these elements, once adopted, they have the same force and effect as policies related to the General Plan elements required by the State. These "optional" issues are as follows:

- The **GROWTH MANAGEMENT ELEMENT** delineates performance standards for public services and facilities, defining the responsibility of new development to "pay its own way" and

provide a net benefit to the community. This element also sets forth a program to manage the rate of residential growth within the City.

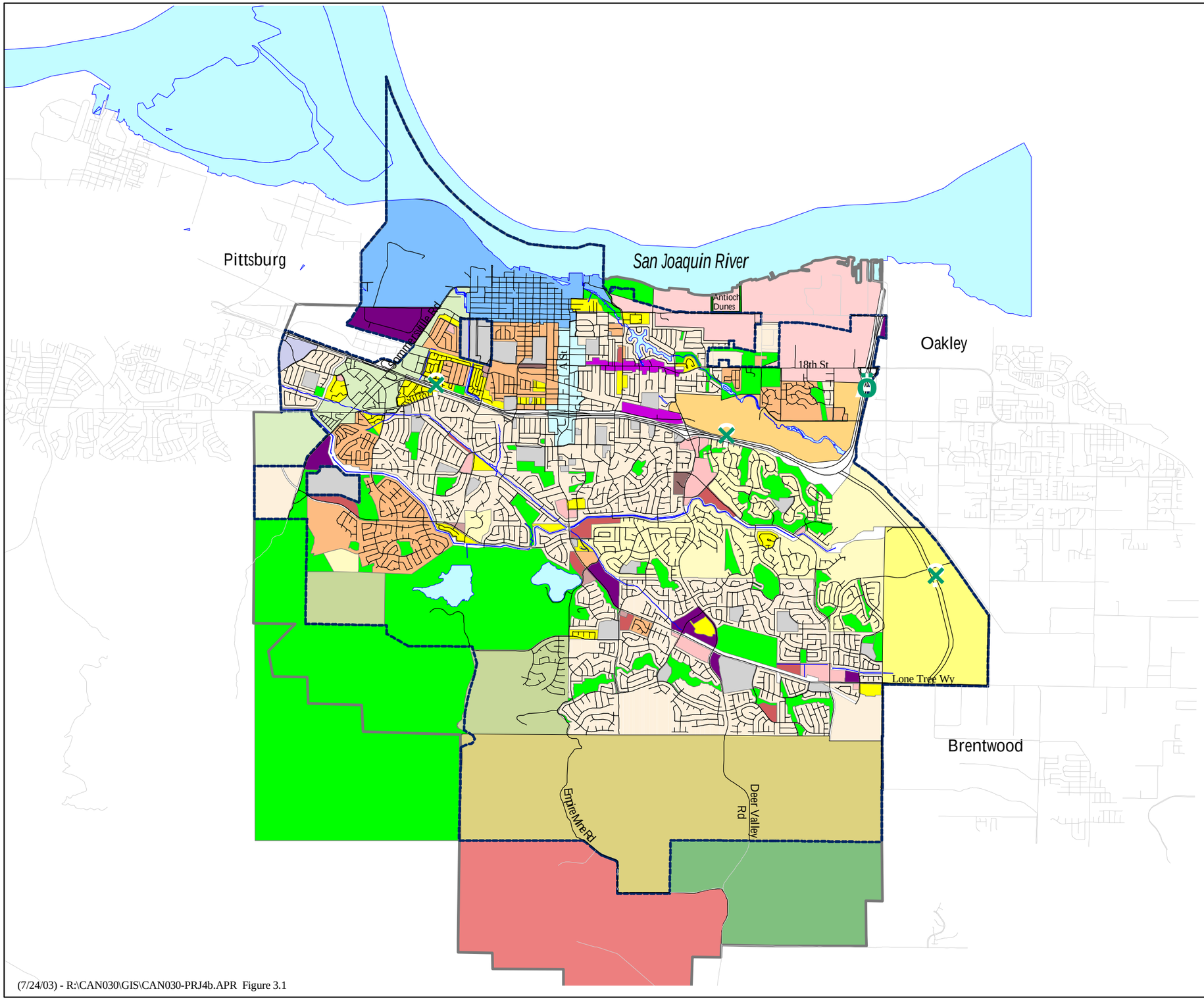
- The **PUBLIC SERVICES AND FACILITIES ELEMENT** includes policies and programs to define the manner in which established minimum level of service standards for circulation, drainage, water and sewer facilities, parks and recreation facilities, police and fire services and other services and facilities will be met. The General Plan also identifies responsibilities to be placed on new development, and indicates what the consequences will be if such minimum standards are not achieved.
- The **ECONOMIC DEVELOPMENT ELEMENT** includes strategies devoted to the promotion of a healthy economic base within the City of Antioch, expansion of retail sales tax generation within the City, and expansion of Antioch's local employment base.
- The **COMMUNITY IMAGE AND DESIGN ELEMENT** addresses the visual quality and character of Antioch's built environment, and a continuing process to shape the community's physical form. This Element, along with the Land Use Element, will provide guidance for detailed design guidelines and standards for development.

The proposed General Plan is intended to promote a focused and balanced pattern of growth that accommodates the demand for housing, employment opportunities, and public services/facilities, while minimizing the impacts of increasing urban development. The proposed land uses for the City are illustrated in Figure 3.1 and shown below in Tables 3.A through 3.C. Figure 3.2 is the proposed circulation map.

The General Plan envisions Antioch becoming a full-service city, providing a broad range of community services and amenities, such as cultural activities and arts, recreation, shopping, and entertainment. The vision expressed in the General Plan describes Antioch's future as:

- A city known for its scenic riverfront, economic vitality, vibrant historic Rivertown area, high quality schools, well-kept neighborhoods, cultural and recreational amenities, and for its high quality public services and facilities;
- A city in which families want to raise their children; in which children choose to stay and, as they become adults, raise their own families;
- A city that the elderly find desirable for their retirement years;
- An inclusive community, providing housing and employment opportunities for executives, managers, and professionals; highly skilled, semi-skilled, and unskilled workers; and retail and service workers; and
- A community in which residents can live, work, shop, and spend their leisure time.

The Antioch General Plan aims at providing commercial and industrial lands for a wide variety of office-based and industrial employment, including heavier industrial and rail-served industries in the northern portion of the City, along with light industry, commercial service, and retail businesses, along with mixed-use business and office parks. To complement these employment-generating lands, a broad range of housing is envisioned, including the following:



GENERAL PLAN LAND USE DESIGNATIONS

- ESTATE RESIDENTIAL (1 du/ac)
- LOW DENSITY RESIDENTIAL (4 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (6 du/ac)
- MEDIUM DENSITY RESIDENTIAL (10 du/ac)
- HIGHT DENSITY RESIDENTIAL (up to 20 du/ac)
- CONVENIENCE COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- SERVICE COMMERCIAL
- MIXED USE
- OFFICE
- BUSINESS PARK
- HEAVY INDUSTRIAL
- PUBLIC/INSTITUTIONAL
- OPEN SPACE

FOCUS AREAS

- A STREET INTERCHANGE
- EAST LONE TREE SPECIFIC PLAN
- EASTERN EMPLOYMENT AREAS
- GINOCHIO
- RIVERTOWN/URBAN WATERFRONT
- RODDY RANCH
- SR 4 INDUSTRIAL FRONTAGE
- SAND CREEK SPECIFIC PLAN
- SOMERSVILLE ROAD CORRIDOR
- WESTERN GATEWAY

JURISDICTIONAL AND INFRASTRUCTURE

- CITY BOUNDARY
- ANTIOCH DUNES
- PLANNING AREA
- WATER

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SOURCE: CITY OF ANTIOCH (5/21/01)

LSA

FIGURE 3.1

City of Antioch
General Plan Update EIR
Proposed General Plan Land Use

(7/24/03) - R:\CAN030\GIS\CAN030-PRJ4b.APR Figure 3.1

Table 3.A: Maximum Anticipated General Plan Build Out in the City of Antioch

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq. ft.)	Business Park/Industrial sq. ft.)
RESIDENTIAL				
Estate Residential	905	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	14,775	--	--	--
Medium Density Residential	6,490	4,330	--	--
High Density Residential		5,310	--	--
SUBTOTAL	***26,270***	***9,640***		
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
SUBTOTAL	***--***	***325***	***--***	***9,796,510***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	5,926,125
Ginochio Property	--	--	--	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch	--	--	--	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek, Option A	4,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	360	2,045,530	--
Western Gateway	--	340	560,350	--
SUBTOTAL	***7,524***	***3,856***	***6,929,165***	***20,046,425***
TOTAL	**33,794**	**13,821**	**11,097,495**	**29,842,935**

Population	**131,450**
Employed Population	**73,805**
Total Jobs	**67,100**
Retail Jobs	**14,850**
Non-Retail Jobs	**52,250**
Jobs/Population Ratio	**0.91**

[1]Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

Table 3.B: Maximum Anticipated General Plan Build Out in the Unincorporated Area

Land Uses	Single-Family (Dwelling Unit)	Multi-Family (Dwelling Unit)	Commercial/ Office (sq. ft.)	Business Park/ Industrial (sq. ft.)
RESIDENTIAL				
Estate Residential	15	--	--	--
Low Density Residential	--	--	--	--
Medium Low Density Residential	250	--	--	--
Medium Density Residential	30	--	--	--
High Density Residential	--	--	--	--
SUBTOTAL	***295***	**--**	**--**	**--**
COMMERCIAL				
Convenience Commercial	--	--	--	--
Neighborhood Commercial	--	--	--	--
Service Commercial	--	--	--	--
Commercial Office	--	--	--	--
SUBTOTAL	**--**	**--**	**--**	**--**
INDUSTRIAL				
Business Park	--	--	--	--
SPECIAL				
Mixed-Use	--	--	--	--
Public Institutional	--	--	--	--
Open Space	--	--	--	--
SUBTOTAL	**--**	**--**	**--**	**--**
FOCUS AREAS				
"A" Street Interchange	--	--	--	--
East Lone Tree Specific Plan	--	--	--	--
Eastern Employment Areas	--	--	--	7,137,875
Ginochio Property[2]	1,215	135	175,000	
Rivertown/Urban Waterfront	--	--	--	--
Roddy Ranch[2]	2,350	275	425,000	--
SR-4 Frontage	--	--	--	--
Sand Creek, Option A	--	--	--	--
Somersville Road Corridor	--	240	--	1,581,690
Western Gateway	--	--	--	--
SUBTOTAL	***3,565***	***650***	***600,000***	***8,719,565***
TOTAL	**3,860**	**650**	**600,000**	***8,719,565***

Population	**12,425**
Employed Population	**6,960**
Total Jobs	**8,155**
Retail Jobs	**310**
Non-Retail Jobs	**7,845**
Jobs/Population Ratio	**1.17**

[1]Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

[2] Urban development is dependent upon future revisions to the Urban Limit Line (see Policy 4.3.2F).

Table 3.C: Maximum Anticipated General Plan Build Out in the General Plan Study Area

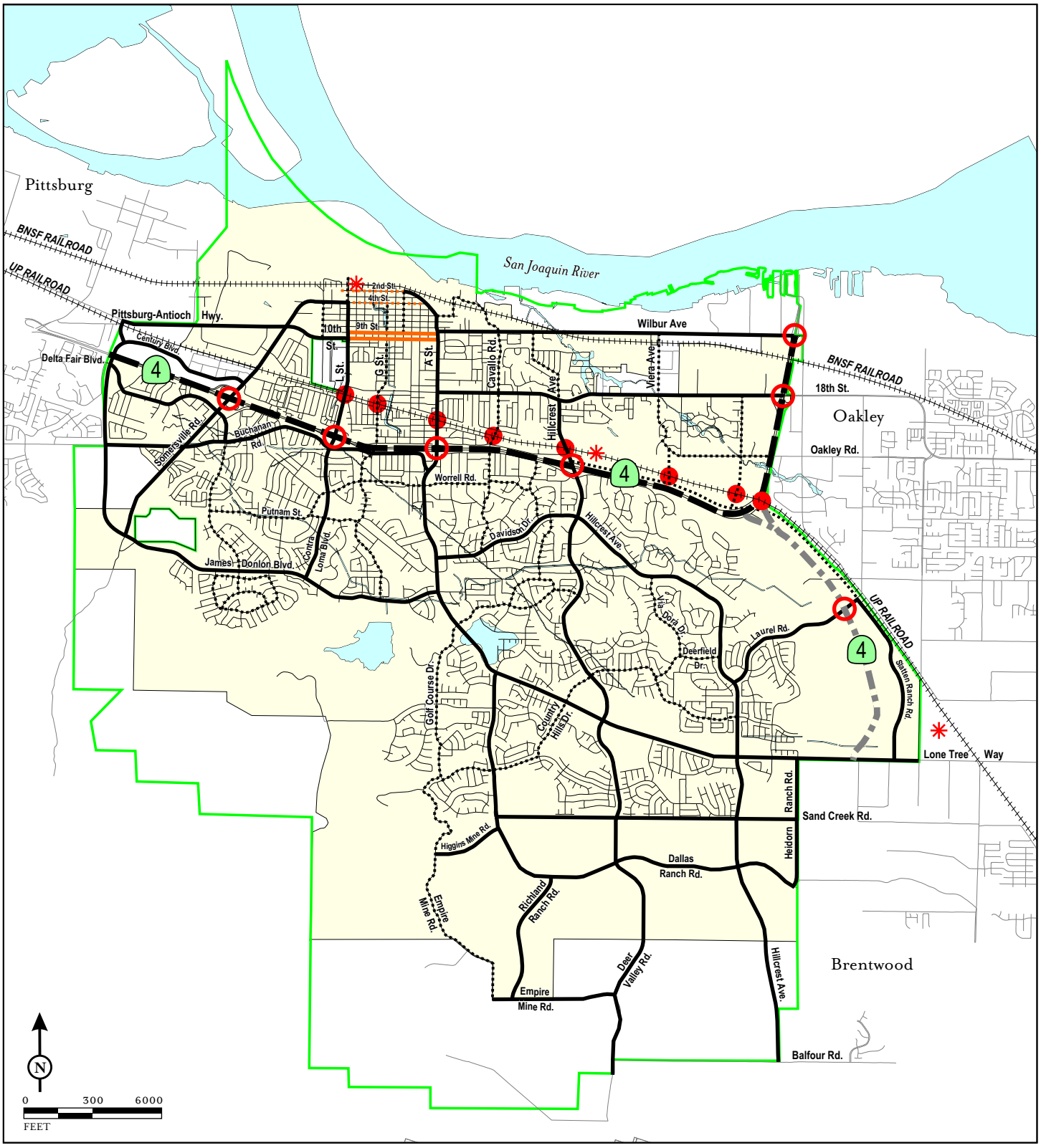
Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
RESIDENTIAL				
Estate Residential	1,830	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	15,025	--	--	--
Medium Density Residential	6,520	4,330	--	--
High Density Residential	--	5,310	--	--
SUBTOTAL	***27,475***	***9,640***	***-***	***--***
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
SUBTOTAL	***--***	***325***	***--***	***9,796,510***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	13,064,000
Ginochio Property[2]	1,480	240	175,000	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch[2]	1,500	200	425,000	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek, Option A	4,537	500	1,240,000	2,600,000
Somersville Road Corridor	--	--	--	--
Western Gateway	--	340	--	560,350
SUBTOTAL	***10,504***	***4,003***	***4,923,285***	***27,744,650***
TOTAL	**37,979**	**13,968**	**9,091,615**	**37,541,160**
Population	**143,875**			
Employed Population	**80,765**			
Total Jobs	**75,255**			
Retail Jobs	**15,160**			
Non-Retail Jobs	**60,095**			
Jobs/Population Ratio	**0.93**			

[1]Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

[2] Urban development is dependent upon future revisions to the Urban Limit Line (see Policy 4.3.2F).

Table 3.D - Comparison of Existing Land Use and Future General Plan Build Out

	Existing City	Unincorporated	General Plan Study Area
Existing Land Use			
Single Family Residential Dwelling Units	27,329	199	27,528
Multi-Family Residential Dwelling Units	6,585	0	6,585
Commercial/Office Building Area (s.f.)	6,106,485	332,125	6,438,610
Employees	10,340	665	11,005
Business Park/Industrial Building Area (s.f.)	10,860,950	7,081,935	17,879,885
Employees	6,210	4,010	10,220
General Plan Build Out			
Single Family Residential Dwelling Units	36,119	3,860	39,979
Multi-Family Residential Dwelling Units	11,820	650	12,470
Commercial/Office Building Area (s.f.)	11,097,495	600,000	11,697,495
Employees	18,790	1,200	19,990
Business Park/Industrial Building Area (s.f.)	29,842,935	8,719,565	38,562,500
Employees	17,035	4,935	21,970
Increase Resulting from General Plan Build Out			
Single Family Residential Dwelling Units	8,465	3,661	12,451
Multi-Family Residential Dwelling Units	5,235	650	5,885
Commercial/Office Building Area (s.f.)	4,991,010	267,875	5,258,885
Employees	8,450	535	8,985
Business Park/Industrial Building Area (s.f.)	18,981,985	1,637,630	20,619,615
Employees	10,825	925	11,750



LSA

CITY OF ANTIOCH

PLANNING AREA BOUNDARY

FREEWAYS

ARTERIALS

ARTERIAL (COUPLET)

MAJOR COLLECTOR

MAJOR COLLECTOR (COUPLET)

RAIL

PROPOSED FREEWAY

RAILROAD GRADE SEPARATION

RAIL TRANSIT STATION

FREEWAY INTERCHANGE

FIGURE 3.2

City of Antioch
General Plan Update EIR
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- Executive housing;
- Traditional single-family subdivisions;
- Planned communities with common open spaces and high levels of community amenities;
- Middle to upper end attached housing products; and
- Affordable housing to provide housing opportunities for the various income ranges represented in the City's employment base.

The focus for the Rivertown area will be to serve as a community gathering place, providing specialty retail, restaurant, and entertainment uses, as well as passive recreational activities along the riverfront. Rivertown will be a vibrant, active downtown area, with both daytime and nighttime activities. The river will become the visual centerpiece of the Rivertown area, featuring a river walk, public art, and activity areas. This river walk will be part of a pedestrian/bicycle trail running along the river from the westerly limits of Rivertown to the existing marina west of Rivertown to Rodgers Point. North-south streets within the Rivertown area will have views of the river, and buildings along the waterfront will "face" the river.

The existing rail line adjacent to Rivertown will become a community asset, rather than a dividing line, providing transit opportunities for Antioch residents and workers. Land uses surrounding the existing train stop will be designed to take advantage of the market created by the rail line's transportation and visitor-serving functions. In addition, a transit-oriented land use pattern will be established adjacent to the Hillcrest Avenue freeway interchange. Land uses adjacent to the proposed rail transit station would include a high-density cluster of office and commercial uses. These high-density uses would be integrated into the surrounding community through pedestrian and bicycle amenities, as well as through consistent urban design themes. Ferry service linking the Bay Area's waterfront communities is envisioned as being available at Rodgers Point anchoring the east end of a waterfront trail in the future.

Retail uses are to be clustered at the SR 4/Hillcrest Avenue and SR-160/18th Street interchanges, along Lone Tree Way, Sommersville Road, "A" Street, East 18th Street, and the SR 4 bypass, as well as at the proposed transportation node. Individual commercial uses at the transportation node would typically be small scale in nature, primarily consisting of restaurants, commercial services, and convenience retail uses oriented toward commuters and workers in adjacent office and industrial areas.

Economic development activities will focus on a combination of expanding local employment opportunities and retail sales tax income. The General Plan envisions expanding local employment opportunities through delineation of commercial and industrial lands for a wide variety of office-based and industrial employment, and implementation of an aggressive economic development program. Because commercial/industrial development will most likely occur both as freestanding uses and larger scale commercial centers and business/industrial parks, the City envisions aiming economic development activities at attracting both commercial/industrial developers and end users. Expansion of the City's sales tax revenues is envisioned to occur through:

- Revitalization and expansion of County East Mall into a mixed-use center, including general and specialty retail, entertainment, office, commercial recreation, entertainment uses;
- Retention of auto dealerships along Somersville Road;

- Development of new specialty retail opportunities within Rivertown;
- Addition of retail uses at the Hillcrest Avenue transportation hub;
- New department stores and upscale retailing to be as part of revitalization of County East Mall and within regional commercial areas to be developed adjacent to the SR-4 Bypass; and
- New retail uses within developing areas of the City.

Because existing traffic congestion largely results from regional traffic patterns connecting housing to distant major job centers, existing regional traffic problems will be addressed through a combination of public transit, roadway expansion, and provision of new employment opportunities throughout the City. Transit improvements are envisioned to include extension of the Bay Area Rapid Transit system (BART) to Antioch in the long-term with interim use of existing rail lines to provide a rail transit connection to BART, employment areas in the northeastern Bay Area, and to the Tracy and Stockton areas. Roadway expansion will include completion of a local arterial roadway system within the East County area and major improvements to the regional highway system. These improvements would be aimed at enhancing linkages among communities within the East County area, as well as between the East County area and employment centers to the south and west. A more equitable allocation for financing major highway improvements will be sought, spreading costs onto both ends of the commute pattern: East County residential areas *and* the employment centers to which residents now commute. In addition, by expanding the area's employment base and achieving a better match between housing and local jobs, commute lengths can be reduced, and peak hour congestion can be relieved.

4.0 SETTING, IMPACTS, AND MITIGATION MEASURES

4.1 AESTHETICS AND VISUAL RESOURCES

The following section describes Antioch's urban form and current visual character. Included are discussions of the City's urban form and general community design elements.

4.1.1 Aesthetics and Visual Resources Existing Setting

The City of Antioch extends in a roughly square pattern from Pittsburg on the west to the Antioch Bridge on the east, and from the foothills of Mt. Diablo on the south to the San Joaquin River on the north. The City is bisected by State Route 4 (SR 4), an east-west-oriented four-lane freeway. The Southern Pacific Railroad line runs east-west just north of SR 4; the Burlington Northern Santa Fe Railroad line runs east-west along the San Joaquin River waterfront. The Contra Costa Canal is located south of SR 4, and traverses the Planning Area in an east-west direction.



South of SR 4, minor ridgelines occur northeast of the Contra Loma Boulevard/James Donlon Boulevard intersection, east and west of Hillcrest Avenue, and in the area separating Lone Tree Way from Lone Tree Valley. Major ridgelines associated with the foothills of Mt. Diablo occur along the entire southwest boundary of the Planning Area. Most of the open lands in the southwest area of the City are located within either Black Diamond Mines Regional Preserve or Contra Loma Regional Park, or within FUA #1, an area of mostly privately-owned ranch land that is planned for development.



North of SR 4, the majority of the San Joaquin River shoreline is in park or open space uses. North of Downtown, the Antioch Riverfront Promenade, a ? -mile urban walkway and linear park, runs adjacent to the River, connecting the Marina and the Barbara Price Marina Park to G Street. To the west of Downtown and bordering Pittsburg, the Dow Wetland Preserve forms part of the City's shoreline. To the east of Downtown, the Antioch Dunes National Wildlife Refuge and other open areas occupy the City's shoreline.

Residential Districts North of SR 4. Architecture in these districts is variable, with newer modern and post-modern housing alongside historic Victorian, Queen Anne, craftsman cottage, or California

bungalow style housing. Typical of older areas in most cities, the average density is about seven houses per acre. A number of apartment buildings (such as Antioch Bayview Apartments, Garden Court Apartments, and Riverbank Apartments) are located north of SR 4. The grid-oriented streets in residential districts north of SR 4 are often bordered by large and mature trees that create a unifying theme. Unkempt vacant lots are also dispersed among housing in this area of the City.



Residential Districts South of SR 4. Residential districts south of SR 4 were built mainly from the 1950s to the present. These newer residential areas tend to be defined by subdivision, each with common architecture and landscaping themes.

Single-family housing is the most common type, with a density of approximately five housing units per net acre, which is typical of U.S. suburban housing densities. Some condominium developments and apartments (such as Flores Apartments, Hudson Townhouse Manor, and Delta View) are located south of SR 4.



Retail Areas. The City's main retail areas are currently auto-oriented and located on main arterials. The intersection of SR 4 and Somersville Road is the City of Antioch's principle retail area; shopping centers in this area include County East Mall, Delta Fair Shopping Center, Albertson's/Long's Center, and Somersville Shopping Center. Other commercial areas, Deer Valley Plaza and Williamson Ranch Plaza, are located along Lone Tree Way. Like most retail areas in Antioch, with the exception of Downtown, these commercial areas are served by busy arterials, and are accessible mainly by car with expansive parking lots in front of each retail strip.

Downtown. The City of Antioch's Downtown is currently defined as the area between B Street on the east and L Street on the west; from the railroad on the north to 4th Street on the south. Along G Street, the Downtown area extends as far south as 6th Street. The Downtown core includes the portion of 2nd Street between E and I Streets, and G Street from 4th Street to the railroad. The Downtown continues in its role



as the City of Antioch's pedestrian-oriented commercial area. The Downtown core is walkable, with one- and two-story turn-of-the-century buildings fronting wide sidewalks. Street traffic is low volume; large display windows encourage browsing; and streetscape improvements include planters, street furniture, historically-themed light fixtures, monument wall street signs, and underground utilities. Conducive to walking and window shopping, the Downtown provides small-scale commercial services including specialty stores, a few restaurants, a community center; and stores that serve the needs of workers employed in and around Downtown. Local government services are also situated in the Downtown area in newer modern-style buildings.

Office Parks. Office parks in the City of Antioch tend to have either 1) a campus-like setting with one- or two-story buildings linked by streets, sidewalks, trees, and bordering parking lots; or 2) an auto-oriented environment with parking lots adjacent to offices and few, if any, sidewalks between buildings. The two largest office parks in the City, which also have extensive landscaping, are the Delta Square Business Park and the Plaza Lynda Office Complex.



Industrial Areas. Industrial facilities within the City of Antioch have a variety of visual appearances. Light industries, such as those found in the Delta Square Business Park, are generally housed in large square buildings or warehouses. These structures are landscaped and have adjacent parking and space for loading. Heavy industries located along the San Joaquin River are somewhat monumental due to the flat terrain; they are more noticeable, and consist of large structures that occasionally have tall smokestacks, and tend to have little if any landscaping.



Views and View Corridors. Views of features within a city contribute to a feeling of community identity as well as visual enjoyment. Views of Mt. Diablo, the ridgelines, and the San Joaquin River are important resources for the City of Antioch. New developments south of SR 4, specifically those built on or near the ridgelines, have obstructed historical and panoramic views of Mt. Diablo and the ridgelines that were once visible from roads and neighborhoods located at a distance from these features. However, new opportunities to view the San Joaquin River are being developed with projects such as the Municipal Public Marina (built in 1988), the Antioch Riverfront Promenade, and the A Street Connection.



Motorists traveling along Somersville Road on the A Street Connection view either the hills or the San Joaquin River. Other major streets providing north and south views include Contra Loma Boulevard, Lone Tree Way, Hillcrest Avenue, and SR 160. Streets providing east and west views include James Donlon Boulevard, Lone Tree Way, Putnam Street, SR 4, Oakley Road, and Empire Mine Road. Views along utility easements also occur in several areas throughout the City; for example, the open views created by the Contra Costa Canal present opportunities to see the ridgelines.

Streetscapes. Streetscapes are a series of decorative features that create a unifying effect for a street, or entice people to stroll or gather. They include such elements as street trees, benches, public art, theme light fixtures, fountains, awnings, raised planters, etc. Hillcrest Avenue south of SR 4 is an example of a major street with well-developed, mature trees.



Downtown. Most of the Downtown area is equipped with streetscape improvements, including decorative sidewalks, street trees, planters, street furniture, historically-theme lighting fixtures, monument wall street signs, and underground utilities. The Riverfront Promenade and Waldie Plaza include pedestrian plazas, lawns, sitting areas, walls, and tree groupings.

Landmarks. The two prominent natural landmarks within the City of Antioch are the San Joaquin River and Mt. Diablo. Other landmarks include the Antioch Bridge, the Riverview Lodge Restaurant, the El Campanil Cinema, the Riverview Fire District Building, the Contra Costa County Fairgrounds, Contra Loma Reservoir, Antioch Municipal Reservoir, and the public service building on L Street. The Municipal Marina, a public marina, is a new landmark within the City, built in 1988. Historic buildings that serve as landmarks include the Hard House, the mid-19th Century ship captain's house at the southeast corner of First and J Streets; the Lynn House, a turn-of-the century structure located adjacent to the Hard House[1]; Beedee Lumber, one of the oldest businesses in the county, situated along the waterfront on 2nd Street; and the Williamson Ranch Park located at the intersection of Lone Tree Way and Hillcrest Avenue, which includes several historic farm buildings.

1 Planning Collaborative, Inc. 1991. *Antioch Urban Waterfront Restoration Plan*, August.

Gateways. Gateways are key points of arrival into a city or district, which can convey civic pride and identity. Gateways are often emphasized with landscaping, lighting, signs, gate markers, ornamental trees, or decorative pavement. Lone Tree Way and Hillcrest Avenue are designated in the 1988 Antioch General Plan as scenic arterials and gateways to the City. Delta Fair Boulevard near Los Medanos College, and where Buchanan Road crosses the Contra Costa Canal, are also gateways. Gateways to commercial districts, such as the Downtown, have decorative pavement and monument signs, and a number of subdivisions south of SR 4 have gates and signs marking their entrance.



4.1.2 Aesthetics/Visual Resources Thresholds of Significance

A determination that a change in visual character and aesthetics would occur as a result of the proposed General Plan is subjective. For the purpose of analysis, an impact on the visual and aesthetic nature of the project area is considered to be significant if the proposed General Plan would:

- Have a substantial adverse effect on a scenic vista;
- Substantially degrade the existing visual character or aesthetic quality of the site and its surroundings;
- Substantially increase the effect of light and glare upon existing residential uses;
- Result in substantial terrain modifications.

4.1.3 Aesthetics/Visual Resources Impacts and Mitigation

Potentially Significant Impacts

Affected Views to Scenic Vistas and Scenic Resources

Impact 4.1.1. *The proposed General Plan would increase the development of urban uses, causing a loss in open space and change in aesthetic character. This could have a significant adverse impact on existing and future scenic vistas and scenic resources.*

Analysis of Impact. Build out of the proposed General Plan would result in development of structures and facilities on vacant properties, and would cause a substantial increase in urban uses throughout most of the proposed General Plan area. This would alter the existing aesthetic environment. This alteration may have an adverse impact on aesthetics by creating development that is out of scale or character with the surrounding environment.

Antioch enjoys a magnificent and varied natural setting, consisting of the San Joaquin River, moderate to steep hills, broad valleys, narrow canyons, and lakes. Views of Mt. Diablo, ridgelines,

and the San Joaquin River are important visual resources. Future developments under the proposed General Plan that are built on or near the ridgelines may obstruct some historic and panoramic views of Mt. Diablo and the ridgelines. Also, developments constructed throughout the City may have the potential to alter landforms, scenic vantage points, and overall character, which could be an adverse impact on scenic views of the City. Some scenic vantage points within the City are not located in areas designated for open space, but rather for residential uses. Future development involving residential land uses around these areas could potentially obstruct views.

Future development under the proposed General Plan would be consistent with the policies outlined in Section 5.0 Community Image and Design of the proposed General Plan. Similarly, the replacement, expansion, or refurbishment of existing development would occur pursuant to the proposed General Plan policies and individual projects will be subject to design review, as appropriate to their nature and location.

Proposed General Plan Policies. The proposed General Plan contains policies designed to protect scenic vistas and scenic resources from adverse impacts from future development activities. Adherence to these guidelines would reduce or eliminate aesthetic impacts relating to the implementation of the proposed General Plan.

5.4.2 General Design Policies

c. Maintain view corridors to natural ridgelines and landmarks, such as Mount Diablo and distant hills, local ridgelines, and the San Joaquin River and other water bodies.

- Recognizing that new development will inevitably result in some loss of existing views, prohibit the siting of structures or landscaping that would completely block views from adjacent properties.
- Important view corridors to be protected include Somersville Road, Lone Tree Way, Hillcrest Avenue, SR 4, SR 160, James Donlon Boulevard, Deer Valley Road, and Empire Mine Road.

i. Preserve and strengthen Rivertown as a vital and attractive place.

- Promote activity along Rivertown streets through attractive building designs with street level activity and façade windows, public art, and other landscaping elements that are pedestrian-friendly.
- Maintain views of the San Joaquin River from buildings within Rivertown, where they are available, by placing windows rather than solid walls along the river side of buildings.
- Avoid blank parking garage building frontages.
- Orient buildings along the first street inland from the San Joaquin River toward the river to enhance pedestrian and bicycle activity.
- Utilize murals to enhance the design quality of existing large blank walls (e.g., Campanile Theater).
- Seek opportunities for small public spaces throughout Rivertown to provide for the comfort of pedestrians and bicyclists, enhance street level activity, and provide sitting areas and protection from the sun and rain. Small left over spaces between buildings, at street corners,

at the edges of parking lots, or along the edges of sidewalks can thus become attractive and lively additions to the street scene.

5.4.14 Hillside Design Policies

e. Buildings should be located to preserve existing views and to allow new dwellings access to views similar to those enjoyed from existing dwellings.

m. The overall scale and massing of structures shall respect the natural surroundings and unique visual resources of the area by incorporating designs which minimize bulk and mass, follow natural topography, and minimize visual intrusion on the natural landscape.

- The overall height of a building is an important aspect of how well it fits into the existing character of the neighborhood and its hillside environment. Houses should not be excessively tall so as to dominate their surroundings or create a crowded appearance in areas of small lots. Structures should generally be stepped down hillsides and contained within a limited envelope parallel to the natural grade, rather than "jutting out" over natural slopes.
- Building forms should be scaled to the particular environmental setting so as to complement the hillside character and to avoid excessively massive forms that fail to enhance the hillside character.
- Building facades should change plane or use overhangs as a means to create changing shadow lines to further break up massive forms.
- Wall surfaces facing towards viewshed areas should be minimized through the use of single story elements, setbacks, roof pitches, and landscaping.

n. Collective mass rooflines and elements should reflect the naturally occurring ridgeline silhouettes and topographical variation, or create an overall variety, that blends with the hillside.

o. Based upon the graphic principle that dark colors recede and light colors project, medium to dark colors which blend with the surrounding environment should be used for building elevations and roof materials in view-sensitive areas.

r. Planting along the slope side of a development should be designed to allow controlled views out, yet partially screen and soften the architecture. In general, 50 percent screening with plant materials should be accomplished.

- Trees should be arranged in informal masses and be placed selectively to reduce the scale of long, steep slopes.
- Shrubs should be randomly spaced in masses.
- Skyline planting should be used along recontoured secondary ridgelines to recreate the linear silhouette and to act as a backdrop for structures. Trees should be planted to create a continuous linear silhouette since gaps in the planting will not give the desired effect.
- Trees that grow close to the height of structures should be planted between buildings to eliminate the open gap and blend the roof lines into one continuous silhouette.
- For fire prevention purposes, a fuel modification zone shall be provided between natural open space and development.

Effectiveness of Proposed General Plan Policies. Implementation of the above policies will reduce the impacts of development on scenic views and scenic resources by maintaining scenic vistas and view corridors and by regulating the development that could have an adverse impact on scenic views and scenic resources. Implementation of the above policies would reduce potential impacts to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Light and Glare

Impact 4.1.2. *Light and glare resulting from new development associated with implementation of the proposed General Plan could adversely affect day or nighttime views of Antioch.*

New development consistent with the proposed General Plan will increase the amount of light and glare in developed areas (from exterior lighting, street lighting, vehicular lighting, and interior lighting visible from the outside). During evening hours, streetlights, security lighting, recreational lighting, and lighting from multi-story structures, if not adequately focused or screened, may cause spillover lighting and glare that may be a nuisance to residential uses. During daylight hours, glare from materials used in new buildings may also present a nuisance or a potential safety hazard by distracting motorists. Development associated with the proposed General Plan would convert vacant land to urbanized uses. These new urbanized uses would create additional sources of light and glare.

To minimize potential light and glare impacts, future development will be required to comply with applicable policies governing light and glare outlined in the proposed General Plan, City of Antioch development standards, and/or requirements mandated during the environmental review of individual developments.

Proposed General Plan Policies. The proposed General Plan does not contain specific policies that would minimize potential light and glare impacts from proposed development projects. Therefore, mitigation measures have been identified below that would ensure that potential light and glare impacts resulting from future development within Antioch would not have any significant adverse impacts.

Mitigation Measures

4.1.2A. The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require that sources of lighting within the General Plan area be limited to the minimum standard required to ensure safe circulation and visibility.

4.1.2B. The City shall modify the proposed General Plan to incorporate a policy with the following provision: Within rural areas the City of Antioch shall require street lighting to be limited to intersections and other locations that are needed to maintain safe access (e.g., sharp curves).

4.1.2C. The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require exterior lighting for buildings to be of a low profile and intensity.

4.1.2D. The City shall modify the proposed General Plan to incorporate a policy with the following provision: The City of Antioch shall require that commercial and industrial development provide design features such as screened walls, landscaping, setback, and lighting restrictions between the boundaries of adjacent residential land use designations, to reduce the impacts of light and glare.

4.1.4 Aesthetics and Visual Resources Level of Significance after Mitigation

Implementation of the proposed General Plan policies and the mitigation measures identified above, will reduce potential aesthetic resource and light/glare impacts resulting from future development within Antioch to a less than significant level.

4.2 AIR QUALITY

This section has been prepared using methodologies recommended by the Bay Area Air Quality Management District (BAAQMD)[1] and assumptions within its air quality impact assessment guidelines. In keeping with these guidelines, this section describes State and Federal air quality standards, general climate conditions, and existing air quality conditions.

4.2.1 Air Quality Existing Setting

Air Quality Regulations and Standards. The following regulations pertain to air quality standards:

- **Federal Clean Air Act of 1970 (CAA)**. The CAA authorized the establishment of national health-based air quality standards, and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 (1990 CAAA) made major changes in deadlines for attaining National Ambient Air Quality Standards (NAAQS), and in the actions required for areas that exceeded these standards. Under the CAA, State and local agencies in areas that exceed the NAAQS are required to develop State implementation plans (SIPs) to show how they will achieve the NAAQS by specific dates.
- **California Clean Air Act (CCAA)**. The CCAA, authorized in 1988, requires that all air districts in the State work towards achieving and maintaining California Ambient Air Quality Standards (CAAQS) for O_3, CO, SO_2, and NO_2 by the earliest practical date. Plans for attaining CAAQS were submitted to the ARB by regional air districts on a staggered time schedule in 1991, 1994, 1997, and 2000.

  The CCAA mandates that districts focus particular attention on reducing emissions from transportation and area-wide emission sources and provides districts with new authority to regulate indirect sources. Each District plan's goal is to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in District-wide emissions of each nonattainment pollutant or its precursors. Substantial new growth within the region tends to impede the air emission reduction goals of the CCAA to the extent that new growth adds additional vehicles, resulting in more miles logged on the region's highways.

A strict interpretation of the reduction goals suggests that any general development that increases traffic within the region, no matter how large or small, would have a significant, project-specific air quality impact unless the development-related emissions are offset by concurrent emission reductions elsewhere within the airshed. Both State and Federal air quality plans and standards need to be considered during the General Plan update process.

Both State and Federal government agencies have established health-based Ambient Air Quality Standards (AAQS) for six air pollutants: carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, lead, and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect public health and welfare with a reasonable margin of safety.

In addition to primary and secondary AAQS, the State of California has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter. These criteria refer to

[1] Bay Area Air Quality Management District. BAAQMD CEQA Guidelines. April 1996.

concentrations that define the short-term exposure levels for air pollutants that would threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three.

CAAQS and NAAQS are listed in Table 4.2.A. Health effects of these criteria pollutants are listed in Table 4.2.B.

Air Pollution Climatology Conditions. The amount of a given pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and, for photochemical pollutants, sunshine. The following discusses the climatological conditions in the Bay Area and the City of Antioch.

Bay Area Climate. During summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high-pressure cell over the northeastern Pacific Ocean. This high-pressure cell keeps storms from affecting the California coast. Hence, the Bay Area experiences little precipitation in the summer months and winds tend to blow onshore out of the north/northwest.

The steady northwesterly flow induces upwelling of cold water from the ocean depths. This upwelling produces a band of cold water off the California coast. When air approaches the California coast, already cool and moisture-laden from its long journey over the Pacific, it is further cooled as it crosses this bank of cold water. This cooling often produces condensation resulting in a high incidence of fog and stratus clouds along the Northern California coast in the summer.

Generally in the winter, the Pacific high weakens and shifts southward, winds tend to flow offshore, upwelling ceases, and storms occur. During the winter rainy periods, inversions (layers of warm air over colder air) are weak or nonexistent, winds are usually moderate, and air pollution potential is low. However, the Pacific high-pressure cell periodically becomes dominant, bringing strong inversions, light winds, and high pollution potential.

Bay Area topography is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the Bay Area. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summertime.

The only major break in California's Coast Range occurs in the Bay Area where the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the Bay Area and the Central Valley.

Table 4.2.A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[2,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	B		0.08 ppm (157 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation*	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	20 µg/m^3*		50 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	12 µg/m^3*	Gravimetric or Beta Attenuation*	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		B		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	B	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 µg/m^3)		B		
Lead	30-day average	1.5 µg/m^3	Atomic Absorption	B	B	High Volume Sampler and Atomic Absorption
	Calendar Quarter	B		1.5 µg/m^3	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	B	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	B	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	B	
	3-Hour	B		B	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		B	B	

Table 4.2.A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[2,6]	Method[7]
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07B30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography*			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Notes:

1 California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1-hour and 24-hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current Federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25ºC and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25ºC and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 New Federal eight-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current Federal policies.

9 The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: California Air Resources Board (ARB, March 2003).

Table 4.2.B - Primary Effects of Major Criteria Air Pollutants

Pollutants	Sources	Primary Effects
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight	• Aggravation of respiratory and cardiovascular diseases • Irritation of eyes • Impairment of cardiopulmonary function • Plant leaf injury
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust • High-temperature stationary combustion • Atmospheric reactions	• Aggravation of respiratory illness • Reduced visibility • Formation of acid rain • Reduced plant growth
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust • Natural events, such as decomposition of organic matter	• Reduced tolerance for exercise • Impairment of mental function • Impairment of fetal development • Death at high levels of exposure • Aggravation of some heart diseases (angina)
Suspended Particulate Matter (PM_{10})	• Stationary combustion of solid fuels • Construction activities • Industrial processes • Atmospheric chemical reactions	• Reduced lung function • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardiorespiratory diseases • Increased cough and chest discomfort • Reduced visibility • Soiling
Sulfur Dioxide ($S0_2$)	• Combustion of sulfur-containing fossil fuels • Smelting of sulfur-bearing metal ores • Other industrial processes	• Aggravation of respiratory diseases (asthma, emphysema) • Reduced lung function • Irritation of eyes • Reduced visibility • Plant injury • Deterioration of metals, textiles, leathers, finishes, coatings, etc.
Lead	• Contaminated soil	• Impairment of blood function and nerve construction • Behavioral and hearing problems in children

Source: ARB, 2000.

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward, splitting off to the northwest toward Richmond and to the southwest toward San Jose, when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with only 7 knots at San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the Bay Area frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flow in coastal valleys. Drainage is a reversal of the usual daytime airflow patterns: air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the Bay Area.

Summertime temperatures in the Bay Area are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean-bottom water along the coast. Thus, on summer afternoons the temperatures at the coast can be 35 degrees Fahrenheit (F) cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10 degrees F.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

The Bay Area is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the Bay Area to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

Local Climate in the Antioch Area. Air quality is a function of both local climate and local sources of air pollution. Air quality is defined as the balance between the natural dispersal capacity of the atmosphere and the generation of emissions of air pollutants from human uses of the environment.

The City of Antioch lies on the south side of Carquinez Strait. The Carquinez Strait is the only sea-level gap in the central and northern California coastal mountains, which results in relatively strong and persistent winds flowing through the gap. Winds are generally greatest during spring and summer and lowest in fall and winter. A strong daily variation in wind occurs in spring and summer, with peak winds occurring in the late afternoon hours and winds gradually decreasing at night. During fall and winter, winds are generally more variable both in speed and direction as the area is influenced by storms from the Pacific Ocean.

Periods of high atmospheric stability, known as inversion conditions, severely limits the ability of the atmosphere to disperse pollutants vertically. In the Antioch area, inversions can be found during all seasons in the Bay Area, but are particularly prevalent in the summer months when they are present about 90 percent of the time in both morning and afternoon.

Topography also affects air quality. Antioch is located between the large Sacramento and San Joaquin Valleys to the east and San Francisco Bay to the west. The large summertime temperature differences between these two areas result in a strong flow of generally westerly winds that dilute and transport air pollutants.

Wind records from the City of Pittsburg show a strong predominance of westerly winds. Average wind speed is relatively high (over 10 miles per hour), while the frequency of calm wind is quite low. Antioch has a relatively low natural atmospheric potential for pollution given the persistent and strong winds typical of the area. These winds dilute pollutants and transport them away from the area, so that emissions released in Antioch may influence air quality in the Sacramento and San Joaquin valleys. Local air quality is affected by several major stationary pollutant sources that originate in Antioch and upwind Pittsburg. Antioch's location downwind of the greater Bay Area also means that pollutants from other areas are transported to Antioch.

Weather data for the area are collected at the Antioch Pump Plant 3 station. Records were examined for the period from March 1, 1955 to June 30, 2000. The monthly average maximum temperature ranged from 53.6 F in January to 90.9 F in July, with an annual average maximum of 73.3 F. Monthly average minimum temperature ranged from 36.7 F in January to 57.1 F in July, with an annual average minimum of 47.6 F. Monthly average total precipitation ranged from 0.02 inches in July to 2.76 inches in January, with an annual average total of 13.09 inches. No snowfall was recorded at this station during that time period.

Regional Air Quality Standards and Conditions. The City of Antioch is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the San Francisco Bay Area. The BAAQMD's Bay Area Clean Air Plans (CAPs) contain district-wide control measures to reduce carbon monoxide and ozone precursor emissions. The State standards for these pollutants are more stringent than the national standards. The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and from indirect sources (e.g., traffic associated with new development), and for monitoring ambient pollutant concentrations. Indirect sources are defined as facilities that do not have equipment that directly emits substantial amounts of pollution, but that attract large numbers of mobile sources of pollution. Direct emissions from motor vehicles are regulated by California Air Resources Board (ARB) and EPA.

Exceedences of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons. As is true throughout much of the U.S., motor vehicle use is projected to increase substantially in the region. However, due to improving emissions control technology, individual vehicles will contribute substantially fewer pollutants to regional air quality. This decrease in emissions from individual vehicles is not expected to eliminate an overall increase in regional air emissions.

Attainment Status Designations. The Air Resources Board (ARB) is required to designate areas of the State as attainment, nonattainment, or unclassified for any State standard. An "Attainment" designation for

an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "Nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "Unclassified" designation signifies that data do not support either an attainment or nonattainment status. The California Clean Air Act (CCAA) divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for ozone (O_3), carbon monoxide (CO), and nitrogen dioxide (NO_2) as either "Does not meet the primary standards," or "Cannot be classified," or "Better than national standards." For sulfur dioxide (SO_2), areas are designated as "Does not meet the primary standards," "Does not meet the secondary standards," "Cannot be classified," or "Better than national standards." In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for Particulate Matter (PM_{10}) based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "Unclassified."

In June 1995, the EPA designated the Bay Area region as an attainment area for the national ozone standard, making the Bay Area the largest metropolitan region in the United States to have achieved that distinction. However, in the summers of 1995 and 1996, unusual heat waves triggered new exceedences of the national ozone standard, which led the EPA to change the Bay Area's ozone status back to nonattainment in July 1998. Ozone levels also exceeded the State standard twice in 1996.

None of the region's monitoring stations has reported exceedences of the State or Federal CO standard since 1991, and the Bay Area has attained the State CO standard. In early 1998, the EPA redesignated the Bay Area as an attainment/maintenance area for the Federal CO standards.

Levels of suspended matter (PM_{10}) in the Bay Area currently exceed the State PM_{10} standards and, therefore, the area is considered a nonattainment area for this pollutant. The Bay Area is currently unclassifiable (equivalent to an attainment designation) for the Federal PM_{10} standard.

On July 18, 1997, EPA issued new National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter. The new NAAQS for ozone is 0.08 ppm, averaged over 8 hours. EPA also established the new $PM_{2.5}$ standards (particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns); annual average of 15 micrograms per cubic meter and 24-hour average of 65 micrograms per cubic meter, and essentially retained the PM_{10} standards. On May 14, 1999, the US Court of Appeals (USCA) for the District of Columbia Circuit found that the Clean Air Act, which the EPA relied on in formulating the new NAAQS, "effects an unconstitutional delegation of legislative power." On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The Court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The Justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for ozone and soot in 1997. Nevertheless, the Court threw out the EPA's policy for implementing new ozone rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management & Budget (OMB) to implement the 8-hour ground-level ozone standard. The EPA issued the proposed rule implementing the 8-hour ozone standard in April 2003, and plans to issue the final rule implementing the 8-hour ozone standard

in December 2003. The EPA is required by court order to complete final 8-hour ozone nonattainment status by April 15, 2004.

The EPA plans to propose a $PM_{2.5}$ implementation rule in September 2003 and issues the final $PM_{2.5}$ implementation rule in September 2004. The EPA is then expected to make final designations on December 15, 2004.

Table 4.2.C provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

Table 4.2.C - Bay Area Attainment Status as of January 2003

		California Standard[a]		Federal Standards[b]	
Pollutant	**Averaging Time**	**Concentration**	**Attainment Status**	**Concentration**	**Attainment Status**
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	N	0.12 ppm (235 µg/m^3)	N[c]
Nitrogen Dioxide (NO_2)	Annual	C	C	0.053 ppm (100 µg/m^3)	A
	1-Hour	0.25 ppm (470 µg/m^3)	A	C	C
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	A	9.0 ppm (10 mg/m^3)	Urban[d] areas N[e] Rural Areas A
	1-Hour	20 ppm (23 mg/m^3)	A	35 ppm (40 µg/m^3)	A
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean	C	C	50 µg/m^3	A
	Annual Geometric Mean	30 µg/m^3	N	C	C
	24-Hour	50 µg/m^3	N	150 µg/m^3	U
Sulfur Dioxide (SO_2)	Annual	C	C	80 µg/m^3 (0.03 ppm)	A
	24-Hour	0.04 ppm (105 µg/m^3)	A	365 µg/m^3 (0.14 ppm)	A
	1-Hour	0.25 ppm (655 µg/m^3)	A	C	C

Notes:

A = Attainment
N = Nonattainment
U = Unclassified
ppm = parts per million
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

[a] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that the ARB determines would occur less than once per year on the average.

[b] National standards other than for ozone and particulates and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

[c] In June 1995, the Bay Area was redesignated to attainment for the national ozone standard. However, the EPA changed the Bay Area back to nonattainment in July 1998, due to new exceedances in 1995 and 1996.

[d] Urbanized areas as defined by US Department of Commerce, Bureau of Census, 1980 Census of Population and Housing, Block Statistics Maps for San Jose and Vallejo-Fairfield-Napa SMSAs.

[e] The BAAQMD has applied for attainment status for carbon monoxide. No BAAQMD monitoring station has recorded an exceedance of the national CO standard since 1991.

Source: BAAQMD, *Bay Area Attainment Status*, 2003.

The major pollutants of concern in the San Francisco Bay Area – ozone, carbon monoxide, and particulate matter – are monitored at a number of locations. There are no monitoring stations in the City of Antioch; the monitoring station closest to the site is in Pittsburg. The Pittsburg monitoring station measures ozone, carbon monoxide, NO_2, and PM_{10} levels. The Concord monitoring station, which is the next closest monitoring station, also measures $PM_{2.5}$.

Pollutant monitoring results for the years 2000 to 2002 in Pittsburg and Concord indicate that air quality in the project area of the Contra Costa County has generally been good. Tables 4.2.D and 4.2.E summarize the last 3 years of published data from these monitoring stations.

Table 4.2.D - Ambient Air Quality at Pittsburg-10th Street Air Monitoring Station

	One-Hour Carbon Monoxide		One-Hour Ozone		Coarse Suspended Particulate (PM_{10})		Nitrogen Dioxide	
	Max. 1-Hour Conc. (ppm)[1]	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded
State Stds.	> 20 ppm/1 hr		> .09 ppm/1 hr		> 50 $\mu g/m^3$, 24 hrs		> .25 ppm/1 hr	
2002	6.2		0.11	4	50	0	0.05	0
2001	5.2	0	0.12	2	98	3	0.06	0
2000	4.9	0	0.11	1	56	1	0.05	0
MAX	**6.2**		**0.12**		**98**		**0.06**	
Federal Stds.	> 35 ppm/1 hr		> .12 ppm/1 hr		> 150 $\mu g/m^3$, 24 hrs		0.053 ppm, annual average	
2002	6.2	0	0.11	0	50	0	0.013	0
2001	5.2	0	0.12	0	98	0	0.014	0
2000	4.9	0	0.11	0	56	0	0.013	0
MAX	**6.2**		**0.12**		**98**		**0.014**	

[1] Data taken from EPA Web site; others taken from ARB Web site.
Source: ARB and EPA 2000 to 2002.

Table 4.2.E - Ambient Air Quality at Pittsburg-10th Street Air Monitoring Station

	Eight-Hour Carbon Monoxide		Eight-Hour Ozone		Fine Suspended Particulate ($PM_{2.5}$)		Sulfur Dioxide	
	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max. 24-Hour Conc. (ppm)	Number of Days Exceeded
State Stds.	9.0 ppm/8 hr		No State Standard		No State Standard		> .04 ppm/24 hr	
2002	2.5	0	0.096	NA[1]	77[2]	NA[3]	0.016	0
2001	2.4	0	0.092	NA	68	NA	0.012	0
2000	2.7	0	0.080	NA	53	NA	0.009	0
MAX	**2.7**		**0.096**		**77**		**0.016**	
Federal Stds.	9.0 ppm/8 hr		> .08 ppm/8 hr		> 65 $\mu g/m^3$, 24 hrs		0.14 ppm/24 hr	

Table 4.2.E - Ambient Air Quality at Pittsburg-10th Street Air Monitoring Station

	Eight-Hour Carbon Monoxide		Eight-Hour Ozone		Fine Suspended Particulate ($PM_{2.5}$)		Sulfur Dioxide	
	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max. 24-Hour Conc. (ppm)	Number of Days Exceeded
2002	2.5	0	0.096	2	77	1	0.002	0
2001	2.4	0	0.092	1	68	1	0.003	0
2000	2.7	0	0.080	0	53	0	0.002	0
MAX	**2.7**		**0.096**		**77**		**0.003**	

1 No State standards
2 Data taken from the Concord-2975 Treat Boulevard monitoring station.
3 No State standards.
Source: ARB 2000 to 2002.

As indicated in Table 4.2.D, from 2000 to 2002, pollution levels at the Pittsburg station have not exceeded the State PM_{10} standards more than three times a year, and have not exceeded Federal standards during the same period. Between 2000 and 2002, Federal $PM_{2.5}$ standards were exceeded up to once a year at the Concord station. Federal and State standards for carbon monoxide, nitrogen dioxide, and sulfur dioxide were not exceeded at the Pittsburg monitoring station during the 3-year period. The 1-hour ozone levels have been lower than the Federal standard at the Pittsburg monitoring station, and the State 1-hour ozone standard was exceeded less than 5 days per year during the past 3 years of published data. The federal 8-hour ozone standard was exceeded up to 2 days a year in the past 3 years.

Stationary Sources of Potential Pollutant Emissions. If coal fuel is used, power plants can be a source of high pollutant emissions. Two power plants are located near Antioch: the Contra Costa Power Plant (CCPP) located on Wilbur Avenue, one mile northeast of the City, and Calpine's Los Medanos Energy Center in Pittsburg. The Los Medanos Energy Center is a new facility and began operation on July 9, 2001. The Energy Center is fueled by natural gas and will produce up to 555 megawatts of electricity. The CCPP plant is planning for expansion. In January 2000, the CCPP filed an Application for Certification for the Unit 8 Power Project, which will add a 530-megawatt natural gas-fired, combined cycle, combustion turbine power plant to the existing facilities. The expansion is expected to be completed by late 2002 or early 2003. Neither power plant is expected to be a source of high pollutant emissions.

4.2.2 Thresholds of Significance

A project would normally be considered to have a significant effect on air quality if the project violates any ambient air quality standard, contributes substantially to an existing or projected air quality violation, or exposes sensitive receptors to substantial pollutant concentrations.

Thresholds of Significance for Construction Emissions. Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. Fine particulate matter (PM_{10}) is the pollutant of greatest concern with respect to construction activities. The BAAQMD's approach to CEQA

analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions.

The BAAQMD has identified a set of feasible PM_{10} control measures for construction activities. The "Basic Measures" should be implemented at all construction sites, regardless of size. The "Enhanced Measures" should be implemented at larger construction sites (greater than 4 acres) where PM_{10} emissions generally will be higher. The "Optional Measures" may be implemented if further emission reductions are deemed necessary by the Lead Agency. Any demolition activity subject to but not complying with the requirements of District Regulation 11, Rule 2 would be considered to have significant project impacts.

In addition, the demolition, renovation or removal of asbestos-containing building materials is subject to the limitations of BAAQMD Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing. The BAAQMD's Enforcement Division should be consulted prior to commencing demolition of a building containing asbestos building materials. Failure to comply with this procedure would be considered to have significant project impacts.

Thresholds of Significance for Operational Emissions. For many types of land use development, such as residential subdivisions, office parks, shopping centers and other "indirect sources," motor vehicles traveling to and from the projects represent the primary source of air pollutant emissions associated with project operations. Significance thresholds listed below address the impacts of these indirect source emissions on local and regional air quality.

Local Carbon Monoxide Concentrations. Local carbon monoxide concentrations should be estimated for projects in which:

- Vehicle emissions of CO would exceed 550 lb./day;
- Project traffic would impact intersections or roadway links operating at Level of Service (LOS) D, E or F or would cause LOS to decline to D, E or F; or
- Project traffic would increase traffic volumes on nearby roadways by 10 percent or more.

Estimated CO concentrations exceeding the California Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for 1 hour would be considered a significant impact.

Total Emissions. Total emissions from project operations should be compared to the thresholds provided below. Total operational emissions evaluated under this threshold should include all emissions from motor vehicle use associated with the proposed project. Projects that emit criteria air pollutants in excess of the levels indicated below would be considered to have a significant air quality impact.

- Reactive Organic Gases (ROG): 80 lbs/day; 36 kgm/day; 15 ton/yr
- Oxides of Nitrogen (NOx): 80 lbs/day; 36 kgm/day; 15 ton/yr
- Fine Particulate Matter (PM_{10}): 80 lbs/day; 36 kgm/day; 15 ton/yr
- Carbon Monoxide (CO): 550 lbs/day (see local CO emissions)

Odors. Any project with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant air quality impact.

Toxic Air Contaminants. Any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants would be deemed to have a significant impact. Thresholds of significant are that when any project that would result in the probability of contracting cancer for the Maximally Exposed Individual (MEI) to exceed 10 in one million, or cause the ground level concentrations of non-carcinogenic toxic air contaminants to result in a Hazard Index greater than 1 for the MEI.

Accidental Release/Acutely Hazardous Air Emissions. Any project that would result in receptors being within the Emergency Response Planning Guidelines (ERPG) exposure level 2 would be deemed to have a significant impact. ERPG exposure level 2 is defined as "the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action."

Cumulative Impacts. Any proposed project which would individually have a significant air quality impact would also be considered to have a significant air quality impact. For any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with local general plan and of the general plan with the regional air quality plan. The most recently adopted Clean Air Plan is the regional air quality plan for the Bay Area.

Thresholds of Significance for Plan Impacts. Any project that would have conflicts with specific air quality management plan policies or programs, or foster or accommodate development in excess of the levels assumed by the applicable air quality management plan would be deemed to have a significant impact.

Cumulative Impacts Criteria

- *Projects in Jurisdictions with Local Plans Consistent with the Clean Air Plan.* If a project is proposed in a city or county with a general plan that is consistent with the Clean Air Plan and the project is consistent with that general plan (i.e., it does not require a general plan amendment), then the project will not have a significant cumulative impact (provided, of course, the project does not individually have any significant impacts). No further analysis regarding cumulative impacts is necessary.

  In a jurisdiction with a general plan consistent with the Clean Air Plan, a project may be proposed that is not consistent with that general plan because it requires a general plan amendment (GPA). In such instances, the cumulative impact analysis should consider the difference(s) between the project and the original (pre-GPA) land use designation for the site with respect to motor vehicle use and potential land use conflicts. A project would not have a significant cumulative impact if: VMT from the project would not be greater than VMT that would be anticipated under the original land

use designation, and 2) the project would not result in sensitive receptors being in close proximity to sources of objectionable odors, toxics or accidental release of hazardous materials.

- *Projects in Jurisdictions with Local Plans Not Consistent with the Clean Air Plan*. For a project in a city or county with a general plan that is not consistent with the Clean Air Plan, the cumulative impact analysis should consider the combined impacts of the proposed project and past, present and reasonably anticipated future projects. A project would have a significant cumulative impact if these combined impacts would exceed any of the thresholds established above for project operations. A quantitative analysis of past, present and future projects would be required as part of this determination. The analysis should also address how the project and past, present and future projects would influence population and vehicle use projections.

Air Quality Plans Impact Significance Criteria. For a local plan to be consistent with regional air quality plan it must be consistent with the most recently adopted Clean Air Plan (CAP). The goal of the CAP is to reduce ground-level ozone and satisfy other CCAA requirements. All of the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP. Local plans found to be consistent with the CAP would have a less than significant impact on air quality.

- *Determine Local Plan Consistency With Clean Air Plan Population and VMT Assumptions*. Plans must show over the planning period of the plan that a) population growth for the jurisdiction will not exceed the values included in the current CAP, and b) the rate of increase in VMT for the jurisdiction is equal to or lower than the increase in population.
- *Determining Local Plan Consistency With Clean Air Plan Transportation Control Measures*. Determining consistency of local plans with the CAP also involves assessing whether CAP transportation control measures (TCMs) for which local governments are implementing agencies are indeed being implemented. Local plans that do not demonstrate reasonable efforts to implement TCMs in the CAP would be considered to be inconsistent with the regional air quality plan and therefore have a significant air quality impact.
- *Local Plan Impacts Associated With Odors and Toxics*. For local plans to have a less than significant impact with respect to potential odor and/or toxic air contaminants, buffer zones should be established around existing and proposed land uses that would emit these air pollutants.

4.2.3 Air Quality Impacts and Mitigation

Less than Significant Impacts

Local Carbon Monoxide Hot Spot Impacts

The project area and the entire Bay Area has been in attainment of the federal and State CO standards. The ambient CO concentrations monitored at all Bay Area monitoring stations have low to moderate CO levels that have sufficient margins before the standards would be exceeded. It is not anticipated that future ambient CO concentrations, with the proposed General Plan, would violate either the State or Federal CO standards. No mitigation measures are required.

Potentially Significant Impacts

Construction Impacts

Impact 4.2.1. The BAAQMD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. The BAAQMD has identified a set of feasible PM_{10} control measures for construction activities. The "Basic Measures" should be implemented at all construction sites, regardless of size. The "Enhanced Measures" should be implemented at larger construction sites (greater than 4 acres) where PM_{10} emissions generally will be higher. The "Optional Measures" may be implemented if further emission reductions are deemed necessary by the Lead Agency.

The BAAQMD's Enforcement Division should be consulted prior to commencing demolition of a building containing asbestos building materials. The demolition, renovation or removal of asbestos-containing building materials is subject to the limitations of BAAQMD Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing. Compliance with this procedure would be considered to have a less than significant project impact.

Proposed General Plan Policies. Implementation of these measures during construction at each project site, which is listed in Air Quality Policy 10.5.2.a in the Resource Management portion of the General Plan, would reduce construction air quality impacts to a less than significant level.

10.5.2 Air Quality Policies

Construction Emissions

a. Require development projects to minimize the generation of particulate emissions during construction through implementation of the dust abatement actions outlined in the CEQA Handbook of the Bay Area Air Quality Management District.

Mobile Emissions

b. Require developers of large residential and non-residential projects to participate in programs and to take measures to improve traffic flow and/or reduce vehicle trips resulting in decreased vehicular emissions. Examples of such efforts may include, but are not limited to the following.
   - Development of mixed-use projects, facilitating pedestrian and bicycle transportation and permitting consolidation of vehicular trips.
   - Installation of transit improvements and amenities, including dedicated bus turnouts and sufficient rights-of-way for transit movement, bus shelters, and pedestrian easy access to transit.
   - Provision of bicycle and pedestrian facilities, including bicycle lanes and pedestrian walkways connecting residential areas with neighborhood commercial centers, recreational facilities, schools, and other public areas.
   - Contributions for off-site mitigation for transit use.
   - Provision of charging stations for electric vehicles within large employment-generating and retail developments.

c. Budget for purchase of clean fuel vehicles, including electrical and hybrid vehicles where appropriate, and, if feasible, purchasing natural gas vehicles as diesel powered vehicles are replaced.

Stationary Source Emissions

d. As part of the development review process for non-residential development, require the incorporation of best available technologies to mitigate air quality impacts.

e. Provide physical separations between (1) proposed new industries having the potential for emitting toxic air contaminants and (2) existing and proposed sensitive receptors (e.g., residential areas, schools, and hospitals).

f. Require new wood-burning stoves and fireplaces to comply with EPA and BAAQMD approved standards.

Effectiveness of Proposed General Plan Policies. Implementation of the policies provided in the proposed General Plan will reduce construction air quality impacts to a less than significant level.

Mitigation Measures. No additional mitigation measures are required.

Regional Emissions Associated with Vehicular Trips

Impact 4.2.2. The proposed General Plan would result in more daily vehicular trips within the Planning Area. Fehr & Peers Associates (FPA) provided the daily vehicle miles traveled (VMT) and average vehicle speed under the existing and future with the proposed General Plan conditions. The build out year for the proposed General Plan is assumed to be 2030. Based on the latest EMFAC 2002 model released by the California Air Resources Board (ARB), emission factors for the existing (2003) and future build out year (2030) were determined. Table 4.2.F lists the VMT and associated emissions for the existing setting and with the proposed General Plan. Future emissions would be lower when compared to their corresponding existing emissions, except PM_{10}. Table 4.2.F demonstrates that the reduction in future vehicular emissions, even when the VMT is projected to increase from its corresponding existing level, is due to much lower emission factors from vehicle exhaust as a result of advanced technologies and improved fuel content. The proposed General Plan would generate NOx emissions, which would exceed the project level operations threshold established by the BAAQMD. However, as the project is a General Plan that affect the entire City, the project level operations thresholds are not considered applicable criteria for the evaluation of project impacts.

Proposed General Plan Policies. Implementation of the Air Quality Policies 10.5.2.b and 10.5.2.c, listed above and in the Resource Management section of the proposed General Plan, would reduce emissions from vehicle travel, but is not expected to reduce them to below the project level operations thresholds.

Table 4.2.F - Vehicular Emissions

Scenario	VMT/Day	Emissions, Lbs./Day				
		ROC	CO	NOx	SO_2	PM_{10}
Existing (2003)	1,180,000	936.5	20,421.1	4,464.0	28.6	122.3
2030 Proposed General Plan	2,150,000	99.5	3,791.9	796.3	19.0	175.4
Proposed General Plan Increase Over Existing	970,000	- 837.0	- 16,629.2	- 3,667.7	- 9.6	53.1
BAAQMD Project Level Operations Thresholds		80	550	80	80	NA[1]

1 No emission threshold has been established for this pollutant for project level operations.

Source: LSA Associates, Inc., 2003

Effectiveness of Proposed General Plan Policies. Implementation of the policies provided in the proposed General Plan will reduce regional emissions associated with vehicular trips; however, significant impacts would remain. This impact is significant and unavoidable, and the policies represent the best available mitigation measures.

Mitigation Measures. No further mitigation measures are provided.

Consistency With Clean Air Plan Population and VMT Assumptions

Impact 4.2.3. Based on the projected average daily traffic (ADT) volumes and average trip lengths for the existing setting and the proposed General Plan, total vehicle miles traveled (VMT) were calculated. Table 4.2.G lists the VMTs and their corresponding annual rate of increase from the existing VMT.

Table 4.2.G - Vehicle Miles Traveled

Scenario	Vehicle Miles Traveled	Rate of Increase per Year from 2003 Existing
2003 Existing Setting	1,180,000	0.0%
2030 Proposed General Plan	2,150,000	2.25%

Source: LSA Associates, Inc., 2003

The Bay Area 2000 Clean Air Plan (CAP) does not list growth or growth rates in population or VMT by each City. However, based on the Association of Bay Area Governments (ABAG) projections, total population in Contra Costa County is projected to grow from 962,900 people in year 2000 to 1,120,000 people in year 2010. This growth rate is approximately 16 percent over a ten year period, or approximately 1.5 percent a year. It is assumed that Antioch would fall within this range of population growth.

Figure 3 on page 6 of the Bay Area 2000 CAP depicts the growth in population, vehicles, and vehicle miles traveled in the Bay Area. This figure shows that VMT growth (80% growth from 1980 to 2006, or approximately 2.3 percent a year) outpaced population growth (30% growth from 1980 to 2006, or approximately 1% a year) in the Bay Area. Although there is no comparable figure to show such growth for the City of Antioch, it is assumed that if the City continues the growth trends of the past that the City will fall within such growth rates.

Due to the current jobs/housing imbalance within the Bay area, the City of Antioch is planning for more job opportunities within the City than the ABAG projections plan for. Increasing the job opportunities within the City will allow people to live closer to their place of employment, and may assist in lessening future impacts related to the jobs/housing imbalance within the region. Therefore, the proposed General Plan is different from the ABAG projections due to the location of future jobs within the community. This policy choice by the City is intended to benefit the existing and future residents of the City, long-term air quality and traffic impacts, and the jobs/housing imbalance.

Based on Table 4.2.G and the discussions above, it is found that the rate of increase in VMT in 2020 with the proposed General Plan (2.25% annual growth from existing to 2030) is similar to the rate of increase in VMT in the Bay Area as shown in the 2000 CAP. However, this rate of increase in VMT is higher than the rate of increase in population in Contra Costa County (1.5% per year) and in the Bay Area (1% per year). These rates of population increases for the County and region are averages of the cities within each area. Cities such as Antioch would be expected to be higher than the average, due to the proximity of the City to employment centers and that the vacant land within the City allows for expansion.

This rate of increase in VMT is due to the increase of job opportunities within the City, as compared to the ABAG projections. The annual growth percentages in the 2000 CAP are assuming that the job opportunities and growth will continue to be in the same employment centers as they are currently. The Bay Area 2000 CAP does not reflect benefits to the balance of jobs and housing and does not reflect the loss of trips elsewhere in the region, it simply refers to historical trends and projects growth for the future as it has occurred in the past. In the past Antioch has been a largely residential community with residents commuting to other cities for employment.

One of the objectives of the proposed General Plan is to create a larger employment base within the City by the year 2030. If the City is successful, there would be two possible effects on regional job growth. The first is that the City will obtain employers that would have located elsewhere in the region. If these employers simply changed the location of the business from a different city in the region to Antioch the result would lessen the number of jobs elsewhere in the region and lessen the length of commuter trips for Antioch residents employed at these businesses. The second is that the City will obtain employers and build out the employment base within Antioch in addition to the employment growth that ABAG has projected elsewhere in the region. In this case total growth within the region will have exceeded the annual growth percentages in the 2000 CAP, and would therefore be inconsistent.

Another possibility is that the employment base within the City of Antioch will take longer to build out, beyond 2030. Hence, during the lifetime of the proposed General Plan, employers would continue to locate in other Cities within the region and residents would continue to commute for employment. If this occurs, growth incurred within the City may be consistent with ABAG projections and the Bay Area 2000 CAP.

Proposed General Plan Policies. Implementation of the Air Quality Policies 10.5.2.b and 10.5.2.c, listed above and included in the Resource Management section of the proposed General Plan, would reduce emissions from vehicle travel, but is not expected to reduce them to below the population growth rate in the region. This is a significant and unavoidable air quality impact.

Effectiveness of Proposed General Plan Policies. Implementation of the policies provided in the proposed General Plan will improve consistency with clean air plan population and VMT assumptions; however, significant impacts would remain. This impact is significant and unavoidable, and the policies represent the best available mitigation measures.

Mitigation Measures. No further mitigation measures are provided.

Stationary Source Emissions

Impact 4.2.4. The proposed General Plan would potentially result in increased stationary sources emissions from non-residential development, new industries having the potential for emitting toxic air contaminants, and wood-burning stoves and fire places.

Proposed General Plan Policies. Implementation of Air Quality Policies 10.5.2.d, 10.5.2.e, and 10.5.2.f would help minimize the emissions from these stationary sources and reduce the impacts to a less than significant level.

Effectiveness of Proposed General Plan Policies. Implementation of the policies provided in the proposed General Plan will reduce stationary source emission impacts to a less than significant level.

Mitigation Measures. No additional mitigation measures are required.

4.2.4 Air Quality Level of Significance After Mitigation

Implementation of the proposed General Plan would increase regional emissions associated with vehicular trips, which would generate NOx emissions that would exceed the project level operations threshold established by the BAAQMD. Additionally, the rate of increase in VMT and annual growth percentages resulting from the implementation of the proposed General Plan would result in significant impacts. Implementation of the proposed General Plan policies would reduce impacts associated with the proposed General Plan; however, significant unavoidable impacts would remain. The policies contained within the proposed General Plan represent the best available mitigation measures.

4.3 BIOLOGICAL RESOURCES

This section assesses the potential impacts on biological resources that could occur with the development pursuant to the proposed General Plan.

4.3.1 Biological Resources Existing Setting

Vegetation, Land Use, and Habitat Types. The following vegetation and habitat types can be found within the Antioch Planning Area. The major vegetation/habitat categories are given an abbreviation (in parenthesis) and are mapped in Figure 4.3.1. Due to the citywide scale of vegetation mapping, the smallest vegetation patch size depicted is 10 acres. Thus, certain habitat types that typically occur in small patches (i.e., vernal pools) are likely under-represented in the tables and figures depicting vegetation on a citywide scale. However, the depiction is considered to be sufficient for the program-level EIR review and it is anticipated that subsequent analyses for site-specific projects will include the small habitat patches. The California Department of Fish and Game considers the following list of vegetation types rare and worthy of consideration in the California Natural Diversity Data Base:

- Native grasslands
- Vernal pools
- Stabilized interior dunes
- Seasonal wetlands
- Freshwater seeps
- Freshwater marshes
- Salt brackish marshes
- Alkaline floodplains
- Alkali seeps
- Valley oak woodlands
- Riparian woodland

Urban Developed Urban developed land, both residential and industrial, occupies most of the Antioch Planning Area. City parks with landscaping or lawns (but not natural open space) are included in this category.[1,2] Urban developed areas do not provide habitat for native plants. Wildlife that are commensal with humans and tolerant of the disturbance associated with urban and developed areas may use urban areas for foraging, roosting, and nesting. Many of the wildlife species found in urban areas are non-native species. Native wildlife such as Pacific treefrogs, western fence lizards, alligator lizards, mallards, burrowing owls, barn swallows, Brewer's blackbirds, California scrub jays, myotis bats may also find suitable foraging and breeding habitat in urban areas.

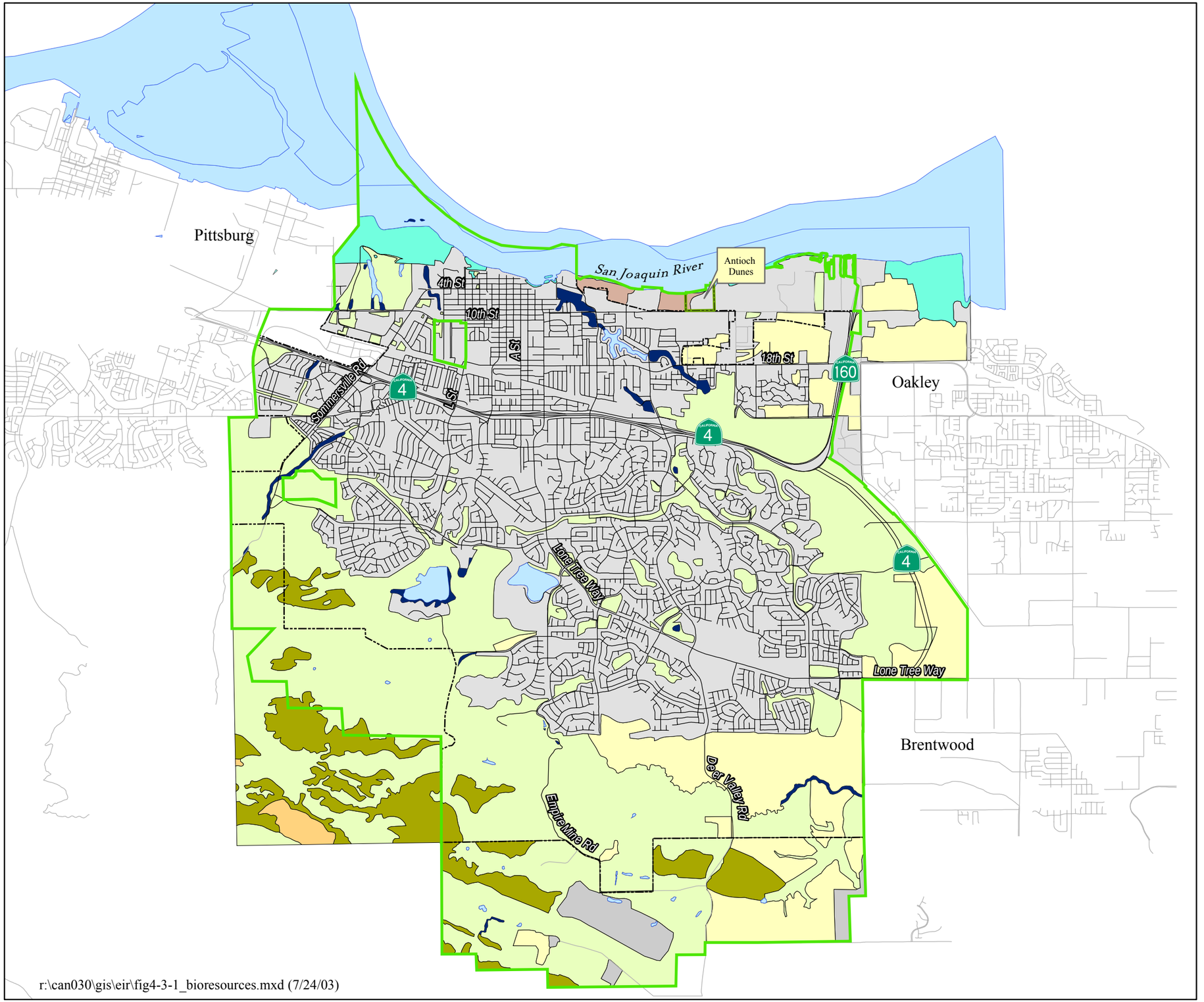
Agricultural. Agricultural uses of land in the Antioch Planning Area include hayfields, vineyards, almond orchards, and walnut orchards. Farm homes, agricultural buildings, and corrals are included in this category. Most of the agricultural lands are found along the eastern edge of the Antioch Planning Area, but they can also be found scattered among the more urban areas.[3,4]

1 LSA, 1993.

2 Sycamore Associates, 2000.

3 Torrey & Torrey, 1981.

4 LSA, 2000.



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VEGETATION

- AGRICULTURE
- BRACKISH MARSH
- DEVELOPED LAND
- GRASSLANDS
- OAK WOODLANDS
- WATER
- SCRUB
- STABILIZED INTERIOR DUNES
- WETLANDS (RIPARIAN)

JURSIDICTIONAL AND INFRASTRUCTURE

- CITY BOUNDARY
- PLANNING AREA
- ANTIOCH DUNES

N

0 5000
FEET

SOURCE: AERIAL IMAGE 2000

LSA

FIGURE 4.3.1

City of Antioch
General Plan Update EIR

Biological Resources

Agricultural lands do not typically provide habitat for native plants. The continual disturbance and selective planting of crops makes these areas inhospitable for native plants. Edges of agricultural fields that abut undisturbed areas may support some native species that are tolerant of disturbance, but mostly, these areas are unsuitable for native plant species. Likewise, agricultural areas have limited value to native wildlife. Working of the land on a routine basis disturbs the area and creates habitat only marginally suitable for wildlife at most times. Depending on the crop and the season however, wildlife may make use of agricultural areas on an occasional basis. Birds may find suitable foraging habitat in newly tilled soil and small mammals may find food and cover in grain crops. The edges of agricultural fields, where disturbance is minimized, may provide opportunities for burrowing animals such as California ground squirrels and burrowing owls.

Grassland. Non-native annual grassland is the most common vegetation type in the Antioch Planning Area. These lands are generally grazed or abandoned agricultural fields dominated by annual introduced grasses, mustard, and filaree. Depending on the degree of disturbance or over-grazing, they may be infested with thistles, especially in seeps or slumps. The most common species in non-native grassland in the Antioch area are wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), filaree (*Erodium* sp.), and mustards (*Brassica* and *Hirschfeldia* sps.). A few native species that are ruderal or strong competitors, such as fiddleneck (*Amsinkia* sps.), bluedicks (*Dichelostemma capitatum*), lupine (*Lupinus* sps.), and owl's clover (*Castilleja exserta* and *C. densiflora*) do persist among the non-native plants. Where the vegetation is thin due to poor or shallow soils, other native species and possibly special-status species can remain.[1,2,3]

Grasslands within the southwestern portion of the General Plan study area, within portions of the Sand Creek, Roddy Ranch, and Ginochio Property Focus Areas function as a linkage between two regionally large blocks of grassland: one to the north of Mt. Diablo, extending west to Concord, and a second on the west edge of the San Joaquin Valley, extending to Altamont Pass and beyond. Historically, this linkage was broad, ranging from the chaparral and oak woodland of the Diablo Range to the edge of Delta wetlands. Decades of urban and agricultural development have substantially reduced the width of this linkage over the past several decades, thereby increasing the ecological importance of the remaining linkage.

Primary movement corridors in this region follow the flat valley floors of the northwest-trending valleys: Briones Valley, Deer Valley, Horse Valley, and Lone Tree Valley. Connectivity also occurs over ridges between the major valleys, but on a secondary basis because the steep habitat between the valleys is generally sub-optimal. Briones Valley has the least function in this regard because it ends in oak woodland and chaparral, rather than connecting with the grassland to the north. Deer Valley and Horse Valley have intermediate function. Historically, the Lone Tree Valley had the highest function in this regard because it connected former grasslands in the Brentwood area to the grassland on East Bay Regional Parks District lands to the northwest, which land has been protected for its resource values. However, the function of the Lone Tree Valley corridor, and to a lesser extent the Deer Valley and Horse Valley corridors has been reduced by existing urban and agricultural development in Brentwood, which essentially blocks the east end of these linkages.

1 Sycamore Associates, 1998.

2 LSA, 1983, 2000.

3 RHAA & LSA, 1989.

Secondary connectivity is likely more functional toward the east, where topography tends toward rolling hills rather than steep ridges. The importance of this secondary connectivity has been increased by the extent of development in Brentwood, which blocks the east end of the linkages.

Vacant urban land that has been graded or highly disturbed is scattered throughout the City of Antioch. These lands generally contain ruderal (weedy) species like yellow star thistle, wild oats, wild barleys (*Hordeum sps.*), ripgut brome, bindweed (*Convolvulus arvensis*), prickly wild lettuce (*Lactuca serriola*), mustards, Italian rye grass (*Lolium multiflorum*), bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus)*, Bermuda grass (*Cynodon dactylon*), and tobacco tree (*Nicotiana glauca*). Relict native species (and potentially even special-status species) can possibly exist in small patches on these lands.[1,2]

Native grasslands have been reduced to 90 percent of their former area in California. Native grassland in the Antioch Planning Area would likely be dominated by purple needlegrass (*Nassella puchra*). A variety of spring wildflowers are also found in native grasslands. Because of the rarity of this once abundant vegetation type, the California Department of Fish and Game (CDFG) may request mitigation for projects that impact native grasslands. Additionally, special-status plants are more likely to be found in undisturbed native vegetation. Native grasslands are most likely to be found in the southern part of the Antioch Planning Area.

Alkali meadows can be found in valley basins in the Antioch area. They typically contain Mediterranean barley (*Hordeum marinum*), saltgrass (*Distichilis spicata*), alkaki heath (*Frankenia salina*), California goldfields (*Lasthenia californica*), toad rush (*Juncus bufonius*), and sand spurrey (*Spergularia* sps.).[3] Basins with a visible salt crust may support such species as Italian rye grass, alkaliweed (*Cressa truxillensis*), Douglas's dandelion (*Microseris douglasii*), dwarf carrot (*Daucus pusilla*), alkali mallow (*Malvella leprosa*), Mayweed (*Anthemis cotula*), blow wives (*Achyrachaena mollis*), alkali heath, and special-status plants like brittlescale (*Atirplex depressa*), and San Joaquin spearscale (*A. joaquiniana*). However, a visible salt crust is not necessary for any of these species to exist. Alkali meadows are most likely to be found in the southern portion of the Antioch Planning Area.[4]

Vernal pools are seasonal wetlands that typically occur in depressions in grasslands. These depressions collect water during the winter and spring rains and dry once the rains cease. As the ponds dry in the spring, a succession of different plant species bloom around the edges of the pool. A high-quality vernal pool will display concentric rings of different colors of flowers in bloom in mid-spring. Because vernal pools tend to be isolated from each other, they may possess a unique flora that includes special-status plants like the Contra Costa goldfields, a federally endangered species. Vernal pools are also habitat for special-status animals like the California tiger salamander (*Ambystoma californiense*), fairy shrimp (*Branchinecta* sp., *Linderiella occidentalis*), and tadpole shrimp (*Lepidurus packardi*).

1 LSA, 1993.

2 Sycamore Associates, 2000.

3 Sycamore Associates, 2000.

4 LSA, 2000.

Typical plant species in Antioch area vernal pools are rabbit's foot grass (*Polypogon monspeliensis*), Fremont goldfields (*Lasthenia fremontii*), valley popcorn flower (*Plagiobothrys stipitatus*), dwarf woolyheads (*Psilocarpus brevissimus*), flat-faced downinga (*Downingia pulchella*), brass-buttons (*Cotula coronopifolia*), and sand-spurrey (*Spergularia marina*). Alkaline vernal pools may have a slightly different plant composition. Vernal pools are most likely to be found in the southern portion of the Antioch Planning Area.[1]

Stabilized Interior Dunes. The Antioch Dunes along the Banks of the San Joaquin River contain a unique assemblage of plant and animal species, several of which are found nowhere else in the world. The groundcover is formed by scattered grasses and forbs, some of which reach shrub size. The federally-endangered Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*) and Contra Costa wallflower (*Erysimum capitatum* ssp. *angustatum*) are found here amongst more common species such as California croton (*Croton californicus*), California matchweed (*Gutierrezia californica*), nude buckwheat (*Eriogonum nudum* var. *auriculatum*), and telegraph weed (*Heterotheca grandiflora*). Willow (*Salix* sp.) and coast live oak trees (*Quercus agrifolia*) are also present. Scattered plants of the Antioch Dunes evening primrose can also be found on immediately adjacent lands.[2,3]

A number of special-status animals occurs in this habitat, the most sensitive of which are the insects such as the federally endangered Lange's metalmark butterfly (*Apodemia mormo langei*). Other sensitive insect species that occur in the dunes include the Antioch efferian robberfly (*Efferia antiochi*), the Antioch multilid wasp (*Myrmosula pacifica*), Middlekauf's shieldback katydid (*Idiostatus middlekaufi*), and the Antioch andrenid bee (*Perdita scituta antiochensis*). Silvery legless lizard (*Aniella pulchra pulchra*) also occurs in the dunes.

Wetlands. Seasonal wetlands and ponds hold water for only part of the year. They may be dry most of the year. In the Antioch area, seasonal ponds and wetlands may contain ryegrass (*Lolium* sp.), popcorn flower (*Plagiobothrys* sp.), curly dock, hyssop loosestrife (*Lythrum hyssopifolium*), Baltic rush (*Juncus balticus*), Pacific foxtail (*Alopecurus saccatus*), and flowering quillwort (*Lilaea scilloides*). If the wetlands have been disturbed, they may contain thistles, gumplant (*Grindelia* sp.), bristly ox-tongue, coyote brush (*Baccharis pilularis*), cattails (*Typha* sp.), and dallis grass (*Paspalum dilatatum*). Wetlands can be found in any part of the Antioch Planning Area.[4,5]

Freshwater seeps may be found in grasslands or meadows or associated with freshwater marshes. They have permanently wet or moist soil. They typically contain sedges (*Carex* sp.) and rushes (*Juncus* sp.). If water pools sufficiently, they may contain water-cress (*Rorripa nasturtium-aquaticum*).[6]

1 Ibid.

2 Holland, 1986.

3 Sawyer and Keeler-Wolf, 1995.

4 RMI, 1996.

5 LSA, 2000.

6 Holland, 1986.

Coastal and valley freshwater marshes are wet year round and can be found in any part of the Antioch Planning Area. They typically contain cattails, sedges, rushes, willows, bulrushes (*Scirpus* sp.), and common tule (*Scirpus acutus*).[1,2]

Coastal brackish marshes are wet year-round and are found along the banks of the San Joaquin River. Most of the freshwater marsh plant listed above can be found in Antioch's brackish marshes. Additionally, brackish marshes will contain salt-tolerant emergents like hardstem bulrush (*Scirpus acutus* var. *occidentalis*), California bulrush (*Scirpus californicus*), water smartweed (*Polygonum punctatum*), 3-square bulrush (*Scripus pungens*), saltgrass, *Bassia* species, and common reed (*Phragmites australis*). If pickleweed (*Salicornia* sp.) is present, coastal brackish marshes may contain suitable habitat for the State and federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*).[3,4] Other listed species associated with the coastal brackish marsh in the Antioch Planning Area include California clapper rail (*Rallus longirostris obsoletus*), and California black rail (*Laterallus jamaicensis coturniculus*). Other special-status wildlife species also occur here including Suisun song sparrow (*Melospiza melodia maxillaris*) and western pond turtle (*Clemmys marmorata*).

Alkaline floodplains exist along the banks of the San Joaquin River. These may appear barren because of the difficulty of growing in highly alkaline, frequently disturbed soil. If unprotected, such barren lands tend to attract people seeking recreation in four-wheel drive vehicles, which reduces the vegetation ever further. Plants growing on alkaline floodplains include alkali heath, salt grass, five-hook bassia (*Bassia hyssopifolia*), and pickle weed. Stands of pickleweed and saltgrass can be habitat for the State and federally endangered salt marsh harvest mouse.[5]

Alkali seeps are permanently wet or moist and are often associated with alkaline meadows; they can also be found near wetlands and drainages along the San Joaquin River. Saltgrass and ditchgrass (*Ruppia* sp.) are the plants most commonly associated with alkali seeps.[6]

Open Water. This category includes the San Joaquin River and permanent water bodies, such as natural or man-made lakes, ponds, and reservoirs.

Although open water does not provide habitat for many plant species, it is important for wildlife and fish. The San Joaquin River is used as a movement corridor, foraging, and breeding habitat for a variety of native and non-native fish including steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), striped bass (*Morone saxatilis*), and many others. Waterbirds and waterfowl use the lakes and rivers for foraging and breeding and stopovers during migration.

1 Torrey & Torrey, 1981.

2 Sycamore Associates, 2000.

3 The Planning Collaborative, 1991.

4 LSA, 1993.

5 LSA, 1993.

6 Holland, 1986.

Oak Woodland. Blue oak woodland is found on north-facing slopes and in shady ravines in the Mt. Diablo foothills. Besides the dominant blue oak (*Quercus douglasii*), a scattering of other trees may be present, including the gray or foothill pine (*Pinus sabiniana*), interior live oak (*Q. wizlizenii*), California buckeye (*Aesculus californica*), and hoptree (*Ptelea crenulata*). The understory may be simply a native or non-native grassland, or it may also contain a few shrubs, like manzanita (*Arcto-staphylos manzanita* ssp. *manzanita*), poison oak (*Toxicodenron diversilobum*), or saplings of live oak and buckeye.[1,2]

Valley oak woodlands once dominated the edges of the Central Valley in vast park-like stands. Valley oaks are the largest and longest-lived of the California oaks. This habitat type has been much reduced by conversion of land to agriculture and because modern grazing patterns prevent the regeneration of young oaks. Valley oak stands are still found in Antioch in Contra Loma Regional Park and other southern portions of the Antioch Planning Area. Valley oak woodlands generally have a grassy understory. In Contra Loma Regional Park, the valley oaks have been reported to have an understory of *Atriplex* species, curly dock, rye grass, and Bermuda grass.[3,4]

Oak woodlands are important habitat for numerous common and special-status wildlife species. Black-tailed deer (*Odocoileus hemionus*), western scrub-jays (*Aphelocoma californica*), and acorn woodpeckers (*Melanerpes formicivorus*) are common inhabitants of this habitat. Numerous bird species use the trees for nesting, roosts, and foraging. Swainson's hawks (*Buteo swainsoni*), a State listed species, nest in valley oaks. Oaks are important nesting sites for many species of raptors.

Riparian. Riparian vegetation refers to the native scrub or forest occurring along streams and riverbanks. In riparian areas, the roots of trees and other vegetation can easily reach the water table. Such areas are prone to frequent flooding. Riparian vegetation used to be found along most perennial and intermittent streams in the Antioch Planning Area and along the San Joaquin River. This vegetation type has become rare due to disturbance by cattle, riverfront development, and the filling or channelizing of small streams in urban areas

Two kinds of riparian vegetation are found in the Antioch area. Central coast riparian scrub is dense and brushy, dominated by willows (*Salix* sp.). Other tree species in the riparian scrub include coast live oak, northern California black walnut *(Juglans californica* var. *hindsii*), blue elderberry (*Sambucus mexicana*), and white alder (*Alnus rhombifolia*). The dense understory may include coyote brush, mule fat (*Baccharis salicifolia*), and California blackberry (*Rubus ursinus*). Exotic invasives in the riparian scrub in the Antioch area include black locust (*Robinia psuedo-acacia*), wattle (*Acacia* sp.), and Himalayan blackberry (*Rubus discolor*). In riparian areas with less frequent flooding, riparian scrub may develop into a riparian woodland.[5,1]

1 Sycamore Associates, 1998.

2 LSA, 2000.

3 Pavlik et al., 1991.

4 RHAA & LSA, 1989.

5 Holland, 1986.

Riparian woodland has more large trees, fewer willows, and a slightly more open understory than riparian scrub. In the Antioch area, riparian woodland may be composed of northern California black walnut, eucalyptus species, coast live oak, blue elderberry, willow species, cottonwood (*Populus fremontii*), mule fat, tobacco tree, naturalized tree of heaven (*Ailanthus altissima*), and escaped almond trees (*Prunus dulcis*).[2,3]

Riparian areas provide important breeding and foraging habitat for many species of birds, mammals, reptiles, and amphibians. The federally listed California red-legged frogs (*Rana aurora draytonii*) occurs near creeks in the Planning Area and the State-listed Swainson's hawk (*Buteo swainsoni*) will nest in large trees such as cottonwoods that grow along creeks. Riparian areas also provide cover for wildlife and movement corridors. The cover typically provided by the riparian corridors allows animals to move between habitat areas even if the intervening areas are less suitable.

Scrub. Black sage scrub is found on windy, shallow and rocky areas on steep south and southeast facing slopes in the Mt. Diablo foothills. This scrub is dominated by California sagebrush (*Artemisia californica*), black sage (*Saliva mellifera*), and sticky monkey-flower (*Mimulus auranticus*) that can grow to a height of six feet. Associated species include interior goldenbush (*Ericarmeria linearifolia*), woolly paintbrush (*Castilleja foliolosa*), valley tassels (*C. attenuata*), deerweed (*Lotus scoparius*), goldback fern (*Pentagramma triangularis*), zorro fescue (*Vulpia myruros*), and red brome (*Bromus madritensis* ssp. *rubens*).[4]

Chamise chaparral is also found in the Mt. Diablo foothills on high ridgetops and dry south-facing slopes. Dominated by a single species, chamise (*Adenostoma fasciculatum*) bushes grow up to nine feet tall. Chamise chaparral is often dense with very little understory. Where the chamise has been opened up by cattle grazing, the understory can be more developed, consisting of annual grasses like wild oats, brome grasses, and wild barleys, and native species such as coffee fern (*Pellaea andomedifolia*), gilia (*Gilia capitata*), man-root (*Marah fabaceaus*), death camas (*Zigadenus fremontii*), interior goldenbush, yerba santa (*Eriodictyon californica*), woolly paintbrush, and the special-status Diablo rock-rose (*Helianthella castanea*).[5]

The scrub habitat is particularly important habitat for the Federal and State-listed Alameda whipsnake (*Masticophis lateralis euryxanthus*). This species is restricted to the chaparral and scrub habitats of the East Bay hills and may be found in the hills in the southwestern portion of the Planning Area.

Special-Status Species. Special-status species are defined as:

1 LSA, 1993.

2 LSA, 1983, 2000.

3 RHAA & LSA, 1989.

4 Sycamore Associates, 1998.

5 Ibid.

- Species that are listed, or designated as candidates for listing, as threatened or endangered under the Federal Endangered Species Act;
- Species that are listed, or designated as candidates for listing as rare (plants), threatened, or endangered under the California Endangered Species Act;
- Plant species on List 1A, List 1B, List 2, and List 3 in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California 1;
- Wildlife species listed by the CDFG as species of special concern or fully protected species;
- Species that meet the definition of rare or endangered under the California Environmental Quality Act (under Section 15380 of CEQA, a species not included on any formal list "shall nevertheless be considered rare or endangered if the species can be shown to meet the criteria" for listing); and/or
- Considered to be a species of special concern by local agencies.

Special-Status Plants. The Natural Diversity Database of the CDFG and the Electronic Inventory of the California Native Plant Society were searched for records of special status species in or near the Antioch Planning Area. Nineteen special-status plant species with potential to occur in the Antioch Planning Area were found. These species are listed in Table 4.3.A along with a description of their habitats. Of these 19 special-status species, 5 are federally listed as endangered, and 2 are listed as both federally and State endangered.

Special-Status Wildlife. The Natural Diversity Database of the CDFG was searched for records of special-status wildlife species in or near the Antioch Planning Area. Thirty-nine special-status animal species with potential to occur in the Antioch Planning Area were found. These species are listed in Table 4.3.B along with a description of their habitats. Of these 39 special-status species, 6 are federally listed as endangered, and 3 are listed as both federally and State endangered.

Existing Policies and Regulations

The Antioch Planning Area is located within the geographic range of numerous sensitive plant communities/habitats and special-status plant and wildlife species. Biological resources on the site may be subject to agency jurisdictions and regulations, as described below.

U.S. Fish and Wildlife Service. The Federal Endangered Species Act (ESA) was promulgated to protect any species of plant or animal which is endangered or threatened with extinction. "Take" of endangered species is prohibited under Section 9 of the ESA. Take as defined under the ESA means to "harass, harm, pursue, hunt, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" [16 U.S.C. § 1532(19)]. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species that are formally listed as threatened or endangered under the Federal Endangered Species Act.

[1] Skinner and Pavlik 1994.

Section 7 of the Act requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on proposed federal actions (actions authorized, funded, or carried out by federal agencies) which may affect threatened or endangered species or result in the destruction or adverse modification of critical habitat. Section 7 also requires federal agencies to confer with the USFWS if the agency determines that its action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat.

Section 10 of the ESA provides the regulatory mechanism which allows the incidental take of a listed species by private interests and non-federal government agencies during lawful land, water, and ocean use activities. Under these conditions, habitat conservation plans (HCPs) for the impacted species must be developed, approved by the USFWS, and implemented by the permitted. It is the goal through the HCP to minimize impacts to the species and develop viable mitigation measures to offset the unavoidable impacts.

Section 9 of the Endangered Species Act and its applicable regulations restrict certain activities with respect to endangered and threatened plants. However, these restrictions are less stringent than those applicable to fish and wildlife species. The provisions prohibit the removal of, malicious damage to, or destruction of any listed plant species "from areas under Federal jurisdiction." Listed plants may not be cut, dug up, damaged or destroyed, or removed from any other area (including private lands) in knowing violation of a State law or regulation.

An endangered plant or wildlife species is one that is considered in danger of becoming extinct throughout all, or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. In addition to endangered and threatened species, which are legally protected under the Endangered Species Act, the Service has a list of candidate species. A *candidate species* is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species.

A draft habitat conservation plan (HCP) is being prepared for eastern Contra Costa County. The following jurisdictions and agencies are involved in the HCP process: Contra Costa County, Brentwood, Clayton, Oakley, Pittsburg, Contra Costa Water District, and East Bay Regional Park District. The HCP will address issues related to the conservation of threatened and endangered animal and plant species that inhabit eastern Contra Costa County such as vernal pool fairy shrimp, San Joaquin kit fox, California red-legged frog, Alameda whipsnake, soft bird's beak, and Contra Costa wallflower. The draft HCP will be reviewed and evaluated by the USFWS.

Table 4.3.A - Special-Status Plant Species Reported in the Study Area,[a] City of Antioch, Contra Costa County, California

Species and Common Name	Legal Status[b]	Description	Habitat	Blooming Period	Locations
Amsinkia grandiflora large-flowered fiddleneck	FE/CE/1B	Annual wildflower.	Grassland, cismontane woodland.	April-May	Los Vaqueros Reservoir, Black Diamond Mines Regional Preserve, Lawrence Livermore Labs.
Arctostaphylos auriculata Mt. Diablo manzanita	-/-/1B	Evergreen shrub.	Canyons and slopes in sandstone chaparral.	January-March	Mt. Diablo Area. Ridge at head of Lone Tree and Deer Valleys.
Aster lentus Suisun marsh aster	-/-/1B	Rhizotamous perennial herb.	Brackish and freshwater marshes and swamps.	August-November	Found only in the Sacramento/San Joaquin River Delta; along sloughs and riverbanks.
Atriplex cordulata heartscale	-/-/1B	Annual herb.	Alkaline flats and scalds in sandy chenopod scrub and grasslands.	May-October	Deer Valley.
Atriplex depressa brittlescale	-/-/1B	Annual herb.	Clay or alkaline chenopod scrub, playas, grassland.	May-October	Lone Tree and Horse Valleys area. Scattered in Central Valley, especially Byron/Livermore/ Altamont area, Fresno and Glenn Counties
Atriplx joaquiniana San Joaquin spearscale	-/-/1B	Annual herb.	Alkaline chenopod scrub, meadows, and grasslands.	April-September	Deer Valley, Horse Valley, and Briones Valley areas. Also found in southern Contra Costa and Alameda Counties and the Central Valley.
Blepharizonia plumosa ssp. *plumosa* big tarplant	-/-/1B	Annual herb.	Dry annual grasslands with clay or clay-loam soils. Often on slopes or burns.	July - October	The Los Medanos and Roddy Ranch areas. Hills near Livermore.
Cordylanthus mollis ssp. *mollis* soft bird's beak	FE/-/1B	Annual hemi-parasitic wildflower.	Coastal salt marsh.	July-September	Antioch Bridge, San Joaquin River edges, Carquinez Straits, Suisun Bay.
Erysimum capitatum ssp. *angustatum* Contra Costa wallflower	FE/CE/1B	Perennial wildflower.	Stabilized inland sand and clay dunes.	March-July	Found only in the Antioch Dunes.
Eschscholzia rhombipetala diamond-petaled California poppy	-/-/1B	Annual wildflower.	Alkaline slopes and flats in clay grasslands.	March-April	Last seen in Antioch in 1889. Only one extant population on the grounds of the Lawrence Livermore Labs.
Helianthella castanea Diablo rock-rose	-/-/1B	Perennial wildflower.	Rocky soils on edge of chaparral or scrub and grassland or woodland.	April-June	Roddy Ranch. Scattered throughout Contra Costa and Alameda Counties, especially Mt. Diablo area.
Hesperolinon breweri Brewer's western flax	-/-/1B	Annual wildflower.	Mostly serpentinite soils in chaparral, woodland, and grassland.	May-July	Contra Costa, Napa, and Solano Counties, especially Mt. Diablo area.
Juglans californica var. *hindsii* northern California black walnut	-/-/1B	Deciduous nut tree.	Riparian forests and woodlands.	April-May	Horse and Lone Tree Valleys. Only two extant stands in Contra Costa and Napa Counties.
Lasthenia conjugans Contra Costa goldfields	FE/-/1B	Annual wildflower.	Mesic grasslands, vernal pools, and cismontane woodland.	March-June	Last reported in Antioch in 1895. Only a handful of extant populations in Napa, Solano, and Contra Costa Counties.
Lathyrus jepsonii var. *jepsonii* delta tule pea	-/-/1B	Perennial wildflower.	Edges of freshwater and brackish marshes, sloughs, and swamps in the Delta.	May-June	Antioch Dunes, Antioch Point. Other areas in Delta.

Table 4.3.A - Special-Status Plant Species Reported in the Study Area,[a] City of Antioch, Contra Costa County, California

Species and Common Name	Legal Status[b]	Description	Habitat	Blooming Period	Locations
Lilaeopsis masonii Mason's liaeopsis	-/-/1B	Perennial herb.	Tidal zones in muddy or silty soil of brackish and freshwater marshes, swamps, and riparian scrub.	April-October	Along banks of San Joaquin River and Delta islands. New York slough; Antioch Dunes.
Limosella subulata Delta mudwort	-/-/2	Stoniferous perennial herb.	Riparian scrub, freshwater and brackish marshes.	May-August	Banks of the Delta, its islands and sloughs, especially Dutch and Montezuma sloughs. Also in the Antioch Dunes and at Point Reyes National Seashore.
Madia radiata showy madia	-/-/1B	Annual wildflower.	In clay in chaparral, grassland, cismontane woodland, and chenopod scrub.	April-May	Last seen north of Lone Tree Valley in 1941. Previously also in Deer Valley. Scattered extant populations throughout Central California.
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose	FE/CE/1B	Perennial wildflower.	Inland sand dunes in Sacramento and Contra Costa Counties.	April-July	Antioch Dunes, Delta islands. One report from a sandy area within the City of Antioch.

[a] Includes occurrences within one mile of the study area boundary (high probability of also occurring within study area).

[b] Legal Status: Federal/State/CNPS: FE = Federally listed as endangered; FT = Federally listed as threatened; CE = State of California listed as endangered; CT = State of California listed as threatened. California Native Plant Society Listings: 1A = Plants presumed extinct in California; 1B = Plants rare, threatened, or endangered in California and elsewhere; 2 = Plants rare threatened or endangered in California, but more common elsewhere.

Source: Natural Diversity Database of the California Department of Fish and Game; Electronic Inventory of the California Native Plant Society.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Invertebrates				
Lange's Metalmark Butterfly *Apodemia mormo langei*	FE	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes. Primary host plant is *Eriogonum nudum* var. *auriculatum.* Feeds on nectar of other wildflowers, as well as host plant.	Adults: emerge in late summer. Larvae: fall, winter, and spring.	Antioch Dunes
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	FT	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries (CNDDB 2000).	Year-round. Adults: spring Larvae: in stems of shrubs for up to 2 years. Exit holes observable all year.	Elderberry shrubs provide potential habitat. These shrubs typically occur along creeks as part of the riparian vegetation.
Middlekauf's Shieldback Katydid *Idiostatus middlekaufi*	**	Antioch Dunes. Species known only from this location..	Year-round.	Antioch Dunes.
Antioch Multilid Wasp *Myrmosula pacifica*	**	Antioch Dunes.	Year-round.	Antioch Dunes.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Antioch Andrenid Bee *Perdita scituta antiochensis*	**	Antioch Dunes. Visits flowers of *Eriogonum, Gutierrezia californica, Heterotheca grandiflora, Lessingia glandulifera*	Year-round.	Antioch Dunes.
Antioch Efferian Robberfly *Efferia antiochi*	**	Known only from Antioch Dunes and Fresno.	Year-round	Antioch Dunes.
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	FT	Grassy or mud-bottomed swales filled with rainwater in unplowed grasslands are the most common habitat for this species. Occasionally found in sandstone depressions as well. Range includes grassland areas in the Central Valley and the Central Coast Mountain Range.	Adults: Winter & Spring Eggs: In soil Year-round	Vernal pools and other seasonally ponded areas (i.e., stock ponds)in grasslands provide potential habitat for this species. Other seasonal wetlands in low-lying areas may also this species depending on depth, extent, and duration of inundation. Suitable habitat primarily in southern portion of plan area.
Vernal Pool Tadpole Shrimp *Lepidurus packardi*	FE	Inhabits pools with clear to highly turbid waters. May occur in pools with grass bottoms (typically clear) or in mud bottomed pools (usually with highly turbid waters) (Federal Register 1994)	Adults: Winter & Spring Eggs: In soil Year-round	Vernal pools and other seasonally ponded areas (i.e., stock ponds)in grasslands provide potential habitat for this species. Other seasonal wetlands in low-lying areas may also this species depending on depth, extent, and duration of inundation. Suitable habitat primarily in southern portion of plan area.
Fish				
Steelhead *Onchorhynchus mykiss*	FT	Sacramento and San Joaquin Rivers and their tributaries.	Seasonal	Seasonal migration corridor in San Joaquin River in northern portion of plan area.
Chinook Salmon *Onchorhynchus tshawytscha*	C/CSC fall/late fall run in Sacramento & San Joaquin River and Tributaries	Sacramento and San Joaquin Rivers and their tributaries.	Fall and Late Fall	Seasonal migration corridor in San Joaquin River in northern portion of plan area.
Delta Smelt *Hypomesus transpacificus*	FT/ST	Sacramento-San Joaquin Delta. Seasonally occur in Suisun Bay, Carquinez Straits, and San Pablo Bay.	Seasonal	Potential habitat in San Joaquin River in northern portion of plan area.
Sacramento Perch *Archoplites interruptus*	CSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physiochemical water conditions.		Potential habitat in San Joaquin River in northern portion of plan area.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Amphibians				
California Tiger Salamander *Ambystoma californiense*	C/CSC	Quiet water of ponds, reservoirs, lakes, temporary rain pools, and streams comprise breeding habitat (Stebbins 1985). Adults emerge from their subterranean burrows for only a few weeks a year during the late winter and early spring after heavy rains (Bury 1971). Suitable habitat includes open woodland and grassland (Dunn 1940, Stebbins 1985).	Adults: Year-round Larvae: Winter & Spring	Occurs primarily in southern portion of plan areas. Grasslands in these areas interspersed with vernal pools and stock ponds provide potential aestivation and breeding habitats. Documented to occur in Horse Valley and on south side of Balfour Road. Actual sightings have occurred in the southern portion of the Planning Area.
California Red-Legged Frog *Rana aurora draytonii*	FT/CSC	Inhabits marshes, slow parts of streams, lakes, reservoirs, ponds, and other permanent water. When not breeding the red-legged frog may be found in damp woods (Stebbins 1985).	Year-round	Potential habitat in creeks and ponds throughout the plan area. Documented from tributary to Sand Creek in southern portion of plan area.
Foothill Yellow-legged Frog *Rana boylii*	CSC	Occurs in partly shaded shallow streams and riffles in a variety of habitats. Need cobbles on stream bottom for egg-laying. Metamorphosis requires at least 15 weeks.	Year-round	Potential habitat occurs in creeks with cobbly bottoms in the hills of the western portion of the plan area. Actual sightings have occurred in the southern portion of the Planning Area.
Reptiles				
Silvery Legless Lizard *Aniella pulchra pulchra*	CSC	Occur in sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. Prefer soils with high moisture content.	Year-round	Inland dunes in northern plan area.
Western Pond Turtle *Clemmys marmorata*	CSC	Permanent or nearly permanent water (fresh to brackish) in a wide variety of habitat types.	Year-round	Potential habitat in creeks, stock ponds, and freshwater and brackish marches throughout the plan area.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Alameda Whipsnake *Masticophis lateralis euryxanthus*	FT/ST	Typically, occurs in northern coastal scrub or chaparral communities of the East Bay Hills in Alameda and Contra Costa counties. These two habitats are more favored by this snake when they occur adjacent to ungrazed grassland or oak woodland savanna where rodent populations are high. Rodents are not considered prime prey, but their burrows are favorite retreat areas for this snake. Grasslands are also considered an important habitat component because of their foraging value, and some female whipsnakes have been identified laying eggs in grassy fields. Rock outcrops are considered especially important hunting habitat for this snake. Western fence lizard is the primary prey species and prime habitats have high populations of this lizard. Inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	Year-round	Potential habitat occurs in the hills in the southwestern portion of the plan area.
Birds				
Double-crested Cormorant *Phalacrocorax auritus* (rookery site)	CSC	Colonial nester. Nests along coasts on sequestered islets, either on ground or in tall trees at edge of lakes.	Spring	Potential nesting habitat along northern shoreline and offshore islands in northern portion of plan area.
California Clapper Rail *Rallus longirostris obsoletus*	FE/SE	Occurs in salt and brackish marshes traversed by tidal slough in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but forages away from cover in the slough channels, searching for invertebrates.	Year-round	Potential habitat occurs in the marshes along the northern shoreline of the plan areas.
California Black Rail *Laterallus jamaicensis coturniculus*	ST	Occurs in tidal salt marshes dominated by pickleweed. Also occurs in low elevation freshwater and brackish marshes.	Year-round	Potential habitat occurs in the marshes along the northern shoreline of the plan areas.
California Least Tern *Sterna antillarum browni*	FE/SE	Colonial breeder on bare or sparsely vegetated flat substrates, including sand beaches, alkali flats, paved areas, or landfills.	Spring	Potential breeding habitat in northern portion of plan area along northern shoreline. Documented from the vicinity of the former PG&E plant in Pittsburg.
Sharp-Shinned Hawk *Accipiter striatus*	CSC	Favored habitats include woodland edges and riparian forests. Riparian forests and grasslands provide potential nesting and foraging habitats, respectively.	Resident and Migrant	Potential habitat occurs in forests particularly riparian areas throughout the plan area.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Cooper's Hawk *Accipiter cooperi*	CSC	Favors woodland edges and riparian areas for foraging and nesting. Feed primarily on avian prey which is abundant at forest edges and in riparian areas (Zeiner et al 1990a).	Year-round Resident	Potential habitat occurs in forests particularly riparian areas throughout the plan area.
Swainson's Hawk *Buteo swainsoni*	ST	Typically found in areas where suitable nest trees, such as cottonwoods, valley oak, walnut, and willow grow adjacent to suitable foraging areas. Majority of nests in the Central Valley is found in riparian areas adjacent to foraging sites. Trees in agricultural fields may provide suitable nest sites (Zeiner et al. 1990a). Suitable foraging areas support large populations of rodents such as California vole, small and medium sized birds such as mourning dove, and insects. Native grasslands, pasture lands, and agricultural fields that lack dense cover provide suitable foraging areas.	Spring & Summer Breeder (A small population is known to winter in the Sacramento-San Joaquin Delta)	Potential nesting and foraging habitat occurs throughout the plan area, particularly in the grasslands of the southern portion of the plan area and agricultural areas with tall trees.
Ferruginous Hawk *Buteo regalis*	CSC	Open grasslands in sagebrush flats, desert scrub, low-foothills surrounding valleys, and edges of pinyon-juniper habitats (Zeiner et al 1990a)	Winter Resident	Potential winter foraging habitat in grasslands/croplands in plan area.
Northern harrier *Circus cyaneus*	CSC	Marshlands, grasslands, meadows, and desert sinks. Mostly found in flat, or hummocky open areas.	Year-round	Potential nesting and foraging habitat in grasslands, marshes, and hay fields throughout the plan area.
White-tailed Kite *Elanus leucurus*	FP	Open grasslands, meadows, or marshes for foraging in proximity to isolated, dense-topped trees for nesting and perching.	Year-round	Potential nesting and foraging habitat throughout plan area in grasslands, marshes, and agricultural areas. Trees or large shrubs needed for nesting.
Prairie Falcon *Falco mexicanus*	CSC	Perennial grasslands, savannahs, rangeland, and some agricultural fields. Forages in open terrain, nests in open terrain with canyons, cliffs, and rock outcrops.	Year-round/ and migrant	Potential foraging habitat within plan area. Potential nesting habitat in mountains to the west (off-site).
Short-eared Owl *Asio flammeus*	CSC	Found in both freshwater and saltwater marsh areas, lowland meadows, and irrigated fields. Tall grass and tules used for daytime cover. Nests on dry ground concealed by vegetation.	Year-round	Potential habitat in marshes along northern shore of plan area.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
Burrowing Owl *Athene cunicularia*	CSC	Open, dry, nearly or quite level grassland, prairie, and desert floor. Subterranean nester that generally uses existing mammal burrows, but will also excavate its own burrows. Burrow depths of 12-18 inches below ground apparently maintain thermal stability of the nest chamber (Olenick 1987).	Year-round	Potential breeding and foraging habitat in open grasslands and agricultural areas throughout the plan area. Actual sightings have occurred in the southern portion of the Planning Area.
Loggerhead Shrike *Lanius ludovicianus*	CSC	Open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low or sparse herbaceous cover.	Year-round and winter visitor	Potential breeding and foraging habitat in plan area, typically associated with open grassland areas and oak woodlands/savannas.
Tricolored Blackbird *Agelaius tricolor*	CSC	Breeds near fresh water, preferably emergent wetland but also in thickets of willow and other shrubs. Feeds in grassland and cropland.	Year-round and migrant	Potential foraging habitat in grassland and agricultural areas throughout plan area. Potential breeding habitat in marshes associated with creeks and ponds throughout plan area.
Suisun Song Sparrow *Melospiza melodia maxillaris*	CSC	Occurs in brackish marshes dominated by cattails, tules, sedges, and pickleweed around Suisun Bay.	Year-round	Potential habitat in marshes along northern portion of plan area.
Mammals				
Salt Marsh Harvest Mouse *Reithrodontomys raviventris*	FE/SE	Occurs only in the marshes bordering San Francisco, San Pablo, and Suisun bays. Pickle-weed-dominated salt marsh typically with a narrow zone of cordgrass (*Spartina foliosa*) along the bayward edge in tidal areas is the primary habitat for the salt marsh harvest mouse. Brackish marshes characterized by stands of tall emergent vegetation, dominated by bulrushes and cattails (*Typha* spp.) and interspersed with areas of short cover, primarily pickleweed (*Salicornia virginica*) and salt grass (*Distichlis spicata*) are also used. Upland habitats adjacent to marshes and other wetland communities with little or no pickleweed also provide suitable habitat for this species. Up land habitats adjacent to an occupied marsh provide refuge or temporary escape cover from prolonged winter flooding or seasonally high tides.	Year-round	Potential habitat occurs in the pickleweed marshes along the northern shore of plan area. Known from the marshes of the northwest portion of the plan area.

Table 4.3.B - Special-status Animal Species Potentially Occurring in the Antioch General Plan Area, Contra Costa County

Species	Status[a]	Habitat[b]	Seasonal Occurrence[c]	Potential Occurrence Within the Plan Area
San Joaquin Kit Fox *Vulpes macrotis mutica*	FE/ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base. (CNDDB 2000)	Year-round	Potential foraging and denning habitat in grassland area of the plan area particularly in the southern portion of the plan area.
Townsend's Big-Eared Bat *Plecotus townsendii townsendii*	CSC	Variety of habitats. Prefers mesic sites. Roosts in caves, mines, tunnels, buildings, or other human-made structures.	Year-round	Potential foraging habitat present within the plan area. Roosting habitat could include abandoned barns and buildings throughout the plan area. Also may roost in rock outcrops in the hills of the western portion of the plan area.
Pallid Bat *Antrozous pallidus*	CSC	Variety of habitats. Most common in open, dry habitats with rocky areas for roosting. Roosts in caves, crevices, mines, hollow trees, and buildings.	Year-round	Potential foraging habitat present in the plan area, particularly in the oak woodlands of the plan area. Roosting habitat includes barns, buildings, rock outcrops, particularly in the undeveloped portions of the plan area.
American Badger *Taxidea taxus*	t	Herbaceous, shrub, and open stages of most habitats (e.g., grasslands, oak woodlands) with dry, friable soils. May reuse old burrows or dig new ones for dens.	Year-round	Potential habitat in grasslands, oak savanna, and pasture lands of the plan area.

[a] FE Federally listed as endangered
FT Federally list as threatened
C Federal candidate for listing as threatened or endangered
SE State listed as endangered
ST State listed as threatened
CSC State species of special concern
FP Fully protected in California
Sensitive for one or more of the following reasons: a) taxa are biologically rare, restricted in distribution, declining throughout their range, or at a critical stage in their life cycle when in California; b) population(s) in California may be peripheral to the major portion of a taxon's range, but is threatened with extirpation in California; c) taxa are closely associated with a habitat that is declining in California (CNDDB 1994).

Species of local interest. No official listing status, but occurrences limited to the Antioch Dunes (or only a few other sites).

[b] Based on CNDDB (2000) and Zeiner et al. (1988, 1990a, 1990b).

[C] Based on Zeiner et al. (1988, 1990a, 1990b).

Source: Natural Diversity Database of the California Department of Fish and Game; Zeiner et al. (1988, 1990a, 1990b); LSA Associates, 2001.

U.S. Army Corps of Engineers. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (Corps) is responsible for regulating the discharge of fill material into waters of the United States. Waters of the United States and their lateral limits are defined in 33 CFR (Code of Federal Regulations) Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the United States are termed "isolated wetlands" and may be subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage and the purpose of the proposed fill and is subject to discretion from the Corps. There are two categories of Corps permits: individual and nationwide (general) permits. Where specified activities would have minimal adverse impacts, nationwide permits may be used. Eligibility for a nationwide permit simplifies the permit review process. Nationwide permits cover construction and fill of waters of the U.S. for a variety of routine activities such as minor road crossings, utility line crossings, streambank protection, recreational facilities and outfall structures.

To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on the aquatic ecosystem. The Corps typically interprets this condition to mean that there will be no net loss of either habitat acreage or habitat value. This usually results in the need to provide mitigation for the fill of any creek or wetland that will occur.

An individual permit is required where a nationwide permit is not applicable. The consideration of an individual permit includes, but is not limited to, factors such as significant acreage of wetlands or waters of the U.S., areas of high biological or unique value, or length of watercourse affected. The Environmental Protection Agency's (EPA) 404(b)(1) guidelines require that an applicant clearly demonstrate that the proposed discharge is unavoidable and is the least environmentally damaging practicable alternative that will achieve the overall project purpose. The guidelines also establish a regulatory presumption that there is a practicable alternative that would have less impact on the aquatic ecosystem. If this presumption is not rebutted, a permit may not be issued. The 1990 Memorandum of Agreement between the EPA and Corps concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines summarizes the hierarchical approach to assessing mitigation under the guidelines. The first priority is to avoid impacts, second to minimize, and third is to provide compensatory mitigation for unavoidable impacts.

California Department of Fish and Game. The California Department of Fish and Game (CDFG) has jurisdiction over threatened or endangered species that are formally listed by the State under the California Endangered Species Act. The California Endangered Species Act is similar to the Federal Endangered Species Act both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. The California Endangered Species Act does not supersede the Endangered Species Act, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both State and Federal laws would apply) or under only one act.

The California endangered species laws prohibit the take of any plant listed as threatened, endangered, or rare. In California, an activity on private lands (such as development) will violate

Section 9 of the Endangered Species Act if a plant species, listed under both State and Federal endangered species laws, is intentionally removed, damaged, or destroyed.

The CDFG maintains informal lists of *species of special concern*. These species are broadly defined as plants and wildlife that are of concern to the CDFG because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. These species are inventoried in the California Natural Diversity Data Base.

The CDFG also exerts jurisdiction over the bed and banks of watercourses according to the provisions of Section 1601 to 1603 of the Fish and Game Code. It requires a Streambed Alteration Permit for the fill or removal of any material from any natural drainage. The jurisdiction of the CDFG extends to the top of bank and often includes the outer edge of riparian vegetation canopy cover.

Regional Water Quality Control Board. Pursuant to Section 401 of the Clean Water Act, projects that apply for a Corps permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit, must obtain water quality certification from the Regional Water Quality Control Board (RWQCB) that the project will uphold State water quality standards. Alternatively, the RWQCB may elect to notify an applicant that the State may issue Waste Discharge Charge Requirements in lieu of a Section 401 certification for a project.

California Native Plant Society. The California Native Plant Society (CNPS) has developed lists of plants of special concern in California.[1] A CNPS List 1A plant is a species, subspecies, or variety that is considered to be extinct. A List 1B plant is considered rare, threatened, or endangered in California and elsewhere. A List 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A List 3 plant is a species for which CNPS lacks necessary information to determine if it should be assigned to a list or not. A List 4 plant has a limited distribution in California.

All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for State listing. Therefore, List 1 and 2 species should be considered under CEQA. Some List 3 plant species also meet the requirements of these portions of the Fish and Game Code and are eligible for State listing. Very few List 4 plants are eligible for listing but may be locally important, and their listing status could be elevated if conditions change.

Existing Preserved Lands in the Region. Significant areas of grassland have been set aside in regional parks and permanent open space in the region, primarily in extensive grassland habitats typical of the Central Valley to the immediate west and northwest of the Plan Area, but also south of the General Plan study area. Other preserved lands to the west and southwest, centered on Mt. Diablo, are largely in a mosaic of woodland, chaparral/ scrub, and grassland more typical of the Inner Coast Range. These preserved lands represent a significant investment of public resources, and are a

1 Skinner and Pavlik, 1994.

valued public asset. Significant reduction of connectivity would indirectly affect these existing preserved grassland habitats.

4.3.2 Biological Resources Thresholds of Significance

The effects of a development project on biological resources are considered to be significant if the proposed project will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Note: CEQA Guidelines Section 15065 identifies conditions warranting "mandatory findings of significance" that are to be used in preliminary review of projects, conducting initial studies, and in determining if an EIR is required. The mandatory findings of significance are not used as thresholds of significance for purposes of the proposed General Plan analysis as: 1) it has already been determined that an EIR is required and 2) a more comprehensive analysis is provided herein than would be done for a preliminary review or an initial study.

4.3.3 Biological Resources Impacts and Mitigation

Potentially Significant Impacts

Impacts to Sensitive Species and Sensitive Natural Communities

Impact 4.3.1. *Implementation of the proposed General Plan may result in impacts to species identified as a candidate, sensitive, or special status species, as well as riparian, wetland or other sensitive natural communities.*

In Antioch, variation in topography, soil, and drainage create conditions for a variety of natural communities, each with its own assemblage of native plant and animal species. Although it is largely urbanized, portions of remaining undeveloped lands contain vegetation and habitat types the CDFG considers rare and worthy of consideration in the California Natural Diversity Data Base.

Implementation of the proposed General Plan would extend urban development into locations where sensitive natural communities are known and/or expected to occur. As a result of this expansion, biological resources could be directly or indirectly impacted by implementation ("build out") of proposed General Plan land uses and associated public works projects in the following ways.

- Direct mortality of individuals of listed, proposed, or candidate species or loss of habitat occupied by such species.
- Alteration or loss of habitat of listed, proposed, or candidate species that inhibits or compromises recovery efforts that could otherwise lead or contribute to the delisting of the species.
- Direct loss of sensitive natural communities.
- Fragmentation of sensitive habitats resulting in isolation of habitat patches creating a "checkerboard" pattern of small habitat patches of limited biological value.
- Fragmentation of habitat that constricts, inhibits, or eliminates wildlife movement.
- Direct loss of mature native oak trees or alteration of natural processes (e.g., hydrology) resulting in indirect loss of mature native oak trees. Alteration of habitat or natural processes that would result in the direct or indirect mortality of listed, proposed, or candidate species or that would result in loss, fragmentation, or isolation of sensitive habitat(s).

For purposes of determining impacts, it is presumed that all natural habitat within areas not specifically designated for open space would be impacted (i.e., removed or degraded to such an extent as to be of no biological value). It is also presumed that all natural vegetation within Open Space areas would be retained. Within certain Focus Areas, some lands are designated as "Residential and Open Space." Within these areas, residential development would occur on non-sensitive lands, while sensitive biological resources would be preserved. Every habitat type identified within the Antioch General Plan study area will be impacted to at least some degree by implementation of the proposed General Plan. Thus, implementation of the proposed General Plan will result in the direct mortality of individuals of listed, proposed, or candidate species or loss of habitat occupied by such species.

To ensure that significant impacts to sensitive biological resources do not occur, future development will be in accordance with applicable City standards and guidelines, and State and Federal Endangered Species Acts, as well as the requirements mandated during the environmental review of individual projects. Areas containing significant biological resources are protected by General Plan policies related to sensitive biotic resources. Additionally, the resource management plan for the Sand Creek Focus Area (Appendix D) contains policies to protect biological resources, therefore, all projects within San Creek that could effect biological resources will be required to comply with pertinent policies contained within this plan.

Proposed General Plan Policies. The proposed General Plan includes the following policies to address effects of prospective development on biological resources. The following proposed General Plan policies will directly or indirectly address the impacts riparian, wetland or other sensitive natural communities. The effectiveness of the policies at reducing such impacts is analyzed below.

10.4.2 Biological Resources Policies

a. Comply with the Federal policy of no net loss of wetlands through avoidance and clustered development. Where preservation in place is found not to be feasible (such as where a road crossing cannot be avoided, or where shore stabilization or creation of shoreline trails must encroach into riparian habitats), require 1) on-site replacement of wetland areas, 2) off-site replacement, or 3) restoration of degraded wetland areas at a minimum ratio of one acre of replacement/restoration for each acre of impacted onsite habitat, such that the value of impacted habitat is replaced.

b. Preserve in place and restore existing wetlands and riparian resources along the San Joaquin River and other natural streams in the Planning Area, except where a need for structural flood protection is unavoidable.

c. Require appropriate setbacks adjacent to natural streams to provide adequate buffer areas ensuring the projection of biological resources.

d. Through the project approval and design review processes, require new development projects to protect sensitive habitat areas, including, but not limited to, oak woodlands, vernal pools, and *native* grasslands. Ensure the preservation in place of habitat areas found to be occupied by State and federally protected species. Where preserved habitat areas occupy areas that would otherwise be graded as part of a development project, facilitate the transfer of allowable density to other, non-sensitive portions of the site.

e. Limit uses within preserve and wilderness areas to resource-dependent activities compatible with the protection of natural habitats.

f. Through the project review process, review, and where appropriate, permit the removal of oak trees on a case-by-case basis.

g. Preserve heritage trees throughout the Planning Area.

h. Within areas adjacent to preserve habitats, require the incorporation of native vegetation and avoid the introduction of invasive species in the landscape plans for new development.

10.3.2 Open Space Policies

e. Require proposed development projects containing significant natural resources (e.g. sensitive habitats, habitat linkages, steep slopes, cultural resources, wildland fire hazards, etc.) to prepare Resource Management Plans to define appropriate responses to General Plan policies calling for their protection or preservation. The purpose of the Resource Management Plan is to look beyond the legal status of species at the time the plan is prepared, and provide a long-term plan for conservation and management of the natural communities found onsite. Resource Management Plans shall accomplish the following.

- Determine the significance of the resources that are found onsite and their relationship to resources in the surrounding area, including habitat linkages and wildlife movement corridors;
- Define areas that are to be maintained in long-term open space, and
- Establish mechanisms to ensure the long term protection and management of lands retained in open space.

Effectiveness of the Proposed General Plan Policies. The proposed General Plan policies focus primarily on avoidance and minimization of impacts to riparian and wetland habitats; maintaining and conserving native vegetation. Implementation of the proposed General Plan policies, applicable City standards and guidelines, and adherence to State and Federal law, including the Endangered Species Acts, as well as the requirements mandated during the environmental review of individual projects would reduce impacts to biological resources associated with the proposed General Plan to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Impact 4.3.2 *Alteration or loss of habitat of listed proposed, or candidate species that inhibits or compromises recovery efforts that could otherwise lead or contribute to the delisting of the species.*

Pursuant to the Federal Endangered Species Act, the USFWS designates "Critical Habitat" identifying specific areas, both occupied and unoccupied, that are essential to the conservation of a listed species and that may require special management considerations or protections. "Recovery Plans" delineate actions that are believed by the USFWS to be required to recover or protect listed species. Construction of proposed General Plan land uses that result in the loss of or disturbance to designated Critical Habitat and/or identified Recovery Areas may inhibit or compromise efforts that could lead or contribute to the delisting of species.

In reaching a determination regarding such effects, the project impacts must be viewed against the aggregate effects of everything that has led to the species' current status and those things likely to affect the species in the future. If such factors may substantially diminish the species' reproduction, numbers, and distribution in the wild, then the effects may inhibit or compromise the recovery and delisting the species. The recovery or delisting of species that are narrowly distributed or that occur in Antioch only as an isolated population of the species' larger range could be inhibited through even small-scale impacts resulting from a small number of projects that could result from a wide variety of land uses. The recovery or delisting of species that are more widely distributed and that occupy larger expanses of habitat could be inhibited through large-scale changes in land use and vegetative cover that eliminates large areas of occupied habitat, fragments habitat into small disjunct patches, or intensively impacts areas in which the species' activities are concentrated.

Species that are listed, proposed, or candidates for listing under the California and/or federal Endangered Species Acts are known to occur in the Antioch General Plan study area, and are identified in Table 4.3.B. The recovery of each of the species listed in Table 4.3.B may be inhibited to some degree by implementation of the proposed General Plan.

Determining if the impact is significant at the level of site-specific projects that are proposed in accordance with the proposed General Plan land uses will require analysis as part of the subsequent evaluation of such projects. The potential for such impacts to be considered significant will depend upon various factors including, but not limited to, the site conditions at the time of project evaluation, the extent of the area potentially affected, the quality of the habitat being affected, the value of the

affected habitat at local and regional scales, and the importance of the habitat to the species in question.

Proposed General Plan Policies. The proposed General Plan includes the policies identified under Impact 4.3.1 to address effects of prospective development on listed, proposed, and candidate species. Those General Plan policies will directly or indirectly address the impacts of individuals of listed, proposed, or candidate species. The effectiveness of the policies at reducing such impacts is analyzed below.

Effectiveness of the Proposed General Plan Policies. The proposed General Plan policies focus primarily on avoidance and minimization of impacts to riparian and wetland habitats; maintaining and conserving native vegetation. Implementation of the proposed General Plan policies, applicable City standards and guidelines, and adherence to State and Federal law, including the Endangered Species Acts, as well as the requirements mandated during the environmental review of individual projects would reduce impacts to biological resources associated with the proposed General Plan to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Impacts to Wildlife Corridors and Habitat Linkages

Impact 4.3.3. *Implementation of the proposed General Plan could interfere with the movement of wildlife species or with migratory wildlife corridors.*

Major areas of remaining natural lands are found in the southern portion of the Planning Area. Wildlife within the Antioch General Plan study area is diverse. Certain species, including many plants and birds, are able to pass urban barriers, and may be somewhat less restricted by habitat fragmentation. Other species, such as small mammals, are more restricted by urban barriers, and require corridors of usable habitat between habitat patches in order to thrive.

As development proceeds under implementation of the proposed General Plan, wildlife movement will be increasingly inhibited. New development within the southern portion of the General Plan study area has the potential to further degrade the habitat corridor in the Lone Tree Valley. The existing habitat corridor in the Lone Tree Valley has already been adversely affected by previous development in Antioch and, in particular, by previous development in Brentwood, which entirely blocks the east end of the corridor. If only a narrow corridor along Sand Creek is retained pursuant to Sand Creek Focus Area Option A, the corridor would have minimal function for grassland species because: 1) the east end is blocked by development in Brentwood; 2) the remaining corridor will be many times longer than it will be wide; and 3) certain grassland species will either avoid the corridor or use it infrequently because it lacks the habitat elements important for these species. This adverse effect would be minimized with Sand Creek Focus Area Option B.

New development within the southern portion of the General Plan study area would also narrow the less important primary corridor in Horse Valley. Proposed urban development would significantly

pinch the existing corridor in the Horse Valley in the vicinity of the existing golf course. This potential adverse effect would also be minimized with San Creek Focus Area Option B.

Finally, new development within the southern portion of the General Plan study area could eliminate an existing corridor between Horse Valley and the Lone Tree Valley. The proposed development would eliminate an existing corridor that crosses the ridge between Horse Valley and the Lone Tree Valley. This potential adverse effect would also be minimized with San Creek Focus Area Option B.

Proposed General Plan Policies. The proposed General Plan includes the policies identified as part of Impact 4.3.1 that will address impacts of prospective development under the proposed General Plan on wildlife movement and habitat linkages. In addition to these policies, the following policies are included in the General Plan Land Use Element. The effectiveness of the policies at reducing such impacts is analyzed below.

Policy 4.4.6.7b (Sand Creek Option B)

s. A viable grassland linkage shall be retained using linkages in Horse Valley and the ridge between Horse Valley and the Sand Creek drainage at the western end of the (Sand Creek) Focus Area.

t. To mitigate impacts, for each acre of grassland that will be lost to future development within the (Sand Creek) Focus Area, an appropriate amount of grassland shall be preserved on- or off-site.

u. Ponds, wetlands, and alkali grassland associated with upper Horse Creek shall be retained in natural open space, along with an appropriate buffer area. If impacts on the Horse Creek stream and riparian downstream are unavoidable to accommodate infrastructure, appropriate compensatory mitigation shall be required off-site.

v. Chaparral, scrub, and rock outcrop community within the western portion of the (Sand Creek) Focus Area (west of Empire Mine Road), as well as adjacent grassland community that is suitable habitat for the Alameda whipsnake (*masticophis lateralis euryxanthus*) shall be retained in natural open space. Within other portions of the Focus Area, the chaparral, scrub, and rock outcrop shall be retained in natural open space contiguous to the required grassland linkage to protect the grassland linkage south of the chaparral, scrub, and outcrop community, but not the portion north of it.

w. Within the western portion of the (Sand Creek) Focus Area (west of Empire Mine Road), the oak woodland and savanna community shall be preserved in natural open space. Within other portions of the Focus Area, the oak woodland and savanna community shall be preserved in natural open space where it overlaps the rock outcrop community.

Effectiveness of the Proposed General Plan Policies. There are policies provided in the proposed General Plan update that would reduce impacts on wildlife movement by protecting habitat, requiring the preparation of Resource Management Plans, and limiting of uses within preserves and wilderness areas. To ensure that significant impacts to wildlife corridors, nursery sites, or native resident/migratory wildlife populations do not occur, development will be in accordance with applicable City, State, and Federal standards and guidelines, as well as the requirements mandated during the environmental review of individual projects.

Implementation of the proposed General Plan policies listed above, in addition to compliance with applicable regulations and requirements mandated during environmental review, will reduce impacts to wildlife movement associated with the proposed General Plan to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Impact 4.3.4. *Future development adjacent to existing preserved land could impact habitat connectivity and the biological value of such preserved lands.*

Land has been set aside in regional parks and permanent open space in the subregion, primarily in extensive grassland habitats. These preserved lands represent a significant investment of public resources, and are a valued public asset. To maintain their full biotic function, the preserved grasslands must remain connected to other blocks of grassland habitat.

Implementation of the General Plan has the potential to substantially reduce connectivity between existing preserved lands. It could further degrade the existing linkage/corridor in the Sand Creek drainage, which is already restricted at its east end by existing development in Brentwood. General Plan implementation could also further reduce the linkage in Horse Valley that is already narrowed by the Roddy Ranch golf course. Only the linkage in Deer Valley would remain available to connect blocks of grassland habitat northwest of and southeast of the Plan Area. The overall effect would be a significant narrowing of the pinch point that has developed between urban lands and the chaparral and oak habitats of the Diablo Range.

Residential and infrastructure development in the southern portion of the General Plan study area, which could occur adjacent to existing preserved lands could result in urban spillover impacts (predation by dogs and cats, spread of landscaping materials, conflicts with grazing, conflicts with wildfire, *etc.*). Reducing the function and values of these lands due to urban spillover effects would degrade a highly valued public asset. These effects would be minimized in Sand Creek Option B.

Proposed General Plan Policies. The proposed General Plan includes the policies identified as part of Impact 4.3.1 and Impact 4.3.3 that will address impacts of prospective development under the proposed General Plan on adjacent preserved lands. The effectiveness of the policies at reducing such impacts is analyzed below.

Effectiveness of the Proposed General Plan Policies. There are policies provided in the proposed General Plan update that would reduce impacts on existing preserved habitat lands by protecting habitat within the General Plan study area, requiring the preparation of Resource Management Plans, and limiting of uses within preserves and wilderness areas. To ensure that significant impacts to existing preserved lands do not occur, development will be in accordance with applicable City, State, and Federal standards and guidelines, as well as the requirements mandated during the environmental review of individual projects.

Implementation of the proposed General Plan policies listed above, in addition to compliance with applicable regulations and requirements mandated during environmental review, will reduce impacts to wildlife movement associated with the proposed General Plan to a less than significant level.

Mitigation Measures. No additional mitigation is required.

4.3.4 Biological Resources Level of Significance after Mitigation

Implementation of the proposed General Plan policies and the mitigation measures identified above will reduce potential biological resource impacts resulting from implementation of the proposed General Plan to a less than significant level.

4.4. CULTURAL RESOURCES

The following section evaluates potential adverse impacts to cultural resources within the City of Antioch that could result from implementation of the proposed General Plan. Mitigation measures are recommended, as necessary.

4.4.1 Cultural Resources Existing Setting

The Antioch Planning Area is within the area depicted by the *Antioch North*, *Antioch South*, and *Brentwood* USGS 7.5' topographic quadrangles. The study methods for locating cultural resources are described below.

Archaeological, prehistoric, historical, and architectural information was obtained from a records search at the Northwest Information Center of the California Historical Resources Information Center, Sonoma State University, on February 6, 2001. The Northwest Information Center is an affiliate of the State of California Office of Historic Preservation and is the official State repository of cultural resources reports and records for a 16-county area, including Contra Costa County. Data and inventories for evaluation of cultural resources in the City of Antioch also includes *California Inventory of Historic Resources*,[1] Caltrans Bridge Inventory,[2] *Five Views: An Ethnic Historic Site Survey for California*,[3] *California Historical Landmarks*,[4] *California Points of Historical Interest*,[5] and the *Directory of Properties in the Historic Property Data File*[6] were reviewed. The *Directory of Properties* (see Appendix B) includes the listings of the National Register of Historic Places and the California Register of Historical Resources, and the most recent listings of the California Historical Landmarks and California Points of Historical Interest.

Fossil locality searches were conducted at the California Academy of Sciences, Golden Gate Park (CAS) and at the University of California Museum of Paleontology, UC Berkeley (UCMP). These fossil localities were plotted on the topographic quadrangles to identify known fossil localities with respect to the study area. LSA conducted a fossil locality search at the CAS on March 5, 2001, and identified marine pelecypod and gastropod fossils collected from almost all of the sedimentary formations located in Antioch. Literature review indicated that all of the formations north of Mt. Diablo contain fossils.

Prehistory and Ethnography Context. The Paleo-Archaic-Emergent cultural sequence developed by Fredrickson[7] is commonly used to interpret the prehistoric occupation of Central California. The sequence is broken into three broad periods: The Paleoindian period (10,000-6,000 BC); the three-staged Archaic period, consisting of the Lower Archaic (6,000-3,000 BC), Middle Archaic (3,000-

1 California Department of Parks and Recreation, 1976.

2 California Department of Transportation, 2000.

3 California Office of Historic Preservation, 1998.

4 California Office of Historic Preservation, 1990.

5 California Office of Historic Preservation, 1992.

6 California Office of Historic Preservation, 2001.

7 Fredrickson, David A., 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41-53.

1,000 BC), and Upper Archaic (1,000 B.C.-A.D. 500); and the Emergent period (AD 500-1800). The Paleo period began with the first entry of people into California. Subsistence appears to have been based on big game and minimally processed plant foods and does not seem to have been derived from exchange networks. The Archaic in Central California is characterized by the increased use of plant foods, the elaboration of burial and grave goods, and increasingly complex trade networks.[1,2] The Emergent Period is marked by the introduction of the bow and arrow, the ascendance of wealth-linked social status, and the elaboration and expansion of trade networks, signified in part by the appearance of clam disk bead money. Human occupation in what is now Contra Costa County dates to the Middle Archaic, 4,500 years ago.[3]

Linguistic and archaeological evidence indicates that the Bay Miwok linguistic group was driven from an area north of the Suisun Bay into eastern Contra Costa County by the intruding Patwin around 700 A.D.[4,5,6] The Antioch area was within the territory of the Bay Miwok when the Spanish arrived and began to occupy the San Francisco Bay lands in the late 1700s.

Little is known about the culture of the Bay Miwok because of the very early population reduction by introduced disease, such as measles and tuberculosis, and by relocation of the Bay Miwok people to Spanish missions, where many died or were consolidated with other Native American groups. As best as can be determined, the Bay Miwok economy was based on fishing, gathering, and hunting, with the land and waters providing a diversity of resources including acorns, various seeds, salmon, deer, rabbits, insects, and quail.[7] The Bay Miwok likely lived in conical tule thatch houses like those of their closest relatives, the Plains Miwok of the Sacramento Valley.

Politically, the Bay Miwok were organized into groups called tribelets. A tribelet constituted a sovereign nation that held a defined territory and exercised control over its resources. A tribelet was also a unit of linguistic and ethnic differentiation.[8] At the time of the arrival of the Spanish, an estimated 1,700 Bay Miwok were living in five tribelets in northeastern Contra Costa County. There

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1 Bennyhoff, James A., 1994. Variation within the Meganos Culture. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes, pp. 81-89 [original manuscript, 1987]. Contributions of the University of California Archaeological Research Facility 52. Berkeley.

2 Moratto, Michael J., 1984. *California Archaeology*. Academic Press, Orlando, Florida.

3 Ibid.

4 Stewart, Suzanne B., 1982. Volume 4: Alameda, Contra Costa, and Marin. In *Prehistoric Overview Northwest Region: California Archaeological Inventory*, edited by David A. Fredrickson. Anthropological Studies Center, Sonoma State University, Rohnert Park, California. State of California's Office of Historic Preservation, Sacramento.

5 Moratto, Michael J., 1984. *California Archaeology*. Academic Press, Orlando, Florida.

6 Bennyhoff, James A., 1994. Variation within the Meganos Culture. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, assembled and edited by Richard E. Hughes, pp. 81-89 [original manuscript, 1987]. Contributions of the University of California Archaeological Research Facility 52. Berkeley.

7 Levy, Richard, 1978. Eastern Miwok. In *California*, edited by R.F. Heizer, pp. 398-413. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

8 Ibid.

have been different interpretations of the locations of Bay Miwok villages, but the latest scholarship indicates that the tribelet *Julpun* was located near the modern City of Antioch.[1]

Prehistoric Resources. Prehistoric cultural resources in the San Francisco Bay region tend to be located near sources of fresh water, along the bay shore, and in the hills of Contra Costa County. A records search indicated that eight prehistoric archaeological sites have been recorded within the Antioch General Plan area. Therefore, it is likely that additional unidentified prehistoric cultural resources exist within the Antioch area. The rapid urbanization of the study area during the late 20th century may have resulted in the burial of unknown cultural resources under modern development.

To deter vandalism, artifact hunting, and other activities which can damage cultural resources, the locations of cultural resources must be kept confidential. The legal authority to restrict cultural resource location information is in the National Historic Preservation Act of 1966, as amended Section 304, and California Government Code 6254.1. The City of Antioch Community Development Department maintains a map of known cultural resource sites.

Historical Context. Contra Costa County "history" began with the arrival of the Fages-Crespí expedition in 1772, which expanded the exploration initiated by the Spanish in the Bay Area in 1769. The Mission and the Presidio of San Francisco were established in 1776; Mission San Jose was established in 1797.[2] The Bay Miwok were "missionized" early on, and by 1827, virtually all had been absorbed into either the San Francisco or San Jose missions.[3] The Spanish, however, showed little interest in the *Contra Costa* ("other shore"), and established neither settlement nor outpost there.

After the independence of Mexico from Spain in 1821, tracts of land called *Ranchos* were granted to citizens in Mexican California. The Antioch study area contains portions of two such land grants: the Rancho Los Meganos, granted to Jose Noriega in 1835; and Rancho Los Medanos ("the sand banks"), granted to Colonel Jonathan Drake Stevenson in 1839.[4,5,6]

John Marsh, an early settler, bought the land from Noriega in 1837 and established Marsh's Landing east of the future town of Antioch. Marsh's Landing was an important commercial center for trade up and down the San Joaquin River during the Gold Rush. The Smith brothers of New Hampshire acquired land from Stevenson to establish Smith's Landing, west of Marsh's Landing. On July 4, 1851, Smith's Landing was renamed Antioch after the biblical city.[7]

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1 Milliken, Randall, 1995. *A Time of Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Ballena Press Anthropological Papers No. 43, Thomas C. Blackburn, Series Editor. Menlo Park, California.

2 Ibid.

3 Ibid.

4 Gudde, Erwin G., 1998. *California Place Names: The Origin and Etymology of Current Geographical Names*. Fourth edition, revised and enlarged by William Bright. University of California Press, Berkeley.

5 Marschner, Janice, 2000. *California 1850: A Snapshot in Time.* Coleman Ranch Press, Sacramento.

6 Hoover, Mildred Brooke, et al., 1990. *Historic Spots in California*. Fourth edition, revised by Douglas E. Kyle. Stanford University Press, Stanford.

7 Gudde, Erwin G., 1998. *California Place Names: The Origin and Etymology of Current Geographical Names*. Fourth edition, revised and enlarged by William Bright. University of California Press, Berkeley.

From the 1850s to the 1880s, a coal mining industry developed and flourished with the establishment of the Black Diamond, Cumberland, Mount Hope, Empire, and Central Mines in the Mount Diablo coal field south of Antioch. Five boomtowns developed in the area, but the collapse of the mines due to rising costs and diminishing profits caused most of these towns to disappear by 1885.[1] Today numerous monuments, plaques, the historic district in Antioch, and the Black Diamond Mines Regional Park commemorate the once thriving coal mining industry.[2]

The waterfront location and facilities served Antioch well with the establishment of the Empire Railroad in 1878, which hauled coal from the coal fields to the San Francisco Bay. Two steamship lines from San Francisco landed boats daily at the wharves. In 1909, the Oakland and Antioch Railway, replacing an earlier narrow gauge railway, connected Antioch to the greater Bay Area by rail. Antioch became a manufacturing center for diversified industries including pottery, a soda works, a distillery, canneries, brickyards, and paper mills.[3,4] Today, the City of Antioch is experiencing dramatic growth as housing is developed for the increasing population of the San Francisco Bay Area.

Historic Resources. Antioch is home to a variety of historical resources, ranging from landmark commercial buildings, to Victorian, Craftsman, and Modern-style homes, to churches, schools, and civic buildings. The City and environs also contain historical archaeological deposits associated with homes, farms, ranch sites, and industrial activities. Twenty historical archaeological sites are recorded within the study area. A map of these sites is maintained by the Antioch Community Development Department. The Antioch waterfront is a distinctive resource both on- and offshore. Numerous shipwrecks are mapped on topographic maps and one submerged vessel is listed with the California State Lands Commission.

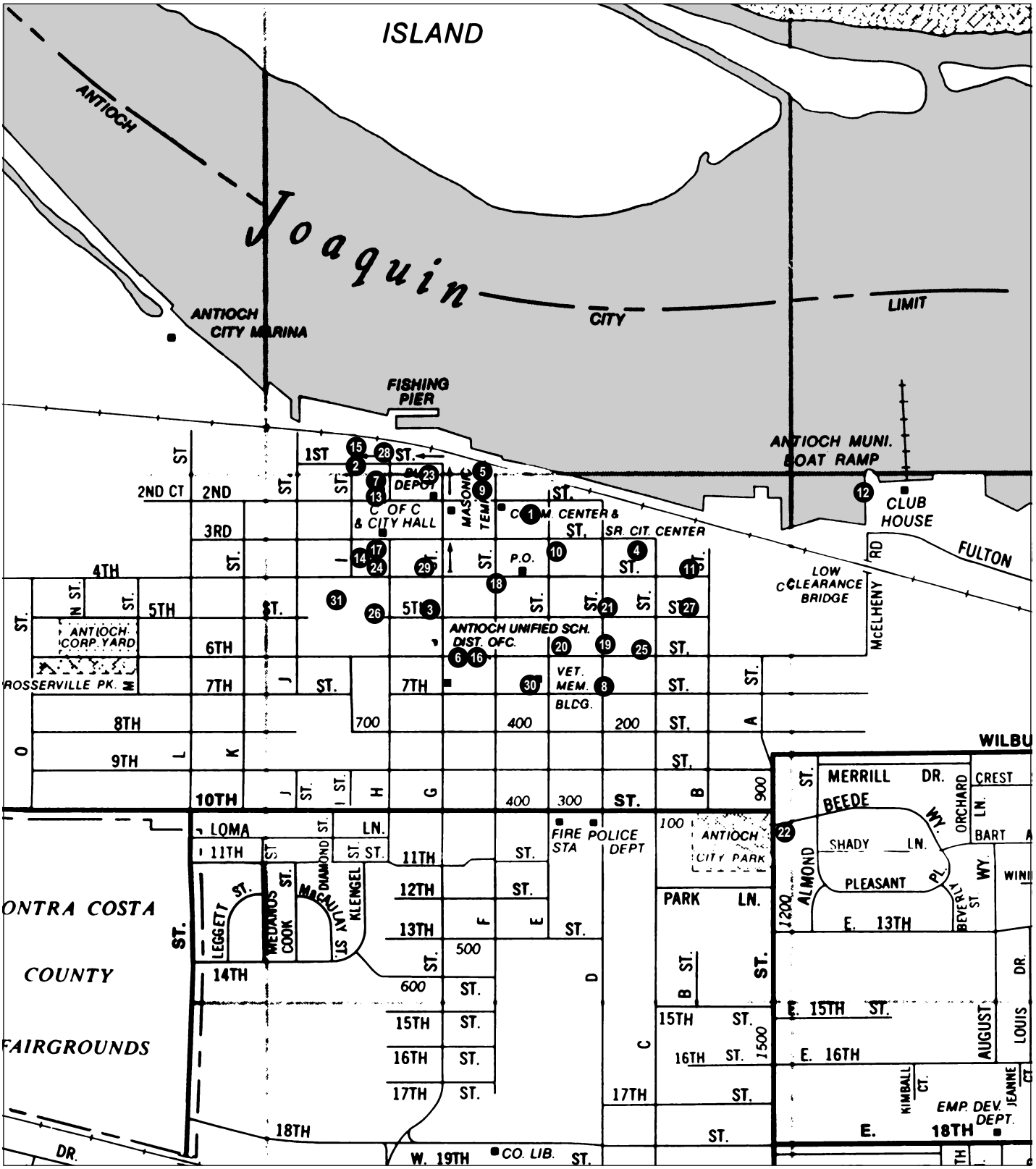
Fifty-six of Antioch's historical buildings and four monuments and vanished sites are listed on national, state, and local registers of historic properties and landmarks. The Directory of Properties in the Historic Property Data File (HPD), maintained by the state Office of Historic Preservation, is a master list of all resources that have been evaluated for potential eligibility for State and national registers of historic places. The HPD listing for the City of Antioch, as of February 2001, is attached as Appendix B. The Antioch Historical Society maintains a separate listing of designated City landmarks, which may overlap those included in the HPD. Historical resources primarily in the Downtown area that have been listed in the Antioch historical society are mapped in Figure 4.4.1. These resources are identified in Table 4.4.A.

1 Hoover, Mildred Brooke, et al., 1990. *Historic Spots in California*. Fourth edition, revised by Douglas E. Kyle. Stanford University Press, Stanford.

2 California, State of, Office of Historic Preservation, 1996. *California Historical Landmarks*. State of California Department of Parks and Recreation, Sacramento.

3 Lantis, David W., Rodney Steiner, and Arthur E. Karinen, 1988. California: The Pacific Connection. Creekside Press, Chico, California.

4 Tatum, Robert Daras, 1993. *Old Times in Contra Costa County*. Highland Publishers, Pittsburg, California.



LSA

FIGURE 4.4.1

8 HISTORICAL RESOURCES

NUMBERS KEYED TO RESOURCES LISTED IN TABLE 4.4.A

City of Antioch
General Plan Update EIR
Downtown Historical Resources

SOURCE: LSA ASSOCIATES, INC., 2002.
R:\GRAPHICS\EIR\down hist.cdr (7/16/03)

Table 4.4-A - Downtown Historical Resources Inventory

Map Key	Resource	Location
1	Antioch Lumber Company	2nd Street and E Street
2	R.B. Hard Building	815 1st Street
3	Antioch Grammar School	5th Street and G Street
4	Donlon House	606 3rd Street
5[a]	Antioch Pioneers Landing Site	Foot of F Street
6	First Congregational Church	6th Street and F Street
7	Mulhare House	2nd Street and I Street
8	Wills Ranch House	319 7th Street
9	Empire Railroad Monument	Foot of F Street
10	Kimball Home	3rd Street near E Street
11	Charles Marsh House	106 4th Street
12[a]	Smith's Landing	Near City Boat Ramp
13	Joslin Home	502 2nd Street
14	Odd Fellows Hall	3rd Street and H Street
15	Atchison-Topeka & Santa Fe Depot	1st Street and J Street
16	McKellips House	6th Street and F Street
17	City Hall	3rd Street and H Street
18	Harkinson House	4th Street and F Street
19	Brown House	6th Street and D Street
20	Remfree House	6th Street and E Street
21	George House	5th Street and D Street
22	Beede House	Beede Way
23	Baker Hardware and Paint Store	2nd Street and G Street
24	Old Ford Garage	3rd Street and H Street
25	Cox House	6th Street and C Street
26	Pioneer Hospital	5th Street and H Street
27	Stamm House	5th Street and B Street
28	Casino Theater	1st Street and H Street
29	Hartley House	4th Street and G Street
30	Belshaw House	7th Street and E Street
31	I Street House	Between 4th Street and 5th Street
32	Old School House	Fibreboard Site
Not Mapped	Empire Basin Area	Empire Mine Road
Not Mapped	Marsh Landing	Near Antioch Bridge (PG&E)

[a] Evidence indicates that #5 and #12 may be the same site.

Source: Antioch Historical Society, 1992. Downtown Business District Study.

Paleontology Context. The City of Antioch Planning Area contains the following geological formations: Pliocene Wolfskill, upper Miocene Neroly and San Pablo Group, middle Eocene Domengine and Markley, Paleocene Martinez, Jurassic to early Tertiary Franciscan Complex, and Great Valley Sequence. The formations listed above all contain marine and non-marine vertebrate and invertebrate fossils. These fossils represent a time period from Pliocene to Jurassic, spanning approximately 203 million years. Some of the fossils that may be contained in these formations are marine and non-marine clams, marine mammals, mammoths, primitive horses, and bison.

Paleontological Resources. Numerous fossils have been collected from the Antioch Planning Area.[1] Most of these collections are curated at CAS. The vertebrate fauna is curated at the UCMP. At least eight fossil localities occur within and immediately adjacent to the Antioch Planning Area and another five are within a one-mile radius of the Planning Area. At the request of LSA, UCMP provided a list of vertebrate fossils within the Antioch Planning Area (the area covered by the three USGS quadrangles). Fossils in the Planning Area identified by UCMP include mammoths, primitive horses, bison, rats, beaver-type creatures, and sloths. See Appendix B for the results of the CAS and UCMP locality searches.

Existing Policies and Regulations

The following existing policies/regulations are intended to ensure the preservation of cultural, historical, archaeological, and paleontological resources in Antioch:

Historic properties comprise prehistoric or historic archaeological resources. The National Register of Historic Places defines an archaeological site as "the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains."[2]

Historic properties and resources are protected pursuant to a wide variety of policies and regulations. Cultural and paleontological resources are recognized as a nonrenewable resource and therefore receive protection pursuant to CEQA. Native American interments and associated funerary objects receive additional protection with Public Resources Code 5097.98. Additional regulations include:

- Section 106 regulations (36 Code of Federal Regulations [CFR] 800, Protection of Historic Properties, National Historic Preservation Act; and
- Regulatory Historic Property regulations (33 CFR 325, Appendix B).

Federal Policies and Regulations

Section 106, Protection of Historic Properties. The Federal Advisory Council on Historic Preservation accommodates preservation of historic resources through consultation among the Agency Official, the State Historic Preservation Officer, and other interested persons during the early stages of planning. To this end, the Council encourages agencies to examine their administrative processes to see that they provide adequately for the efficient identification and consideration of historic properties, for participation by the State Historic Preservation Officer and others interested in historic preservation, for timely requests for Council comment, and for the promotion of cost-effective implementation of the Section 106 process.

Regulatory Historic Property Regulations (33 CFR 325, Appendix C). Appendix C establishes the procedures to be followed by the U.S. Army Corps of Engineers (USACE) to fulfill the

[1] Clark and Woodford (1927), Dickerson (1914), Gabb (1869), Stanton (1896) and Weaver (1905, 1909, and 1953).

[2] National Register Bulletin 36, *Guidelines for Evaluating and Registering Historical Archaeological Sites and Districts*, 1993, p.2.

requirements set forth in the National Historic Preservation Act (NHPA), other applicable historic preservation laws, and Presidential directives as they relate to the regulatory program of the USACE (33 CFR Parts 320-334).

State Policies and Regulations

California Environmental Quality Act. The California Environmental Quality Act (CEQA) requires that cultural resources which are listed in or determined to be eligible for listing in the California Register of Historic Places be considered during the CEQA process. A resource may be listed or eligible for listing if it: 1) is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; 2) is associated with the lives of persons important to local, California, or national history; 3) embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of a master or possesses high artistic values; or 4) has yielded or has the potential to yield information important to the prehistory or history of the local area, California, or the nation. CEQA applies to all discretionary projects undertaken or approved by public agencies. In regard to paleontological resources, the CEQA requires identification of potential adverse impacts of a project to any object or site of scientific importance (CEQA, 13 PRD, 2100 et seq.; Div. 1, PRC 5020.1 (b)). Additionally, Appendix G, the Environmental Checklist Form, Section V., Cultural Resources (c), asks if a project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

4.4.2 Thresholds of Significance

A potentially significant environmental impact related to cultural resources would result if implementation of the proposed General Plan would:

- Cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5 of the *CEQA Guidelines* (as revised in October, 1998);
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the *CEQA Guidelines* (as revised in October, 1998);
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

4.4.3 Cultural Resources Impacts and Mitigation

Less than Significant Impacts

Adverse Change in the Significance of an Historical Resource

Impact 4.4.1. *Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands and possible conversion of existing structures into various land uses (e.g., historic homes into office*

space). Development allowed by implementation of the proposed General Plan could cause the destruction of or loss of an historical resource, as defined in CEQA Guidelines*, Section 15064.5.*

The Antioch waterfront is a distinctive resource both on- and offshore. The Rivertown area is located downtown and along the urban waterfront, in the oldest part of Antioch. The area contains the majority of historic resources within the City and development policies for the area have the potential to impact historic resources located there. Land uses allowed within the Rivertown area include multifamily, commercial, civic, and open space uses. Fifty-six of Antioch's historical buildings and four monuments and vanished sites are listed on national, State, and local registers of historic properties and landmarks.

The proposed General Plan contains policies for encouraging new and infill development within the Rivertown/Urban Waterfront area (see *Policies 4.4.6.1, 5.4.2, and 2.5.1*). The area is allowed a maximum development intensity of 0.50 floor area ratio (FAR) for commercial uses or 45 units per gross developable acre for residential uses within the upper floors of commercial structures. This development would consist of residential and non-residential uses. The following proposed General Plan policies would mitigate potential adverse impacts to historical resources to a less than significant level.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce the effects of prospective growth on historic resources.

5.4.6. General Architectural Design Policies.

c. Encourage a harmonious appearance of new development with the surrounding environment and existing developments based on the compatibility of individual structures rather than one specific style of architecture.

e. Encourage the rehabilitation of older structures within neighborhoods to preserve the City's history, and to facilitate a diversity of architectural styles in the City.

5.4.11. Infill Development Policies.

a. The scale of proposed infill development must not overpower neighboring developments. The perceived intensity and character of infill buildings should be similar to that of the existing neighborhood; infill development should appear to be an integral part of the neighborhood.

10.7.2. Cultural Policies.

a. Require new development to analyze, and therefore avoid or mitigate impacts to archaeological, paleontological, and historic resources in accordance with applicable CEQA Guidelines and provisions of the California Public Resources Code.

b. As a standard condition of approval for new development projects, require that if cultural or paleontological resources are encountered during grading, alteration of earth materials in the vicinity of the find be halted until a qualified expert has evaluated the find and recorded identified cultural resources.

c. Preserve historic structures and ensure that alterations to historic buildings and their immediate settings are compatible with the character of the structure and the surrounding neighborhood.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan policies related to historic resources would reduce the effects of growth and development by requiring development proposals be evaluated for the presence of historic resources and by preserving historic buildings. Implementation of the above policies and all applicable State and Federal regulations would ensure that future development in the City would not have any significant adverse impacts on historic resources.

Mitigation Measures. No additional mitigation is required.

Destruction of a Known Archaeological Resource

Impact 4.4.2. *Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands. Development allowed by implementation of the proposed General Plan could cause the destruction of known archaeological resources, as defined in* CEQA Guidelines*, Section 15064.5.*

Archaeological resources in the San Francisco Bay region tend to be located near sources of fresh water, along the bay shore, and in the hills of Contra Costa County. A records search indicated that eight prehistoric archaeological sites have been recorded within the Antioch planning area. Therefore, it is likely that additional unidentified prehistoric cultural resources exist within the Antioch area.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects of prospective growth on cultural resources by requiring that development proposals be reviewed for archaeological sensitivity and evaluate the potential for archaeological resources.

Potential archaeological resource impacts can be reduced through implementation of Policies 10.7.2a and b.

Effectiveness of Proposed General Plan Policies. The policies do not protect archaeological resources from being destroyed by future development. Although the proposed General Plan has policies to protect and minimize adverse impacts on archaeological resources, the potential exists for the destruction of archaeological resources to occur if mitigation is not provided to protect such resources. To ensure that future development in the City would not have any significant adverse impacts on archaeological resources, mitigation is provided below.

Mitigation Measures

4.4.2A. The City shall modify the proposed General Plan to incorporate a policy with the following provision: If avoidance and/or preservation in the location of any cultural resources is not possible, the following measures shall be initiated for each impacted site:

a. A participant-observer from the appropriate Indian Band or Tribe shall be used during archaeological testing or excavation in the project site.

b. Prior to the issuance of a grading permit for the project, the project proponent shall develop a test level research design detailing how the cultural resource investigation shall be executed and providing specific research questions that shall be addressed through the excavation program. In particular, the testing program shall characterize the site constituents, horizontal and vertical extent, and, if possible, period of use. The testing program shall also address the California Register and National Register eligibility of the cultural resource and make recommendations as to the suitability of the resource for listing on either Register. The research design shall be submitted to the City of Antioch for review and comment. For sites determined, through the Testing Program, to be ineligible for listing on either the California or National Register, execution of the Testing Program will suffice as mitigation of project impacts to this resource.

c. After approval of the research design and prior to the issuance of a grading permit, the project proponent shall complete the excavation program as specified in the research design. The results of this excavation program shall be presented in a technical report that follows the City's outline for Archaeological Testing. The Test Level Report shall be submitted to the City for review and comment. If cultural resources that would be affected by the project are found ineligible for listing on the California or National Register, test level investigations will have depleted the scientific value of the sites and the project can proceed.

d. If the resource is identified as being potentially eligible for either the California or National Register, and project designs cannot be altered to avoid impacting the site, a Treatment Program to mitigate project effects shall be initiated. A Treatment Plan detailing the objectives of the Treatment Program shall be developed. The Treatment Plan shall contain specific, testable hypotheses relative to the sites under study and shall attempt to address the potential of the sites to address these research questions. The Treatment Plan shall be submitted to the City for review and comment.

e. After approval of the Treatment Plan, the Treatment Program for affected, eligible sites shall be initiated. Typically, a Treatment Program involves excavation of a statistically representative sample of the site to preserve those resource values that qualify the site as being eligible for the California or National Register. At the conclusion of the excavation or research program, a Treatment Report shall be developed. This data recovery report shall be submitted to the City for review and comment.

Destruction of a Unique Paleontological Resource or Site

Impact 4.4.3. *Build out within now-vacant areas of the City will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. Development associated with the proposed General Plan would require disturbance of vacant lands.*

Therefore, development as a result of implementation of the proposed General Plan could potentially destroy directly or indirectly a unique paleontological resource or site.

Development in undeveloped areas could affect paleontological resources. Based on the soil types within Antioch and previous paleontological studies, paleontological resources are known to be present within the City. It is possible that there will be impacts upon paleontological resources as a result of implementation of the proposed General Plan in the form of individual private development and public works projects.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects of prospective growth on paleontological resources by requiring that development proposals be reviewed for paleontological sensitivity and evaluate the potential for paleontological resources.

Potential paleontological resource impacts can be reduced through implementation of Policies 10.7.2a and b.

Effectiveness of Proposed General Plan Policies. The policies do not protect paleontological resources from being destroyed by future development. Although the proposed General Plan has policies to protect and minimize adverse impacts on paleontological resources, the potential exists for destruction of known paleontological resources to occur if mitigation is not provided to protect such resources. To ensure that future development in the City would not have any significant adverse impacts on paleontological resources, mitigation is provided below.

Mitigation Measures

4.4.3A. The City shall modify the proposed General Plan to incorporate a policy with the following provision: When existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor site grading activities with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate reposition, and file a report with the Community Development Department documenting any paleontological resources found during site grading.

4.4.4 Cultural Resources Level of Significance after Mitigation

Implementation of the policies in the proposed General Plan and proposed mitigation measures would reduce potential impacts on cultural, archaeological, and paleontological resources to less than significant.

4.5 GEOLOGIC AND SEISMIC HAZARDS

The following section evaluates potential adverse impacts associated with geologic and seismic hazards in the City of Antioch that could result from implementation of the proposed General Plan. The discussion in this section covers four types of geologic and seismic hazards: 1) active faulting and seismicity; 2) liquefaction potential; 3) ground failure and landslides; 4) risks related to unreinforced masonry buildings. Mitigation measures are recommended, as necessary.

4.5.1 Geologic and Seismic Hazards Existing Setting

The City of Antioch is located in a geologically young and seismically active region. The composition of geologic material, soils, topography, and groundwater conditions affect geologic hazards at any given site. The following section describes the geologic hazards facing the City of Antioch as well as the Antioch Emergency Response Plan.

Antioch consists of two general topographic areas: the Lowland Area and the Upland Area. The Lowland Area generally corresponds to the esturine and flatland soils, and the Upland Area includes hillside soils.

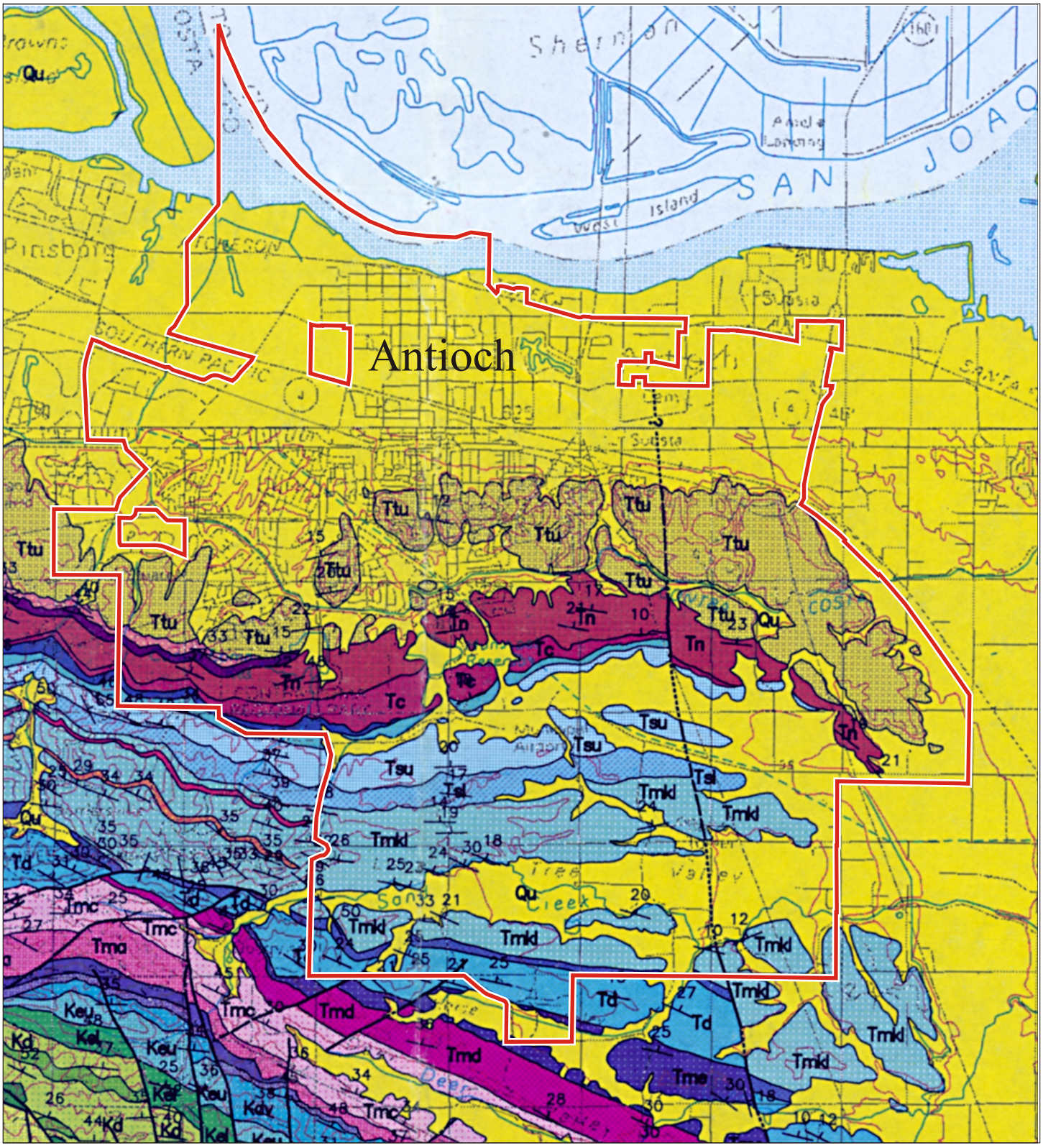
The Lowland Area includes the generally level terrain and wetlands adjacent to the San Joaquin River and low-lying areas to the south. Bedrock formations in the City of Antioch are shown in Figure 4.5.1. Lowland areas, as shown in Figure 4.5.1, are underlain mostly by Quaternary alluvium, including alluvial fan and terrace deposits that consist of clay, silt, sand, and gravel. Elevations in the Lowland Area generally range from near sea level to about 100 feet above mean sea level (amsl) and contain slopes that range from 0 to 15 percent. Land uses consist of industrial, residential, and commercial uses.

The Upland Area comprises moderate to steeply sloping hills, and is generally located south of the Lowland Area. This area is underlain by northward tilted sedimentary rocks, including coal-bearing Domingene sandstone in the southwestern portion of the Planning Area. Lone Tree Valley is underlain by Quaternary alluvium, resembling the Lowland Areas to the north. Elevations in the Upland Area generally range from about 100 feet amsl to peaks that approach 1,900 feet amsl in the southern portion of the Planning Area. Hillsides have slopes that range from 2 to 75 percent. Elevations in Lone Tree Valley range from 160 amsl to 300 amsl. Land uses in the Upland Area consist of residential, commercial, open space, parks, and utility uses.

Geology. The geology of Antioch has been mapped by the U.S. Geological Survey (USGS). In 1994, the USGS published a compilation map of Contra Costa County (Figure 4.5.1) which depicts the generalized surface geology of Antioch.[1]

The Lowland Area of Antioch is underlain by alluvium (designated Qu in Figure 4.5.1) that is younger than 2 million years old, and consists mainly of unconsolidated floodplain deposits with sand, silt, gravel, and clay irregularly interstratified.

[1] U.S. Geologic Survey, 1994. *Preliminary Geologic Map Emphasizing Formations in Contra Costa County, California.*



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NOTE: GEOLOGIC UNITS ARE DESCRIBED ON TABLE 4.5.A

SOURCE: USGS, R.W. GRAYMER, D.L. JONES, & E.E. BRABB, 1994.

FIGURE 4.5.1

City of Antioch
General Plan Update EIR
Geologic Map
Emphasizing Bedrock Formations
in the City of Antioch

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The Upland Area of the City consists primarily of tilted sedimentary rocks that range in age from Upper Cretaceous (65 million years old) to Holocene (11,000 years old). The following geologic units are present: Unit D sandstone, Deer Valley sandstone of Coburn, Lower Unit E siltstone, Upper Unit E siltstone, surficial deposits, Cierbo sandstone, Domingene formation, Meganso formation, Neroly sandstone, and Markley formation. Table 4.5.A summarizes, from youngest to oldest, the age and description of these geologic units.

Table 4.5.A - Geologic Units in the Planning Area

Map Symbol	Unit Name	Age	Description
Qu	Undivided surficial Quaternary deposits	Quaternary	Alluvium, alluvial fan, and terrace deposits consisting of clay, silt, sand, and gravel.
Ttu	Tulare formation	Pliocene	Assemblage V; poorly consolidated, non-marine gray to maroon sandstone, siltstone, and conglomerate. This formation also includes tuff (volcanic ash deposits).
Tn	Neroly sandstone	Miocene	Assemblage V; brown, massive, marine sandstone with abundant volcanic clasts.
Td	Domingene formation	Eocene	Assemblage VI; tan arkosic sandstone; local coal beds; with submembers consisting of brown sandstone with minor mudstone and conglomerate, and siltstone and claystone with minor sandstone and basal conglomerate.
Tmk	Markley formation	Eocene	Assemblage VI; sandstone and shale with submembers consisting of bedded sandstone, siltstone, and shale; black shale with minor siltstone and sandstone; interbedded shale and sandstone; thin-bedded to massive sandstone with minor mudstone.
Tm	Meganso formation	Paleocene	Assemblage VI: sandstone, shale, and conglomerate with submembers consisting of greenish-gray to light gray biotite-rich siltstone and silty mudstone with abundant plant debris in place; bluish-gray sandstone interbeds; sandstone interbeds; and sandstone with basal conglomerate.
Kd	Unit D, sandstone	Upper Cretaceous	Assemblage VI; medium- to course-grained, light gray, clean sandstone; grains include quartz, feldspar, and biotite; spherical weathering common; in places, interbedded with fine- to medium-grained, biotite and muscovite-bearing wacke with mustone rip-up clasts; sandstone beds form packages up to 10 meters thick with 1 to 2 meters of interbedded siltstone and mudstone.
Kdv	Deer Valley sandstone of Coburn	Upper Cretaceous	Assemblage VI; fine- to medium-grained, gray, distinctly bedded to massive, biotite-bearing arkosic sandstone and minor conglomerate.
Kel	Lower unit E, siltstone	Upper Cretaceous	Assemble VI; lower member; light gray to gray-brown, foraminifer bearing siltstone and mudstone; reddish-brown weathering and iron concretions conspicuous.
Keu	Siltstone-upper unit E	Upper Cretaceous	Assemblage VI; light gray siltstone, interbedded with medium- to course-grained, clean, white and orange, lithic sandstone with many large (as much as 50 cm diameter) iron concretions; weathers to light orange.

Source: U.S. Geological Survey, 1994. *Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County: A Digital Database.* Compiled by R.W. Graymer, D.C. Jones, and E.E. Brabb. Open-file Report 94-622.

Historic Coal Mining. The Black Diamond area coal deposits (within the Domingene Formation) are located in the southwestern portions of the Planning Area. Past mining activities followed two principal coal seams to a depth of more than 550 feet below ground surface (bgs). Records of the

Black Diamond Coal Company indicate that, by 1890, more than 85 percent of the total reserve at the Black Diamond region had been mined.[1]

Access tunnel and ventilation shafts constructed as part of the mining operation were generally located at the head of ravines, where erosion had naturally worn away portions of the hillside overlying the coal. Most access tunnels were well documented, and have been relocated and sealed over the years. Ventilation shafts, however, are more numerous and their locations are poorly documented. These shafts were typically sealed through construction of timber floors placed about 10 feet bgs and then backfilled to grade during closure of the mine. The timber floors deteriorate over time, and ventilation shafts can collapse creating soil slumps. The remaining mine openings provide a connection to a labyrinth of subsurface tunnels that can be subject to cave-ins and unexpected drop-offs. Pockets of poisonous carbon monoxide or methane gas may also be present.[2]

These mines present a possible risk of collapse and surface subsidence that could compromise the integrity of buildings developed overlying the mine tunnels. Ultimately, the potential for mine collapse is dependent upon the type of mining that was conducted, the size and dimensions of the mined area, the bearing strength of the materials bounding the mined area, depth of mining, and the length of time since the mining was discontinued.

Soils. Soils in Contra Costa County have been mapped by the United States Department of Agriculture (USDA) Soil Conservation Service.[3] Soils broadly correspond to the Lowland and Up-land Areas. Soil characteristics are described in Table 4.5.B, and soils are mapped on Figures 4.5.2A and 2B.

Lowland Area. The Lowland Area can be roughly divided into two parts: the western and eastern portions of the City.

The western portion consists mainly of well-drained Rincon clay loam with moderate shrink-swell potential, and a slight erosion hazard that is situated among other soils that occupy small areas and have similar shrink-swell potential but are poorly drained.

The eastern portion consists of Delhi sand, which tends to be excessively drained soil with low shrink-swell potential. Runoff from Delhi sand is slow to very slow, with only slight erosion when the soil is tilled and exposed. An organic rich soil referred to as "Joice muck" borders the San Joaquin River in areas of the eastern portion of the Lowland Area. Joice muck is a poorly drained soil that is affected by high groundwater and has a high capacity to shrink, but has low swell potential. Rincon clay loam, Zamoral silty clay loam, and urbanized land also border the San Joaquin River.

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1 Wagstaff & Associates, 1997. *Final Environmental Impact Report for the Proposed Southeast Area Sphere of Influence Amendment and Annexation.*

2 Wagstaff & Associates, 1997.

3 United States Department of Agriculture Soil Conservation Service, 1977. *Soil Survey of Contra Costa County, California*. September.

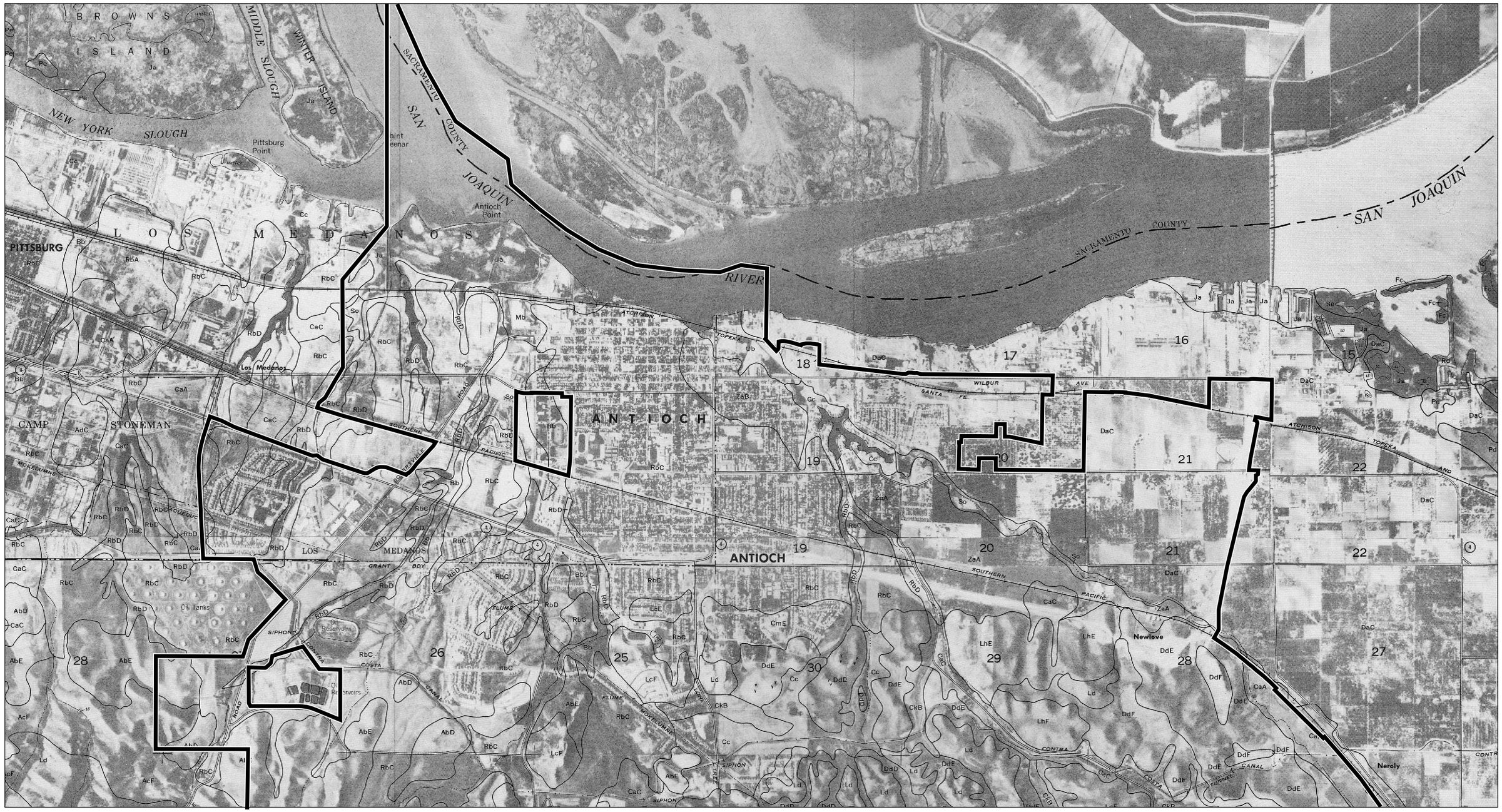
Table 4.5.B - Soil Properties in Antioch

Map Symbol	Soil Name	Slope	Description	Development Constraints
Lowland Area				
Bb	Brentwood Clay Loam	0-2%	Well drained to moderately drained soils on valley fill derived from sedimentary rocks.	High shrink-swell/subsidence potential.
CaA	Capay Clay	0-2%	Moderately well drained soils on lower edges of valley fill and on old benches that have been slowly dissected. Soils formed in alluvium from sedimentary rocks. This nearly level soil is in basins or low benches. Runoff is very slow.	No erosion hazard; high shrink-swell potential.
Cc	Clear Lake Clay	0-2%	Poorly drained soil in basins and coastal valleys that form in fine-textured alluvium.	High shrink-swell/subsidence potential.
DaC	Delhi Sand	2-9%	Consists of somewhat excessively drained soils formed in wind-modified stream deposits of mixed origin. Runoff is slow or very slow.	Slight erosion hazard where soil is tilled and exposed; low shrink-swell potential.
Fc	Fluvaquents	–	Very poorly drained, loamy, mineral soils in sloughs and river channels. They are stratified fine sandy loam, loam, silt loam, and silty clay loam and have lenses of organic material as much as 4 inches thick. Fluvaquents are subject to frequent flooding or inundation by high tides, runoff water, or both during the rainy season.	Properties are too variable to be estimated.
Ja	Joice Muck	<1%	Very poorly drained soil in brackish marshes affected by tides; elevations range from 0 to 5 feet above sea level.	Affected by high groundwater; high shrink potential; low swell potential.
Mb	Marcuse Clay	0-2%	Poorly drained; subject to ponding, or water runs off very slowly. Formed in the alluvium from sedimentary rock. Located on lower edges of valley fill on rims of basins.	No erosion hazard; high shrink-swell potential.
Pb	Pescadero	0-2%	Poorly drained soil that forms on alluvium from sedimentary rocks.	Moderate to high shrink-swell/subsidence potential.
Pd	Piper Sand	0-5%	Poorly drained soil formed on low eolian mounds and ridges that have become prominent as the surrounding organic soils have subsided.	Low shrink-swell potential.
RbA, RbC, RbD	Rincon Clay Loam	0-15%	Well-drained soils that form on benches in alluvial valley fill.	Slight erosion hazard; moderate to high shrink-swell/subsidence potential.
Se	Shima Muck	<1%	Very poorly drained organic soils underlain by sand at a depth of less than 36 inches. These soils are in the marshes on the Sacramento-San Joaquin Delta. They formed mainly from the remains of reeds and tules. Runoff is very slow.	No erosion hazard while soil is wet in winter; moderate erosion hazard in summer; high shrink, low swell potential.
So	Sycamore	0-2%	Poorly drained soils that form on alluvium from sedimentary rocks.	Moderate to high shrink-swell/subsidence potential.
Ub	Urban Land	--	Areas that are filled with crushed rock or other materials. They are usually adjacent to the bay. Also included in this mapping unit are Upland Areas that are covered with blacktop material to reduce the hazard of fire after severe grading and shaping for industrial structures.	Properties are too variable to be estimated.

Table 4.5.B - Soil Properties in Antioch

Map Symbol	Soil Name	Slope	Description	Development Constraints
ZaA, ZaB	Zamora Silty Clay Loam	0-5%	Well-drained soils that formed in alluvium from sedimentary rocks. ZaA is a nearly level soil on alluvial fans and terraces. Runoff is slow and there is no hazard of erosion. ZaB is on alluvial fans, low terraces, and floors of small upland valleys. Runoff is slow.	Slight erosion hazard; moderate shrink-swell potential.
Upland Area				
AbD, AbE, AcF, AcG	Altamont Clay	9-75%	Well-drained soils underlain by shale and soft, fine-grained sandstone.	Moderate/high erosion hazard; high shrink-swell potential.
BdE, BdE2	Briones Loamy Sand	5-30%	Well-drained and excessively drained soils underlain by soft, siliceous sandstone and located on uplands. Runoff is medium to rapid.	Moderate to high erosion hazard where soil is tilled and exposed; low shrink-swell potential.
CkB	Cropley Clay	2-5%	Moderately well drained soils in small upland valleys. These soils formed in fine-textured alluvium from sedimentary rock. Runoff is slow.	Slight erosion hazard where soil is tilled and exposed; high shrink-swell potential.
DdD, DdE, DdF	Diablo Clay	5-50%	Well-drained soils underlain by calcereous, soft, fine-grained sandstone and shale.	Moderate/high erosion hazard; high shrink-swell potential.
GbF, GbG	Gaviota Sandy Loam	30-75%	Well-drained to somewhat excessively drained soils underlain by sandstone. These soils are on the uplands. Runoff is rapid.	High erosion hazard; low shrink-swell potential.
LcE, LcF, LcG	Lodo Clay Loam	9-75%	Somewhat excessively drained soils underlain by soft sandstone and shale.	Moderate to very high erosion hazard; moderate shrink-swell potential.
LeF	Los Gatos Loam	30-50%	Well-drained soils underlain by interbedded sedimentary rock. These soils are on the north-facing slopes in the uplands. Runoff is medium to rapid.	Medium to high erosion hazard when soil is bare; moderate shrink-swell potential.
LhE, LhF	Los Osos Clay Loam	15-50%	Well-drained soils underlain by soft, fine-grained sandstone and shale. This soil is located in the uplands. Runoff is medium to rapid.	Medium to high erosion hazard when soil is bare; high shrink-swell potential.
MeG	Millsholm Loam	50-75%	Well-drained soils that formed from interbedded shale and fine grained sandstone. This soil is located in the uplands. Runoff is rapid.	High erosion hazard where soil is bare; low shrink-swell potential.
Re	Rock Outcrop-Xerorthents Association	30-75%	Rock outcrop is exposed bedrock. This association consists of about 50-75% rock outcrops and 25-50% Xerorthents. Xerothents are mainly loamy soils less than 4 inches deep, but in a few areas are as much as 10 inches deep. They are typically loam but are silt loam or light clay loam in some places. Permeability is moderate. Xerorthents are excessively drained.	High erosion hazard where soil is bare; low shrink-swell potential.
Sc	San Ysidro Loam	0-5%	Moderately well drained soils that formed in alluvium from sedimentary rock. These soils are on old alluvial fans and floors of valleys. Runoff is slow.	Slight erosion hazard; shrink-swell potential varies from low to high.

Source: USDA Soil Conservation Services, 1977. Soil Survey of Contra Costa County, California.



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NOTE: SOILS ARE NAMED AND DESCRIBED IN TABLE 4.5.B.

SOURCE: U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, UNIVERSITY OF CALIFORNIA, AGRICULTURAL EXPERIMENT STATION, 1976.

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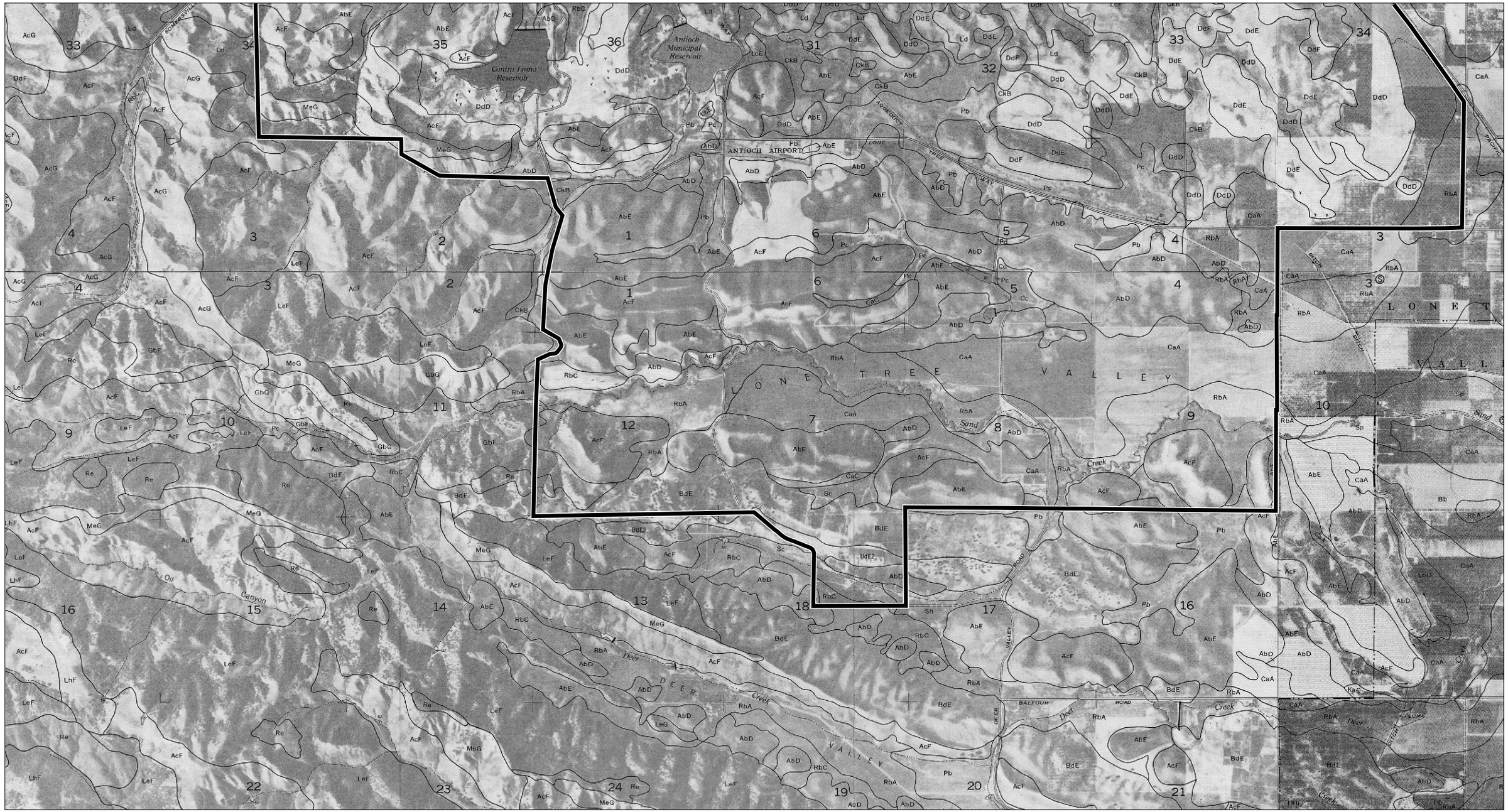
FIGURE 4.5.2A

City of Antioch
General Plan Update EIR
Soils in the Planning Area



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NOTE: SOILS ARE NAMED AND DESCRIBED IN TABLE 4.5.B.

SOURCE: U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, UNIVERSITY OF CALIFORNIA, AGRICULTURAL EXPERIMENT STATION, 1976.

FIGURE 4.5.2B

City of Antioch
General Plan Update EIR

Soils in the Planning Area

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Upland Area. The native soils of the Upland Area are characterized as various clay, clay loam, loam, and loamy sand. Shrink-swell varies from low to high, depending upon soil type. Erosion potential is moderate to very high in soils including Altamont clay, Diablo clay, Lodo clay loam, and San Ysidro loam. Erosion may occur as either gully erosion, where runoff is concentrated in swales and ravines, or as sheet erosion down straight slopes. Erosion carries soil into local streams, increasing sediment loads and degrading water quality.

Lone Tree Valley is a low-lying area situated within the Upland Area. Lone Tree Valley is composed primarily of Rincon clay loam and Capay clay, and thus shares the properties of the Lowland Area.

Groundwater. The Planning Area is located within the Tracy sub-basin in the San Joaquin basin hydrologic study area. The main water-bearing units in the area are younger alluvium.[1] Intense pumping for industrial uses from the 1930s through 1950s resulted in overdraft and saltwater intrusion. These problems were alleviated by widespread use of surface water from the Contra Costa Canal. Depth to groundwater, well yields, and storage capacity of the Tracy groundwater sub-basin are not reported by the Department of Water Resources. However, a geotechnical report prepared for the Kaiser project within the southern portion of the City, on the east side of Deer Valley Road and ½ mile south of Lone Tree Way, indicates that groundwater in the site's Quaternary alluvium deposits have a depth between 30 and 35 feet.[2] Groundwater generally follows topography, but is likely to be deeper in upland areas and shallower near discharge points such as rivers and near the Delta. Groundwater depth varies depending on the nature of the geology, the time of year, and drought cycles.

Seismicity. Eastern Contra Costa County, as well as the San Francisco Bay Area as a whole, is located in one of the most seismically active regions in the United States. Major earthquakes have occurred in the vicinity of Antioch in the past, and can be expected to occur again in the near-future. The 1999 Working Group on California Earthquake Probabilities estimated that there is a 70 percent probability of at least one magnitude 6.7 or greater earthquake to occur on one of the major faults within the San Francisco Bay region before 2030. Furthermore, they determined that there is a 30 percent chance of one or more magnitude 6.7 or greater earthquakes occurring somewhere along the Calaveras, Concord-Green Valley, Mount Diablo Thrust, and Greenville Faults before 2030.[3]

Within the City of Antioch, geologic reports are required in connection with rezoning, specific plans, or subdivisions in areas of high damage susceptibility. Geologic and engineering studies are required for critical structures regardless of their locations. Environmental impact reports are required for projects that could result in exposure of people or property to geologic hazards.

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1 California, State, of, Department of Water Resources, 1980. *Groundwater Basins in California*. Bulletin 118-80. January.

2 Mundie & Associates, 1994. *Draft Environmental Impact Report: Kaiser Project, Antioch, California*. August 8.

3 USGS, 2000. *Understanding Earthquake Hazards in the San Francisco Bay.* U.S. Geological Survey Fact Sheet 152-99. Online version 1.0 - http://geopubs.wr.usgs.gov/fact-sheet/fs152-99/index.html.

Although no known active faults are located within the Planning Area, several major faults are located within a few miles. Historically active faults (exhibiting evidence of movement in the last 200 years) in Contra Costa County include the Hayward, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville faults. The largest regional fault, the San Andreas fault, is located approximately 45 miles west of Antioch. Table 4.5.C describes the faults in the vicinity of Antioch.

Table 4.5.C - Faults in the Vicinity of Antioch

Fault	Location and Direction from Planning Area	Recency of Movement	Fault Classification[a]	Historical Seismicity	Maximum Magnitude[b]
San Andreas	45 miles west	Historic (1906; 1989 ruptures)	Active	M7.1, 1989 M8.25, 1906 M7.0, 1838 Many <M6	7.9
Hayward	25 miles west	Pre-historic (1868 ruptures) Holocene	Active	M6.8, 1868 Many <M4.5	7.1
Calaveras (northern)	20 miles southwest	Historic (1961 rupture) Holocene	Active	M5.6-M6.4, 1861 M4-M4.5, swarms 1970 1990	6.8
Concord-Green Valley	10 miles west	Historic (1955) Holocene	Active	Historic active creep	6.9
Marsh Creek-Greenville-Clayton	4 miles south	Historic (1980 rupture) Holocene	Active	M5.6, 1980	6.9
Black Diamond Area	Southwestern portion of the Planning Area	Pre-Quaternary	Inactive	Scattered seismicity	N/A
Antioch	North-south directed fault through center of Planning Area	Quaternary	Inactive	Reported creep	N/A

[a] An "Active Fault" is defined by the State Mining and Geology Board as one which has had surface displacement within Holocene time (about the last 11,000 years).

[b] The maximum movement magnitude is the strongest earthquake that is likely to be generated along a fault zone, based on the geologic character of the fault and earthquake history (CDMG, 1996).

Sources: Jennings, C.W., 1994. *Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions.* CDMG Geologic Data Map No. 6. California, State of, Department of Conservation, Division of Mines and Geology (CDMG), 1996. *Probabilistic Seismic Hazard Assessment for the State of California.* DMG Open-File Report 96-08.

Faults. The 62-mile-long Hayward fault extends from San Pablo Bay to an obscure convergence with the Calaveras fault east of San Jose (Figure 4.5.3). The Hayward fault is currently considered to be at highest risk for the occurrence of a large earthquake.

The Calaveras fault is a major right-lateral strike-slip fault that was active during the Holocene era. The fault extends for about 75 miles from southern Contra Costa County to Hollister in San Benito County. Historical earthquakes with associated surface fault rupture have occurred on the Calaveras fault.

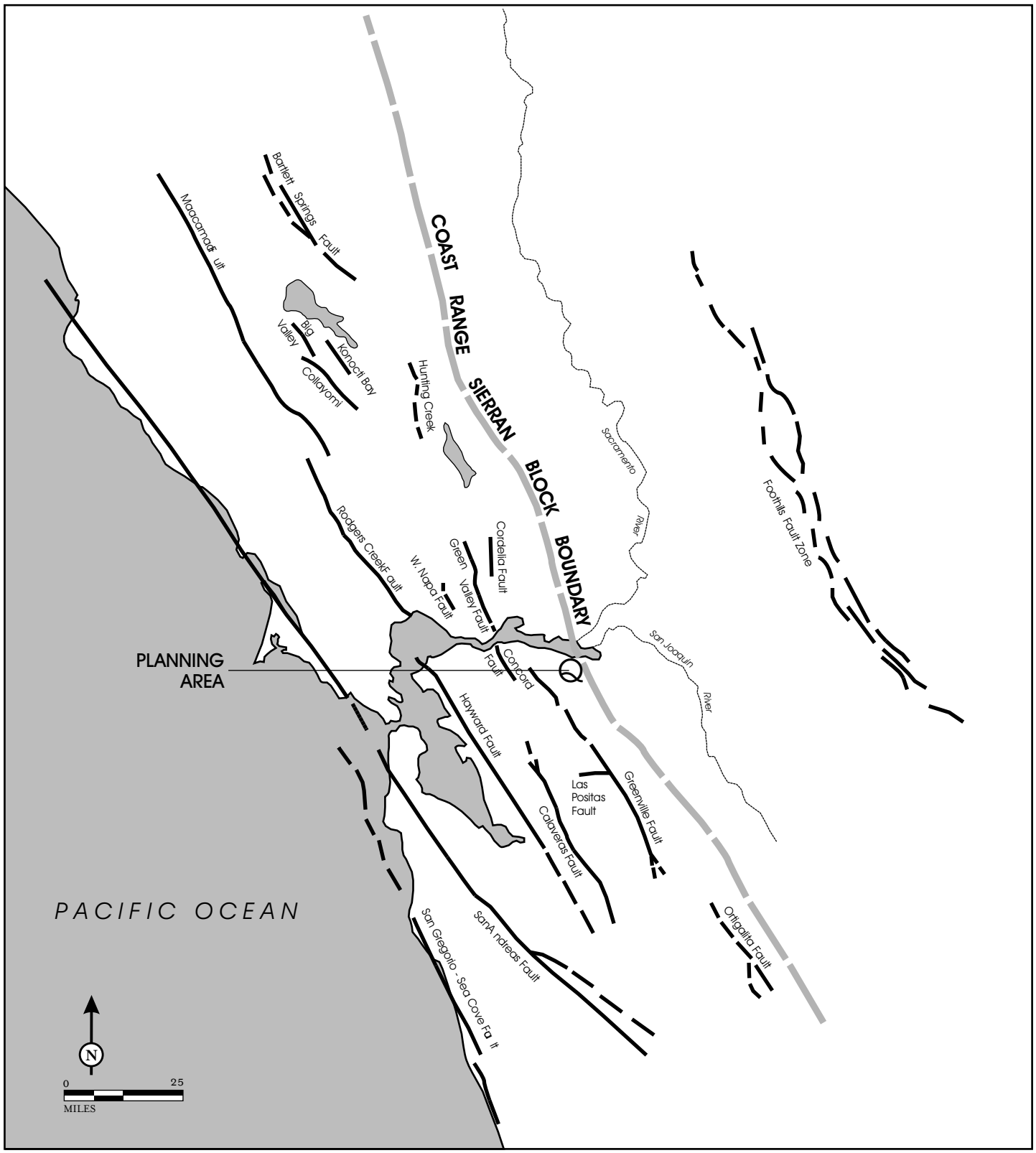

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Figure 4.5.3

ACTIVE FAULT
FAULT HAS EVIDENCE OF SURFACE DISPLACEMENT WITHIN THE LAST 11,000 YEARS (DASHED WHERE INFERRED)

City of Antioch
General Plan Update EIR

Regional Faults

SOURCE: BASELINE ENVIRONMENTAL CONSULTING, 1999

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The Concord-Green Valley fault extends for approximately 10 miles from the Suisin Bay to southern Contra Costa County. The fault is recognized as a major structural feature, has demonstrated Holocene activity, and is zoned under the Alquist-Priolo Act. A damaging earthquake in 1955 has been attributed to the Concord-Green Valley fault.

The Marsh Creek-Greenville fault is a northwest-trending fault system that extends from near Clayton to the eastern margin of the Livermore Valley in northern Alameda County. The fault is recognized as a major structural feature, and has demonstrated Holocene activity. The Marsh Creek-Greenville fault is located approximately 7 miles west of the Planning Area, and is an active Holocene fault zoned under the Alquist-Priolo Act. Surface fault rupture occurred on the Greenville fault during an earthquake in 1980.

Geological Effects of Earthquakes.

Ground Shaking. The intensity of ground shaking that would occur in Antioch as a result of an earthquake in the Bay Area is partly related to the size of the earthquake, its distance from the City, and the response of the geologic materials within the Planing Area. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site, the greater the intensity of ground shaking.

The distribution of ground shaking intensity has been mapped by the Association of Bay Area Governments (ABAG).[1] Ground shaking intensity is described using the Modified Mercalli Scale, which ranges from I (not felt) to XII (widespread devastation). When various earthquake scenarios are considered, ground shaking intensities will reflect both the effects of strong ground accelerations and the consequences of ground failure. Possible earthquake intensities are described below.

A large earthquake on the Concord-Green Valley fault is projected to produce the maximum ground shaking intensities in Antioch with Modified Mercalli intensity IX in Bay Mud deposits along the Suisun Bay, north of SR 4. Modified Mercalli intensity IX is associated with damage to buried pipelines and partial collapse of poorly built structures. Strong ground shaking of Mercalli intensity VII would occur locally along creek beds in inland portions of Antioch; however, the major portion of the Planning Area is projected to experience ground shaking of intensity VII on the Modified Mercalli scale, which is associated with non-structural damage.

A large earthquake on the Hayward fault is projected to produce ground shaking intensities of Mercalli VIII along the Suisun Bay, north of SR 4, and less intense ground shaking in Upland Areas.

Liquefaction. Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake ground shaking. Liquefaction has resulted in substantial loss of life, injury, and damage to property. In addition, liquefaction increases the hazard of fires because of explosions induced when underground gas lines break, and because the breakage of water mains substantially reduces fire suppression capability.

1 ABAG, 1995. *The San Francisco Bay Area – On Shaky Ground.* April.

As shown in Figure 4.5.4, Antioch's Lowland Area's potential for liquefaction ranges from low to very high.[1] The majority of the Lowland Area, correlated with the area underlain by Rincon clay loam has a low potential for liquefaction. The second largest part of the Lowland Area, underlain by Delhi sand, has a moderate potential for liquefaction. As shown in Figure 4.5.4, the area directly adjacent to the San Joaquin River has a high to very high potential for liquefaction. The Upland Area has a very low potential for liquefaction. However, it is intersected with areas, such as Long Tree Valley, that have moderate potential for liquefaction.

The potential for liquefaction also depends on soil conditions and groundwater levels, which may fluctuate. In general, where there is any potential for liquefaction, site-specific studies are needed to determine the extent of the hazard.

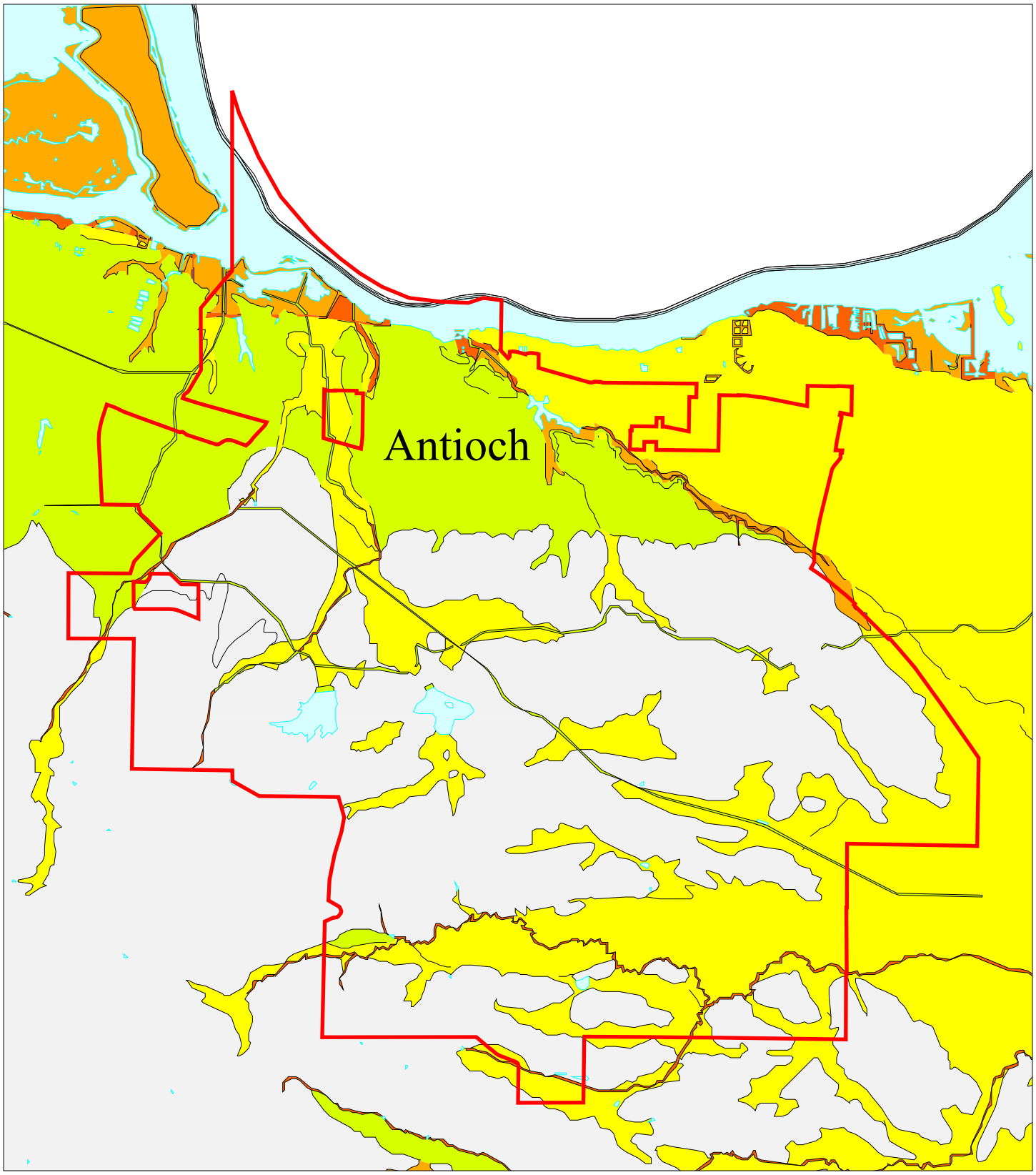
Lateral spreading (lurching) may also be present where open banks and unsupported cut slopes provide a free face. Ground shaking, especially when inducing liquefaction, may cause lateral spreading toward unsupported slopes.

Landsliding. The strong ground motions that occur during earthquakes can induce landslides, generally where unstable slope conditions already exist. The United States Department of the Interior Geologic Survey *Regional Slope Stability Map of the Northeastern San Francisco Bay Region California*, which was used to draft Figure 4.5.4, indicates that landslide hazards exist primarily in the Upland Area in the southwestern part of the City of Antioch.[2] Figure 4.5.5 categorizes slope stability and associated landslide potential as follows:

- Category 1, Very Stable. Areas of 0-5 percent slope that are not underlain by landslide deposits.
- Category 1A, Stable. Areas of 0-5 percent slope that include tidelands, marshlands, and swamplands that are underlain by moist, unconsolidated mud.
- Category 2, Generally Stable. Areas of 5-15 percent slope that are not underlain by landslide deposits.
- Category 3, Generally Stable to Marginally Stable. Areas of greater that 15 percent slope that are not underlain by landslide deposits or bedrock units susceptible to landsliding.
- Category 4, Moderately Unstable. Areas of greater than 15 percent slope that are underlain by bedrock units susceptible to landsliding but not underlain by landslide deposits.
- Category 5, Unstable. Areas of any slope that are underlain by or immediately adjacent to landslide deposits.

[1] Knudsen, K.L., J.M. Somers, R.C. Witter, C.M. Wentworth & E.J. Helley, 2000. *Preliminary Maps of Quarternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California Geology.*

[2] United States Department of Interior Geological Survey, 1979. Compiled by T.H. Nilsen and R.H. Wright. *Regional Slope Stability Map of the Northeastern San Francisco Bay Region, California*. Profession Paper 944, Plate 2.



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LEGEND
VERY HIGH
HIGH
MODERATE
LOW
VERY LOW
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MILES

FIGURE 4.5.4

City of Antioch
General Plan Update EIR
Liquefaction Susceptibility in the City of Antioch

SOURCE: USGS, K.L. KNUDSEN, J.M. SOWERS, R.C. WITTER, C.M. WENTWORTH, AND E.J. HELLY, 2000.

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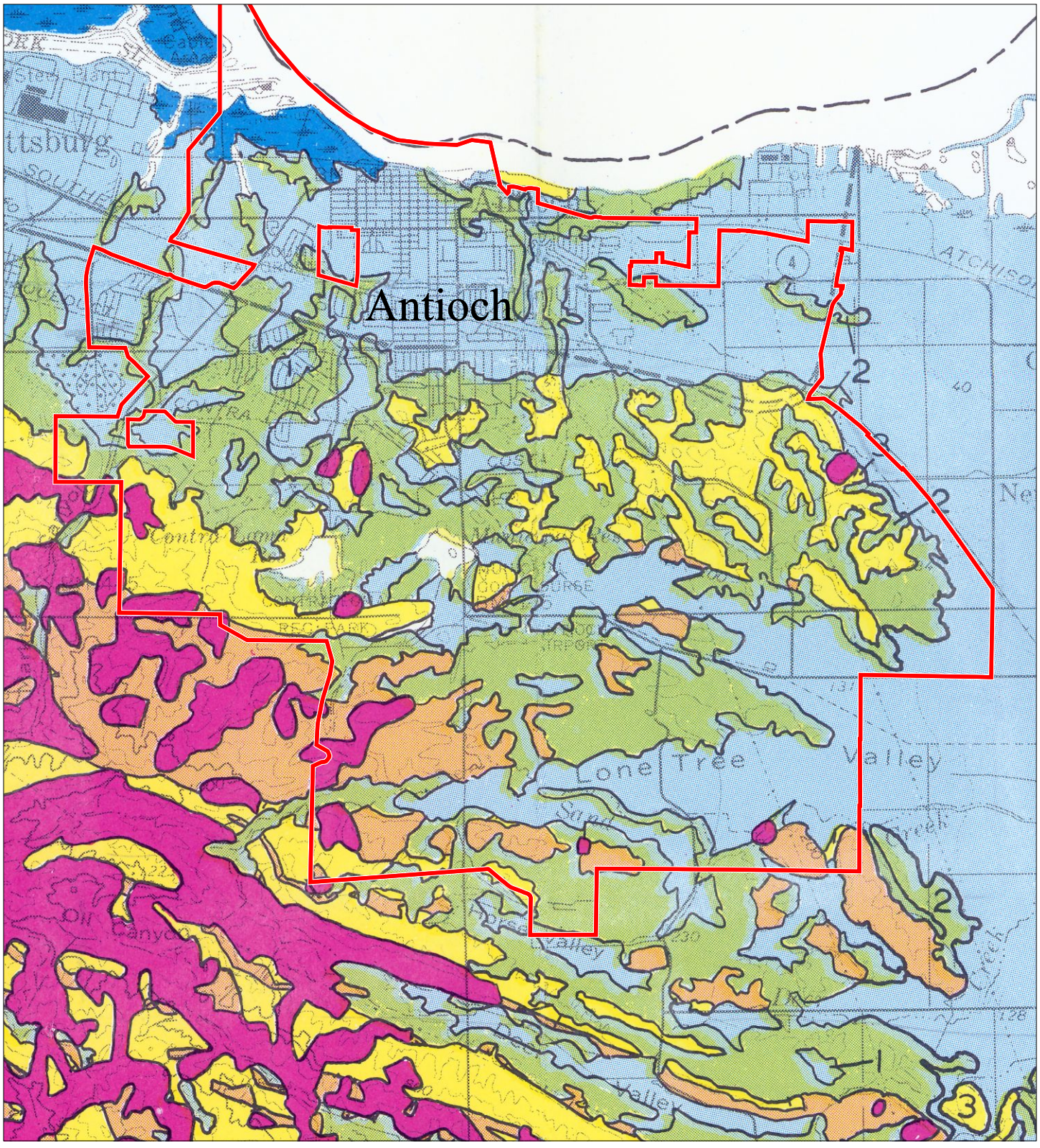

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FIGURE 4.5.5

SOURCE: USGS, TOR H. NILSEN AND ROBERT H. WRIGHT, 1975.

City of Antioch
General Plan Update EIR
Slope Stability

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As shown in Figure 4.5.5, most of the southwest corner of the Planning Area is susceptible to landslides with the majority of slopes considered unstable or moderately unstable. To the east, the Lone Tree Valley has little susceptibility to landslides with stable to generally stable slopes. However, the Upland Area to the south of Lone Tree Valley is prone to landslides with moderately unstable and unstable slopes. The Upland Area to the north of Lone Tree Valley is generally not prone to landslides with slopes that are generally stable to marginally stable. However, a few small areas have unstable slopes susceptible to landslides, including an area to the north of Contra Loma Reservoir, and an area to the west of the intersection of the Contra Costa Canal and SR 4.

Most of the Lowland Area in the north of the City is not prone to landslides with stable, generally stable, and marginally stable slopes. However, the northwest corner of the Planning Area, part of which is the Dow Wetland Preserve, is unstable.

This general overview of slope stability and landslide potential in the City of Antioch is not intended as a substitute for detailed site investigations, which should precede any final planning decisions.

Inundation from Seiche and Tsunami. Earthquakes can cause tsunamis ("tidal waves") and seiches (oscillating waves in enclosed water bodies). There are no enclosed bodies of water in the vicinity of the Planning Area that would be affected by seiches. Low-lying portions of the City are located adjacent to the San Joaquin River where tsunami inundation is a possibility. However, projected wave height and tsunami run-up is expected to be small in the interior portions of the San Francisco Bay and the Delta. Some coastal inundation and damage could occur if a tsunami coincided with very high tides or an extreme storm.

Response of Structures to Earthquakes. Structures in Antioch are subject to damage from large earthquakes. The degree of hazard depends in part on the seismic hazards at a particular location and partly on the type of structure, its materials, and construction quality. Within the City, damage can be caused by strong ground shaking, ground failure due to liquefaction or landsliding, or secondary hazards such as fire.

Fault Rupture Damage. No known active faults have been mapped within the Planning Area, and the potential for structures to be adversely affected by fault rupture is considered to be very low. The California Geological Survey has not established any Earthquake Fault Zones regulated under the Alquist-Priolo Act in the Planning Area. It is possible that future investigation could identify active faults in the Planning Area. Fault rupture hazards in the City should be reevaluated if data suggest that such a hazard is present.

Liquefaction Damage. Liquefaction poses a substantial source of hazard to structures and infrastructure located in the northern portion of the Planning Area and along creeks. Where liquefaction is accompanied by lateral spreading and settlement, damages to structures and infrastructure can be dramatic. Several strategies for managing damage can be used, including:

- Foundation design, including deep foundations in areas subject to liquefaction;
- Use of flexible materials in some types of infrastructure that will allow a degree of resistance to damage from liquefaction-induced settlement and soil movement; and

- Engineering of the soil medium and groundwater management.

Most available technology for reducing liquefaction hazards is relatively expensive compared to construction on soils in which liquefaction hazard is absent.

Landslide Damage. Large landslides can cause significant damage to structures and roads. The risk of a landslide depends on a number of complex factors: Rock type, slope, gradient, drainage, and aspects of engineered structures. Landslide hazard in some cases can be managed through landslide remediation and/or foundation design. Engineering methods, such as landslide material removal, slope reconfiguration, surface water control, and soil water management, can be employed to reduce the potential hazard of slope instability.

Ground Shaking Damage. Ground shaking presents the most widespread hazard to structures and infrastructure within the Planning Area. Ground shaking intensity, however, is highly variable from one site to another. In addition, the effect of ground shaking on structures is related to the form, structural design, materials, construction quality, and location. Engineers analyze the response of structures with different frequencies to specific ground motions, known as acceleration response spectra.

Since the 1970s, the Uniform Building Code (UBC) in California has incorporated standard response spectra as a basis for structural design. The response spectra establish the minimum standards for which a building must be designed. The UBC considers primary lateral seismic forces and general soil type; incorporation of vertical forces into code design requirements is currently being considered. The objective of the UBC is to protect the life safety of building occupants and the public. For large earthquakes, the UBC primarily ensures that the building will not collapse, but some structural and non-structural damage may be expected.

Buildings constructed prior to code revisions in the 1970s generally would not meet current design provisions for earthquake forces of the UBC. Expected damage to different types of buildings is described below:

- The most severe hazards are presented by unreinforced masonry buildings constructed of brick or concrete block. Under strong intensity ground shaking, many of these structures may be expected to collapse or require demolition. The City has developed a list of unreinforced masonry buildings.[1]
- Other types of buildings that may also be severely damaged are older buildings of steel and concrete framing that were not designed to resist earthquake vibrations and older reinforced brick and masonry structures.
- Light wood-frame, such as most residential structures, and sheet metal buildings would be expected to have moderate damage in most conditions.
- Steel-frame structures designed to resist earthquake vibrations have an excellent record in earthquakes.

[1] Mesick, Harold. 2001. City of Antioch Building Department. *Personal communication* with LSA Associates, Inc. March 13.

New construction in Antioch is required to meet the requirements of the California Building Code. Buildings of special occupancy are required by the State to meet more stringent design requirements than the UBC. Special occupancy buildings include hospitals, schools, and other structures that are important to protecting health and safety in the community.

Antioch Emergency Response Plan. In 1996, the City of Antioch approved an Emergency Plan that addresses response to disasters, including but not limited to earthquakes, floods, fires, hazardous spills or leaks, major industrial accidents, major transportation accidents, major storms, airplane crashes, environmental response, civil unrest, and national security emergencies. The plan outlines the general authority, organization, and response actions for City of Antioch staff when disasters happen. The City's plan is in compliance with existing law. The objectives of the plan are to reduce life, injury, and property losses through effective management of emergency forces. The City's plan:

1. Identifies who is in charge during disaster response and clarifies who does what.
2. Lists the necessary jobs for disaster response and what each person is to do.
3. Ensures survivability and availability of government services, or the continuity of government.
4. Helps to understand the City of Antioch's emergency organization.
5. Gives guidance for disaster education and training.
6. Gives references to more detailed information.

The emergency plan indicates that a major earthquake in the San Francisco Bay Region would result in widespread damage, large numbers of casualties, and disruption of infrastructure such as transportation, utility service, emergency services, and medical response. It is likely that Antioch would experience casualties, significant property damage, and utility service interruptions following a major earthquake. The potentially catastrophic effects of an earthquake on the Hayward Fault would more than likely exceed the response capabilities of both the City of Antioch and the County.

A large earthquake would create many homeless families, including up to 2,000 long-term earthquake-related homeless people in the County. It is projected that there will be a significant loss of acute care hospital space because of the number of casualties and the expected degree of damage at hospitals located in the County. A large earthquake is expected to damage roadways, bridges, and airports throughout the Bay Area, affecting the movements of people and supplies into and out of the City of Antioch in the aftermath of a large earthquake. Telephone service is expected to be limited because of overload, equipment failure/damage, and power outage. The impact to cellular phones could be equally problematic if transmission and relay sites are damaged. It is projected that electrical power will be severely disrupted for at least 72 hours after an earthquake. Water and wastewater services may be disrupted for at least 24 hours, since many water supply and wastewater pipelines cross the Hayward fault, and electrical outages may hamper sewage treatment. There will probably be extensive damage to natural gas services, but most areas in the City will be relatively quick to restore, except for areas in the hills immediately east of the fault. Broken residential service connections may cause many fires.

A particular concern in the City of Antioch is the possibility of an earthquake triggering an industrial disaster. The density of petroleum and chemical industries, and the trans-shipping of military explosives, result in large quantities of potentially explosive, flammable, and poisonous materials being stored, processed, and transported throughout the County and through the City of Antioch.

Existing Policies and Regulations

Alquist-Priolo Fault Zoning Act. Surface rupture is the most easily avoided seismic hazard. The Alquist-Priolo Special Studies Zones Act was signed into law in 1972. In 1994, it was renamed the Alquist-Priolo Earthquake Fault Zoning Act (A-P Act). The primary purpose of the A-P Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. Passage of this law was a direct result of the 1971 San Fernando Earthquake. Extensive surface fault ruptures during this earthquake damaged numerous homes, commercial buildings, and other structures.

The A-P Act requires the State Geologist (Chief of the CGS) to delineate "Earthquake Fault Zones" along faults that are "sufficiently active" and "well defined." Sufficiently active faults show evidence of Holocene surface displacement along one or more or their segments. Well-defined faults are clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The boundary of an "Earthquake Fault Zone" is generally about 500 feet from major active faults, and 200 to 300 feet from well-defined minor faults. The A-P Act dictates that cities and counties withhold development permits for sites within an Alquist-Priolo (A-P) Zone, until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting.

Local agencies must regulate most development projects within the A-P Zones. Projects include all land divisions and most structures constructed for human occupancy. While State law exempts single family wood-frame dwellings and steel-frame dwellings that are less than three stories and are not part of a development of four units or more, local regulations may be more restrictive than State law.

Before a project can be permitted within an identified Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. A site-specific evaluation and written report site must be prepared by a licensed geologist. If an active fault is identified, a structure intended for human occupancy cannot be placed over the trace of the fault and must be set back, generally no closer than 50 feet from the fault.

The A-P Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards.

The Seismic Hazards Mapping Act. Passed in 1990, the Seismic Hazards Mapping Act (SHMA) addresses non-surface fault rupture earthquake hazards, including strong ground shaking, liquefaction, and seismically induced landslides.

The CGS is the principal State agency charged with implementing the 1990 SHMA. Pursuant to the SHMA, the CGS is directed to provide local governments with seismic hazard zone maps that identify areas susceptible to amplified shaking, liquefaction, earthquake-induced landslides, and other ground failures. The goal is to minimize loss of life and property by identifying and mitigating

seismic hazards. The seismic hazard zones delineated by the CGS are referred to as "zones of required investigation." Site-specific geotechnical hazard investigations are required by SHMA when construction projects fall within these areas.

Natural Hazards Disclosure Act. Effective June 1, 1998, the Natural Hazards Disclosure Act requires that sellers of real property and their agents provide prospective buyers with a "Natural Hazard Disclosure Statement" when the property being sold lies within one or more State-mapped hazard areas. If a property is located in a Seismic Hazard Zone as shown on a map issued by the State Geologist, the seller or the seller's agent must disclose this fact to potential buyers.

The Building Earthquake Safety Act of 1986. This Act requires all local governments to identify all potentially hazardous buildings within their jurisdictions and to establish a program for mitigation of identified hazards. It is the legislative basis for the inventory of hazardous unreinforced masonry buildings and Unreinforced Masonry Ordinances adopted by most counties and cities in California.

The Recovery (and) Reconstruction Act of 1986. This Act authorizes local governments to prepare for expeditious and orderly recovery before a disaster and reconstruction afterward. It enables localities to prepare pre-disaster plans and ordinances that may include: an evaluation of the vulnerability of specific areas to damage from a potential disaster; streamlined procedures for appropriate modification of existing General Plans or zoning ordinances affecting vulnerable areas; a contingency plan of action; organization for post-disaster, short-term and long-term recovery and reconstruction; and a pre-disaster ordinance to provide adequate local authorization for post-disaster activities.

4.5.2 Geologic and Seismic Hazards Thresholds of Significance

A potentially significant environmental impact related to geologic and seismic hazards would result if implementation of the proposed General Plan would:

- Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving:
  - i. Rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other evidence of a known fault.
  - ii. Strong seismic ground shaking.
  - iii. Seismic related ground failure including liquefaction.
  - iv. Landslides.
- Result in substantial erosion, loss of topsoil, changes in topography or unstable soil conditions from excavation, grading, or filling;

- Be located on a geological unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Alter or destroy a unique geological feature; or
- Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

For the purpose of this EIR, significant geologic hazards would pertain to soil and/or seismic conditions so unfavorable that they could not be overcome by reasonable design, construction, and maintenance practices.

4.5.3 Geologic and Seismic Hazards Impacts and Mitigation

Potentially Significant Impacts

Ground Shaking

Impact 4.5.1. *The City of Antioch has and will continue to be subject to ground shaking resulting from activity on local and regional faults. Future development permitted by the proposed General Plan may increase the potential for property loss, injury, or death resulting from this ground shaking hazard. Impacts associated with this issue are potentially significant.*

Although no known active faults exist within the Planning Area, several major faults are located within a few miles of the City. It can be anticipated that strong to violent ground shaking will occur in Antioch during a major earthquake (fault rupture) on the Hayward, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville faults or the San Andreas Fault. Buildings constructed in this geologically active region would be exposed to severe seismic shaking that could cause extensive non-structural (e.g., plaster, furnishings, lighting, etc.) and structural damage throughout the City. Older building within the City may sustain a greater degree of damage during a seismic event due to outdated construction techniques. In addition, ruptured utility pipelines and electricity transmission lines are a potential hazard following large earthquakes. The design and construction of structures and facilities shall adhere to the standards and requirement detailed in the California Building Code (California Code of Regulations, Title 24) and/or professional engineering standards appropriate for the seismic area in which such construction may occur. Conformance with these design standards is enforced through building plan review and approval by the City of Antioch Building Division prior to the issuance of building permits for any structure or facility.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects associated with ground shaking on residents and habitable structures. The effectiveness of the policies at reducing the effect of ground shaking is analyzed below and additional mitigation measures are provided to ensure that ground shaking impacts resulting from future development within the City are reduced to a less than significant level.

Policy 11.3.2. Geology and Seismicity Policies.

a. Require geologic and soils reports to be prepared for proposed development sites, and incorporate the findings and recommendations of these studies into project development requirements.

b. Provide information and establish incentives for property owners to rehabilitate existing buildings using updated construction techniques to protect against seismic hazards.

c. Encourage the purchase of earthquake insurance by residents and businesses.

d. Encourage continued investigation by State agencies of geologic conditions within the Bay Area to update knowledge of seismic hazards and promote public awareness.

e. Provide expedited review of any seismic-related revisions to the UBC proposed by the State.

f. Work with PG&E, pipeline companies, and industrial uses to implement measures to safeguard the public from seismic hazards associated with high voltage transmission lines, caustic and toxic gas and fuel lines, and flammable storage facilities.

g. Require that engineered slopes be designed to resist seismically induced failure.

h. Require that parcels overlying both cut and fill areas within a grading operation be over-excavated to mitigate the potential for seismically induced differential settlement.

i. Limit development in those areas which, due to adverse geological conditions, will be hazardous to the overall community and those who will inhabit the area.

j. Require evaluations of potential slope stability for developments proposed within hillside areas, and incorporate the recommendations of these studies into project development requirements.

k. Require specialized soils reports in areas suspected of having problems with potential liquefaction, bearing strength, expansion, settlement, or subsidence, including implementation of the recommendations of these reports into the project development.

Policy 11.8.2. Disaster Response Policy.

a. Maintain and update the City's Emergency Response Plan, as required by State law.

Effectiveness of Proposed General Plan Policies. While implementation of the aforementioned policies would reduce the significance of potential ground shaking impacts, they do not provide specific development standards for development within areas subject to potential ground shaking impacts, nor do they provide adequate mitigation for potential ground shaking impacts that may be identified through the use of new scientific data, equipment, or procedures. To provide adequate mitigation for potential ground shaking hazards, mitigation has been identified to provide flexibility to the City in requiring site-specific ground shaking assessment for any development subject to potential ground shaking impacts and to require adherence to identified design standards. Adherence to these measures will reduce potential impacts related to this issue to a less than significant level.

Mitigation Measures

4.5.1A. The City shall modify the proposed General Plan to incorporate a policy with the following provision: as determined by the City of Antioch Building Division, a site-specific assessment shall be prepared to ascertain potential ground shaking impacts resulting from development. The site-specific ground shaking assessment shall incorporate up-to-date data from government and non-government sources and may be included as part of any site-specific geotechnical investigation. The site-specific

ground shaking assessment shall include specific measures to reduce the significance of potential ground shaking hazards.

This site-specific ground shaking assessment shall be prepared by a licensed geologist and shall be submitted to the City of Antioch Building Division for review and approval prior to the issuance of building permits.

4.5.1B. The policy stated in Mitigation Measure 4.5.1A shall apply to structures or facilities that undergo expansion, remodeling, renovation, refurbishment or other modification. This policy shall not apply to second units or accessory buildings.

Liquefaction

Impact 4.5.2. *Portions of Antioch are susceptible to liquefaction, a destructive secondary effect of strong seismic shaking. Future proposed General Plan development within Antioch would increase the potential for the placement of structures and facilities in or near areas susceptible to liquefaction. Impacts associated with this issue are potentially significant.*

Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake ground shaking. The potential for liquefaction also depends on soil conditions and groundwater levels, which may fluctuate. According to previously referenced Figure 4.5.4, liquefaction susceptibility in Antioch's Lowland Area ranges from low to very high. The majority of the Lowland Area, correlated with the area underlain by Rincon clay loam, has a low potential for liquefaction. The second largest part of the Lowland Area, underlain by Delhi sand, has a moderate potential for liquefaction. Some areas directly adjacent to the San Joaquin River have a high to very high potential for liquefaction. The Upland Area has a very low potential for liquefaction. However, there are areas, e.g., Lone Tree Valley, that have moderate potential for liquefaction. Under the proposed General Plan, the City proposes new development in portions of the City Rivertown/ Urban Waterfront Focus Area, including Rodger's Point Park and the Waterfront Park, which are located directly adjacent to the San Joaquin River.

Proposed General Plan Policies. The proposed General Plan Policies 11.3.2-i and k, listed above, address the potential for damage by requiring specialized soil reports in areas suspected of having problems with liquefaction and other soil-related issues. Based on the findings of these reports, the City of Antioch could limit development in those areas to reduce potential impacts. Additional mitigation measures are provided to ensure that potential liquefaction impacts resulting from future development within the City are reduced to a less than significant level.

Effectiveness of Proposed General Plan Policies. While implementation of the aforementioned policies would reduce the significance of potential liquefaction impacts, they do not provide specific development standards for development within areas subject to liquefaction. To ensure that potential impacts associated with this issue are reduced to a less than significant level, mitigation measures have been identified below to provide flexibility to the City in requiring site-specific liquefaction assessments.

Mitigation Measures

4.5.2A. The City shall modify the proposed General Plan to incorporate a policy with the following provision: Where development is proposed within an identified or potential liquefaction hazard area (as determined by the City), adequate and appropriate measures such as (but not limited to) design foundations in a manner that limits the effects of liquefaction, the placement of an engineered fill with low liquefaction potential, and the alternative siting of structures in areas with a lower liquefaction risk, shall be implemented to reduce potential liquefaction hazards. Any such measures shall be submitted to the City of Antioch Building Division for review prior to the approval of the building permits.

Landslides and Rockfalls

Impact 4.5.3. *Landslides and rockfalls can be expected to occur in the southwest corner of the planning area, as a result of seismic activity and other natural processes, or as the result of human activity. Future proposed General Plan development within the City would increase the potential for the placement of structures and facilities in areas susceptible landslides or rockfalls. Impacts associated with this issue are potentially significant.*

Landslides in areas that have steep slopes can be caused by seismic activity and/or extended periods of rain resulting in high water saturation of soils. New development built on hillsides or that require engineered slopes can be susceptible to landslide hazards. Development within or adjacent to areas susceptible to land or rockslides would increase the potential for injury, death, or loss of property. To lessen the potential for property loss, injury, or death resulting from landslides or rockfalls, policies have been identified to mitigate the potentially significant impacts associated with future development within the City.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce to a less than significant level, the potential impacts associated with development in areas of steep slopes. The effectiveness of the policies at reducing potential landslide and rockfall impacts is analyzed below.

Policy 5.4.14. Hillside Design Policies.

a. Design hillside development to be sensitive to existing terrain, views, and significant natural landforms and features.

b. Projects within hillside areas shall be designed to protect important natural features and to minimize the amount of grading. To this end, grading plans shall conform to the following guidelines.

   - *Slopes less than 25%:* Redistribution of earth over large areas may be permitted.
   - *Slopes between 25% and 35%:* Some grading may occur, but landforms need to retain their natural character. Padded building sites may be allowed, but split level designs of greater than 18 inches, stacking and clustering are required to mitigate the need for large padded building areas.

- *Slopes between 35% and 50%:* Development and limited grading can occur only if it can be clearly demonstrated that safety hazards, environmental degradation, and aesthetic impacts will be avoided. Use of larger lots, variable setbacks and variable building structural techniques such as stepped or post and beam foundations are required. Structures shall blend with the natural environment through their shape, materials and colors. Impact of traffic and roadways is to be minimized by following natural contours or using grade separations.
- *Slopes greater than 50%:* Except in small, isolated locations, development in areas with slopes greater than 50% shall be avoided.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan Policies 5.4.14-a and b and 11.3.2-a, g, h, i, and *j* would reduce the potential for landslide hazards related to development on hillside slopes. As stated in these policies, the City of Antioch will require the preparation of geologic, soil, and slope stability reports and the incorporation of the recommendations into project development requirements. The City of Antioch can then evaluate and limit development, as necessary, in areas that have adverse geologic conditions that could result in damage and hazards to public and property. In accordance with the proposed General Plan Policy 11.3.2-h, approved hillside development must abide by specific grading operations to limit the probability of landslides and differential soil settlement. The above policies provide specific requirements to identify, evaluate, and mitigate potential impacts associated with seismically induced landsliding and rockfalls. Implementation of the above policies would reduce significant adverse impacts resulting from landslides/rockfalls to a less than significant level. Therefore, no additional mitigation is required.

Mitigation Measures. No additional mitigation is required.

Soil Erosion/Loss of Topsoil

Impact 4.5.4. *Areas exposed during development activities would be prone to erosion and/or the loss of topsoil. The potential for substantial soil erosion or the loss of topsoil is considered potentially significant.*

Erosion and loss of topsoil can be associated with groundbreaking excavation activities, such as grading and/or filling for new development. Future construction and grading activities could expose unprotected soils to stormwater runoff causing erosion and loss of topsoil. To accommodate the land uses and population increase anticipated by the proposed General Plan, development of residential and non-residential structures and facilities would be required. This would result in the alteration of existing topography and/or the removal of existing vegetation/topsoil. The potential for soil erosion, either by wind or water, is substantially increased upon the exposure of underlying soils during grading activities or other landform modifications.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce to a less than significant level, the potential impacts to soil erosion associated with development.

Policy 8.7.2. Storm Drainage and Flood Control Policies.

Require new developments to provide erosion and sedimentation control measures to maintain the capacity of area storm drains and protect water quality.

Policy 10.6.2. Water Resources Policies.

Require the implementation of BMPs to minimize erosion and sedimentation resulting from new development.

Effectiveness of Proposed General Plan Policies. Implementation of the above policies, in addition to project specific environmental review, and existing standards and requirements of the UBC and California Building Code, would reduce impacts associated with soil erosion and the loss of topsoil to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Unstable Geologic Conditions

Impact 4.5.5. *Implementation of the proposed General Plan could facilitate new development in areas that may become unstable and potentially result in landslides, lateral spreading, subsidence, liquefaction, or collapse. Impacts to this issue are potentially significant.*

Within a local context, development within or adjacent to areas susceptible to unstable geologic conditions would increase the potential for injury, death, or loss of property, through the loss of structures. Measures are identified below to mitigate the potentially significant impacts associated with development of the land uses envisioned in the proposed General Plan.

Proposed General Plan Policies. The proposed General Plan includes policies 11.3.2-a, i, j, and k to reduce to a less than significant level potential impacts associated with seismically induced ground settlement. The effectiveness of the policies at reducing potential impacts associated with seismically induced settlement impacts is analyzed below.

Effectiveness of Proposed General Plan Policies. Implementation of the above policies, in addition to project-specific environmental review, and existing standards and requirements of the UBC and California Building Code, would reduce hazards associated with landslides, lateral spreading, subsidence, liquefaction, or collapse. To ensure that potential impacts associated with this issue are reduced to a less than significant level, mitigation measures have been identified below.

Mitigation Measures. Implementation of **Mitigation Measures 4.5.1A** and **4.5.1B** listed above will ensure that potential impacts associated with this issue are reduced to a less than significant level.

Expansive Soils

Impact 4.5.6. *Future development within Antioch would increase the potential for the placement of structures and facilities in areas susceptible to damage resulting from expansive soils. Impacts associated with expansive soils are considered potentially significant.*

Expansive soils are those soils with a significant amount of clay particles that have the ability to give up water (shrink) or take on water (swell). When these soils shrink or swell, the change in volume exerts significant pressures on loads (such as buildings) that are placed on them. Implementation of the proposed General Plan may result in the construction and occupation of structures within areas underlain by expansive soils. Expansive soil conditions (as defined in Table 18-1-B of the UBC, 1994), if not properly mitigated by site preparation and/or foundation design, can cause substantial damage to structures and other improvements over time. The past construction of structures and facilities on these soils may increase the potential for structure damage or, through the disruption of utility facilities, an interruption of utility service. Additionally, abandoned mines present a possible risk of collapse due to expansive soils. Measures are identified below to mitigate the potentially significant impacts associated with development of the land uses envisioned in the proposed General Plan.

Proposed General Plan Policies. Policies 11.3.2-a and k, listed previously, require new development to conduct specialized soils reports for development in areas suspected of having problems with liquefaction, bearing strength, expansion, settlement, or subsidence. In addition these policies require proposed development to incorporate the recommendations and findings of these reports into the project's engineering and geotechnical analysis to minimize risk to the safety of occupants. These policies, if properly implemented, would mitigate the potential for damage caused by adverse soil conditions to a less than significant level.

Mitigation Measures. No additional mitigation is required.

4.5.4 Geology and Slope Stability Level of Significance after Mitigation

Implementation of the proposed policies, mitigation measures, and existing requirements would reduce potential impacts associated with fault rupture hazards, ground shaking, liquefaction, landslides and rockfalls, seismically induced settlement, subsidence and collapsible soils, and soil erosion and loss of topsoil to a less than significant level.

4.6 HAZARDOUS MATERIALS

This section discusses the existing setting and possible impacts and mitigation measures pertaining to hazardous materials resulting from the implementation of the proposed General Plan.

4.6.1 Hazardous Materials Existing Setting

Hazardous materials are commonly used by all segments of society, including manufacturing and service industries, commercial enterprises, agriculture, military installations, hospitals, schools, and households. Anticipated residential, commercial, and industrial growth within Antioch in the coming years will make the identification of potential problems associated with the handling, transport, storage, and disposal of hazardous materials an increasingly important consideration.

Hazardous waste is often generated as a byproduct of industrial, manufacturing, agricultural, and other uses. The Federal Resource Conservation and Recovery Act (RCRA) defines a hazardous waste as any solid, liquid, or contained gaseous material that is either disposed, incinerated, or recycled. A hazardous material may become hazardous waste upon its accidental release into the environment. Although hazardous wastes may be considered hazardous materials, hazardous materials may not always be classified as hazardous waste. For example, liquid chlorine transported in a tanker truck would be classified as a hazardous material. This same substance, upon accidental release into the environment, would be considered hazardous waste. Hazardous materials and hazardous waste pose potential risks to the health, safety, and welfare of Antioch residents and workers, if handled inappropriately. All hazardous waste must be discharged at a Class I landfill.

Within the Antioch Planning Area, the Delta Diablo Sanitation District (DDSD) disposes of hazardous materials. The DDSD operates the Delta Household Hazardous Waste Collection Facility. This facility collects hazardous substances and pollutants such as used oil and filters, anti-freeze, latex and oil based paints, household batteries, fluorescent and high intensity lamps, cosmetics, pesticides, pool chemicals, and household cleaners for safe disposal at this facility.

Not all pollutants can be removed by the DDSD treatment process. To ensure that certain pollutants do not enter the Delta, DDSD has established a Pretreatment Program, which consists of public education and regulation of certain businesses and industries. The Pretreatment Department works closely with commercial and industrial users to ensure that hazardous substances such as solvents, pesticides, metals, grease, petroleum, oil, and paints are not discharged into the sewer system.

There is a long history of agricultural production in Antioch. Agricultural activities typically include the storage and periodic application of pesticides, herbicides, and fertilizers, as well as the storage and use of toxic fuels and solvents. The infiltration of these substances may leach into local groundwater supplies, presenting an elevated risk of groundwater contamination. In addition, nearly all Antioch residents have some type of hazardous material in their homes. Examples include motor oil, paints, cleaners, aerosols, and pesticides. Household hazardous materials pose serious health issues for people who improperly use or dispose of these materials. Adverse environmental impacts can occur when household hazardous materials are disposed of in unlined sanitary landfills, where these materials may leach through the soil and contaminate groundwater.

Medical facilities, including clinics, hospitals, professional offices, blood and plasma centers, and medical research facilities generate a wide variety of hazardous substances. These substances may include contaminated medical equipment or supplies, infectious biological matter, prescription medicines, and radioactive materials used in medical procedures. The disposal of medical waste is achieved by on-site autoclaving of red-bagged waste (any medical waste that could possibly transmit a pathogen) and subsequently transported to a Class III landfill.

Although incidents can happen almost anywhere, certain areas of Antioch are at higher risk for inadvertent release of hazardous materials. Locations near roadways that are frequently used for transporting hazardous materials (e.g., SR-4) and locations near industrial facilities that use, store, or dispose of these materials have an increased potential for a release incident, as do locations along the freight railways.

The California Department of Toxic Substances Control identifies two (2) sites within Antioch where surface and/or sub-surface contamination has occurred due to the release of hazardous materials or wastes. Those sites include the GBF/Pittsburg Dumps, located at the intersection of Somersville Road and James Donlon Boulevard, and the former Hickmott Cannery site at the intersection of 6th and "A" Streets.

Pursuant to State law, Antioch has adopted by reference Contra Costa County's Hazardous Waste Management Plan. This Plan establishes a comprehensive approach to management of hazardous wastes in the County, including siting criteria for new waste management facilities, educational and enforcement efforts to minimize and control the hazardous waste stream in the County, and policies to maintain a unified database on businesses generating hazardous wastes.

The U.S. Bureau of Mines closed six ventilation shafts in the southwestern portion of the Sand Creek Focus Area in 1981 and 1982. These mines, abandoned in the late 1800s, present a possible risk of collapse and surface subsidence that could compromise the integrity of buildings developed overlying the mine tunnels. Ultimately, the potential for mine collapse is dependent upon the type of mining that was conducted, the size and dimensions of the mined area, the bearing strength of the materials bounding the mined area, depth of mining, and the length of time since the mining was discontinued.

Existing Federal Policies and Regulations

Comprehensive Environmental Response, Compensation, and Liability Act. Discovery of environmental health damage from disposal sites prompted the U.S. Congress to pass the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund). The purpose of CERCLA is to identify and clean up chemically contaminated sites that pose a significant environmental health threat. The Hazard Ranking System is used to determine whether a site should be placed on the National Priorities List for cleanup activities.

Superfund Amendments and Reauthorization Act. The Superfund Amendments and Reauthorization Act (SARA) pertains primarily to emergency management of accidental releases. It requires formation of State and local emergency planning committees, which are responsible for collecting material handling and transportation data for use as a basis for planning. Chemical inventory data is made available to the community at large under the "right-to-know" provision of the

law. In addition, SARA also requires annual reporting of continuous emissions and accidental releases of specified compounds. These annual submissions are compiled into a nationwide Toxics Release Inventory.

Hazardous Materials Transportation Act. The Hazardous Materials Transportation Act is the statutory basis for the extensive body of regulations aimed at ensuring the safe transport of hazardous materials on water, rail, highways, through air, or in pipelines. It includes provisions for material classification, packaging, marking, labeling, placarding, and shipping documentation.

Resource Conservation and Recovery Act. The RCRA Subtitle C addresses hazardous waste generation, handling, transportation, storage, treatment, and disposal. It includes requirements for a system that uses hazardous waste manifests to track the movement of waste from its site of generation to its ultimate disposition. The 1984 amendments to RCRA created a national priority for waste minimization. Subtitle D establishes national minimum requirements for solid waste disposal sites and practices. It requires states to develop plans for the management of wastes within their jurisdictions. Subtitle I requires monitoring and containment systems for underground storage tanks that hold hazardous materials. Owners of tanks must demonstrate financial assurance for the cleanup of a potential leaking tank.

Existing State of California Policies and Regulations

The California Hazardous Waste Control Law. The Hazardous Waste Control Law (HWCL) is the primary hazardous waste statute in the State of California. The HWCL implements RCRA as a "cradle-to-grave" waste management system in the State of California. HWCL specifies that generators have the primary duty to determine whether their wastes are hazardous and to ensure their proper management. The HWCL also establishes criteria for the reuse and recycling of hazardous wastes used or reused as raw materials. The HWCL exceeds Federal requirements by mandating source reduction planning, and a much broader requirement for permitting facilities that treat hazardous waste. It also regulates a number of types of wastes and waste management activities that are not covered by Federal law with RCRA.

California Code of Regulations. Most State and Federal regulations and requirements that apply to generators of hazardous waste are spelled out in the California Code of Regulations (CCR), Title 22, Division 4.5. Title 22 contains the detailed compliance requirements for hazardous waste generators, transporters, and treatment, storage, and disposal facilities. Because California is a fully authorized State according to RCRA, most RCRA regulations (those contained in 40 Code of Federal Regulations [CFR] 260 et seq.) have been duplicated and integrated into Title 22. However, because the Department of Toxic Substance Control (DTSC) regulates hazardous waste more stringently than the U.S. EPA, the integration of California and Federal hazardous waste regulations that make up Title 22 do not contain as many exemptions or exclusions as does 40 CFR 260. As with the California Health and Safety Code, Title 22 also regulates a wider range of waste types and waste management activities than does the RCRA regulations in 40 CFR 260. To aid the regulated community, California compiled the hazardous materials, waste and toxics-related regulations contained in CCR, Titles 3, 8, 13, 17, 19, 22, 23, 24, and 27 into one consolidated CCR Title 26

'Toxics.' However, the California hazardous waste regulations are still commonly referred to as Title 22.

4.6.2 Hazardous Materials Thresholds of Significance

For the purpose of this analysis, an impact related to hazardous materials compliance is considered significant if the exposure of people or the environment to hazardous materials is in excess of Federal, State, or local regulatory standards.

4.6.3 Hazardous Materials Impacts and Mitigation

Potentially Significant Impacts

Hazardous Materials Use, Generation and Transport

Impact 4.6.1. *Build out of the Proposed General Plan may result in increased risk of upset associated with the routine use, generation, and transportation of hazardous materials, which may potentially pose a health or safety hazard.*

New non-residential development within Antioch may result in an increase in commercial and industrial land uses involving the use of hazardous materials or in generation of hazardous waste. The types and quantities of hazardous materials utilized by the various types of businesses that could locate in Antioch would vary and, as a result, the nature of potential hazards would also be varied. Since the proposed General Plan does not include specific development projects, no specific type of hazard associated with these materials can be identified and the likelihood of a hazard presenting a serious impact cannot be determined at this time. However, it can be generally concluded that any non-residential development would result in an increase in the use and transport of hazardous materials and an increase in generation of hazardous waste. The consequence of this is the increase in the potential for a public health or safety hazard. Additionally, new development within ¼ mile of a school or adjacent to residential areas could expose these sensitive land uses to a greater risk of exposure to hazardous substances.

While the risk of exposure to hazardous materials cannot be eliminated, measures can be implemented to maintain risks at acceptable levels. Oversight by the appropriate agencies and compliance with all applicable regulations is considered adequate to reduce the impacts associated with the use and transport of hazardous materials within Antioch.

In addition, the following proposed General Plan policies would further reduce hazardous material impacts to less than significant.

Proposed General Plan Policies. The proposed General Plan includes the following policies that would reduce or minimize the effects of prospective growth on the use and generation of hazardous materials. Implementation of these policies would ensure that potential hazardous material impacts resulting from future development in the City would not have any significant adverse impacts and no further mitigation is required. The proposed policies related to this issue are provided below.

11.7.2 Hazardous Materials Policies

a. Promote the reduction, recycling, and safe disposal of household hazardous wastes through public education and awareness.

b. Implement the provisions of the Contra Costa County Hazardous Waste Management Plan, including, but not limited to, provisions for pretreatment and disposal, storage, handling, and emergency response.

c. Require businesses generating hazardous wastes to pay necessary costs for local implementation of programs specified in the Contra Costa County Hazardous Waste Management Plan, as well as costs associated with emergency response services for a hazardous materials release.

Source Reduction

d. Require new and expanding hazardous materials users to reduce the amount of hazardous waste generated.

- Require submittal of a waste minimization plan with any use permit application for a new large facility or expansion of an existing large facility creating additional hazardous wastes.[1]
- Encourage existing large facilities to prepare waste minimization plans.
- Require new large hazardous waste-producing facilities to provide on-site treatment of recycling of wastes generated to the maximum extent feasible. This will minimize the amount of hazardous waste being transferred off-site for treatment or disposal.
- Require all hazardous waste generators to recycle wastes to the maximum extent feasible.

e. Encourage reductions in the amount of hazardous wastes being generated within Antioch through incentives and other methods.

- Provide educational and technical assistance to all hazardous materials users and waste generators to aid in their source reduction efforts (e.g., substitution of less hazardous products and modifications to operating procedures). These services will primarily be provided by through the County.
- Provide public recognition to hazardous materials users and waste generators who meet or exceed source reduction goals.
- Provide penalties for facilities failing to meet minimization objectives, and place funds from these penalties in a revolving account for use in educational and emergency services efforts.

Facilities Siting

f. Locate hazardous materials facilities in areas reserved for compatible uses.

- Permit large hazardous waste users and processors only in areas designated for "heavy industrial" use. Smaller generators and medical facilities (e.g., service stations) may be sited in other industrial and commercial areas, consistent with applicable General Plan policies and zoning regulations. The compatibility of small facilities will be determined by the types and amounts of hazardous materials involved and the nature of the surrounding area.

[1] Large facilities are those routinely generating more than 1,000 kilograms of solid hazardous waste month or 275 gallons of liquid hazardous waste per month.

- Require use permits for all operations handling hazardous materials to ensure compatibility with the surrounding area.

g. Maintain adequate siting criteria to determine appropriate locations for hazardous material facilities.

- Maintain a "Hazardous Materials" section in the Antioch zoning ordinance to define siting criteria to be used for various types of facilities, requirements for application submittal, and required findings for approval.

h. Locate hazardous materials facilities at a sufficient distance from populated areas to reduce potential health and safety impacts.

- Require risk assessment studies to determine potential health impacts for all proposed hazardous waste processors and large generators as part of permit application submittals.
- Require a 2,000-foot buffer zone around all new hazardous waste processors within which no residences, schools, hospitals, or other immobile populations, existing, proposed, or otherwise, would be located, unless evidence is presented in the risk assessment study that a larger buffer is needed.

i. Permit hazardous waste processors based on their relative need in conjunction with the "fair share" approach to facilities siting contained in the Contra Costa County Hazardous Waste Management Plan.

- Require a needs assessment as part of use permit applications for a waste processor, demonstrating the proposed facility will serve a need that cannot be better met in any other manner (e.g., source reduction) or at any other location.
- Discourage proposed hazardous waste facilities processing materials similar to those treated or stored at existing facilities within the County, unless the need for the new facility can be adequately demonstrated.

j. Carefully review and require appropriate mitigation for pipelines and other channels for hazardous materials.

Facilities Management

k. Ensure adequate provision is made for emergency response to all crises involving hazardous materials.

- Require emergency response plans for all hazardous waste processors and large generators to be submitted as part of use permit applications.
- Require training of employees of all facilities in emergency procedures, and that they be acquainted with the properties and health effects of the hazardous materials involved in the facilities' operations.

l. Promote the safest possible transport of hazardous materials through Antioch.

- Maintain formally designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
- Restrict all processors and new large generators to access only along established hazardous material carrier routes.

- Locate hazardous waste processors as near to waste generators as possible, in order to minimize the need for transport.
- Require transportation analyses for all new large generators and processors to determine the effect of each facility on Antioch's transportation system, and assess and provide mitigation for potential safety impacts associated with hazardous materials transported to and from the site.
- Prohibit the parking of vehicles transporting hazardous materials on City streets.
- Require that new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the greatest extent possible.

m. Require that hazardous materials facilities within Antioch operate in a safe manner.

- As a condition of approval for new hazardous materials facilities, require access for vehicles carrying hazardous materials to be restricted to hazardous materials carrier routes.
- Undertake inspections of hazardous materials facilities as needed (e.g., when an unauthorized discharge into City sewers is made), and assist Contra Costa Health Services in their inspections as requested.
- Require that water, sewer, and emergency services be available consistent with the level of service standards set forth in the Growth Management Element. Work with LAFCO to require that that sites for proposed hazardous materials facilities annex into the City before necessary municipal services are provided.

n. Require appropriate design features be incorporated into each facility's layout to increase safety and minimize potential adverse effects on public health.

- Require the provision of spill containment facilities and monitoring devices in all facilities.
- Ensure that pipelines and other hazardous waste channels are properly designed to minimize leakage and require aboveground pipelines to be surrounded by spill containment basins.
- Give priority to underground storage of hazardous materials, unless this method is shown to be infeasible.
- Require hazardous materials storage areas to be located as far from existing pipelines and electrical transmission lines as possible.

o. Maintain a high priority on clean up of the GBF landfill, Hickmott Cannery, and other contaminated sites.

- Maintain communication with the Department of Toxic Substances Control, Contra Costa Health Services, and other responsible agencies to complete clean up of the GBF landfill and Hickmott Cannery sites as rapidly and thoroughly as possible.
- Participate in task forces with County and State agencies for remediation of the GBF landfill and Hickmott Cannery sites.

Public Education/Outreach

p. Require that new large hazardous materials users and/or processors maintain communication lines within the community by establishing a Communication and Information Panel. Encourage existing large users and processors to form similar panels.

q. Facilitate public awareness of hazardous materials by preparing and distributing in conjunction with Contra Costa Health Services public information regarding uniform symbols used to identify hazardous wastes, Antioch's household hazardous waste collection programs, and hazardous waste source reduction programs.

Monitoring

r. Monitor the progress and success of hazardous materials efforts, and modify these efforts as needed.

s. Maintain data regarding the use and generation of hazardous materials within Antioch and its Planning Area.

Effectiveness of Proposed General Plan Policies. Implementation of the above policies in conjunction with compliance with local, State, and Federal regulations would reduce potential hazardous materials impacts to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Impair an Emergency Response Plan

Impact 4.6.2. *Build out of the Proposed General Plan may impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*

Implementation of the proposed General Plan will result in a substantial increase in population and residential and non-residential structures. This type of growth has the ability to physically interfere with implementing an emergency response plan and the ability to delay emergency responders. Adopted emergency response plans and emergency evacuation procedures in the City of Antioch are not expected to be affected substantially by the adoption of the proposed General Plan. To ensure that significant impacts do not result, the proposed General Plan includes the following policies.

Proposed General Plan Policies. The proposed General Plan includes the following policies that would minimize the effects of prospective growth on the implementation of an adopted emergency response plan. Implementation of these policies would ensure that potential impacts resulting from future development in the City would not have any significant adverse impacts. The proposed policies related to this issue are provided below.

11.8.2 Disaster Response Policies

a. Maintain and update the City's Emergency Response Plan, as required by State law.

b. Disseminate disaster preparedness information to local residents and businesses, describing how emergency response will be coordinated, how evacuation, if needed, will proceed, and what residents and businesses can do to prepare for emergency situations. Provide information to the public about:

- Environmental hazards existing in Antioch;
- The costs of doing nothing to mitigate these hazards;
- Why governmental agencies cannot eliminate all hazards;
- What the City does to assist;
- What the City cannot do; and
- What the public can do to protect itself.

c. Maintain an effective and properly equipped emergency operations center, along with trained personnel, for receiving emergency calls, providing initial response and key support to major incidents, meeting the demands of automatic and mutual aid programs, and maintaining emergency incident statistical data.

d. Maintain ongoing emergency response coordination with surrounding jurisdictions.

e. Encourage private businesses and industrial uses to be self-sufficient in an emergency by:

- Maintaining a fire control plan, including on-site fire fighting capability and volunteer response teams to respond to and extinguish small fires; and
- Identifying personnel who are capable and certified in first aid and CPR.

f. Regularly review and clarify emergency evacuation plans for dam failure, fire, and hazardous materials releases.

Effectiveness of Proposed General Plan Policies. Implementation of the above policies in conjunction with compliance with local, State, and Federal regulations would reduce potential impacts to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Wildland Fire Hazards

Impact 4.6.3. *Implementation of the proposed General Plan may expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas.*

Areas of potential wildland fire hazard exist within the southern, mostly now unincorporated portions of the General Plan study area, including rural, hilly terrain as well as the areas adjacent to or covered by natural grassland or brush. New development within or near these areas may expose additional persons to hazardous conditions. Additionally, there is the potential for an increase in the occurrence of fire in these areas due to increasing population and the fact that a majority of wildland fires are caused by human carelessness. To prevent fire, the Contra Costa County Fire Protection District (CCCFPD) strongly recommends that wildland access, or access to existing open areas, be planned into all new subdivisions. Wildland areas must be accessible by fire trail gates to ensure expedient response to grass fires in open areas and fires within the subdivisions themselves. The CCCFPD also trains industries located in the City to prevent and respond to fires. To ensure that significant impacts

do not result from this increase in development, the proposed General Plan includes the following policies.

Proposed General Plan Policies. The proposed General Plan includes the following policies that would minimize the effects of prospective growth on wildland fire hazards. Implementation of these policies would ensure that potential impacts resulting from future development in the City would not have any significant adverse impacts. The proposed policies related to this issue are provided below.

8.10.2 Fire Protection Policies

a. Work with the Contra Costa County Fire Protection District to provide high quality fire protection services to area residents and businesses. The City's role should include, but not be limited to:

   - Determining the appropriateness of station location sites;
   - Enforcement of building codes to reduce fire hazards;
   - Collection of mitigation fees established by the fire district to construct needed additional stations within the Antioch Planning Area.
   - Support the District in providing funding for personnel costs to staff stations within the City;
   - Support the District in establishing fees that are adequate to mitigate the impacts of new development and income to support operation of new stations whose construction is financed with development fees; and
   - Requiring reasonable reservation of appropriate sites for new fire stations as part of new development.

b. In cooperation with the Contra Costa County Fire Protection District, conduct an annual assessment of the adequacy of facilities and services serving Antioch, personnel and staffing needs, and capital needs, based on anticipated growth and the level of service standard set forth in the Growth Management Element. This assessment should be undertaken as part of the annual review of proposed capital projects required by the California Government code (see Chapter 12, Implementation, Section 12.4b).

c. Provide the Contra Costa County Fire Protection District with timely information on development proposals and projected levels of future growth so that it can maintain appropriate long-term master plans and refine the delivery of service and facilities to maintain the performance standards set forth in the Growth Management Element.

d. Involve the Fire Protection District in the development review process by referring development requests to the Police Department for review and comment.

Effectiveness of General Plan Policies. Implementation of the above policies will reduce the impacts of wildland fire hazards by both reducing the fire threat and by maintaining adequate fire protection plans. Implementation of these policies along with the implementation of the Uniform Fire Code and the Uniform Building Code will reduce the effects of development on wildland fire hazard impacts to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Mine Hazards

Impact 4.6.4 *Collapse of historic coal mine tunnels could result in subsidence of lands located above the mines, potentially causing damage to foundations or other improvements.*

Abandoned mines present a possible risk of collapse and surface subsidence that could significantly compromise the integrity of buildings, utilities, and roadways in the areas of these mines. The potential for mine tunnel collapse is contingent upon many factors of the previous mining operation and the length of time since the mining was completed. To ensure that significant impacts do not result, the proposed General Plan includes the following policies.

Proposed General Plan Policies. The proposed General Plan includes the following policies that would reduce the risk of mine hazards. Implementation of these policies would ensure that potential impacts resulting from future development in the City would not have any significant adverse impacts. The proposed policies related to this issue are provided below.

11.3.2 Historic Mineral Extraction

l. As appropriate and necessary to protect public health and safety, abandoned mines shall be placed in natural open space areas, with appropriate buffer areas to prevent unauthorized entry.

m. Within areas of known historic mining activities, site-specific investigations shall be undertaken prior to approval of development to determine the location of any remaining mine openings, and the potential for subsidence of collapse.

n. All identified mine openings shall be effectively sealed.

o. Construction of structures for human occupancy shall be prohibited within areas found to have a high probability of surface collapse or subsidence, unless foundations are designed that would not be affected by such surface collapse or subsidence, as determined by site-specific investigations and engineered structural design.

p. The locations of all oil or gas wells on proposed development sites shall be identified in development plans. Project sponsors of development containing existing or former oil or gas wells shall submit documentation demonstrating that all abandoned wells have been properly abandoned pursuant to the requirements of the California Department of Conservation Oil, Gas, and Geothermal Resources.

Effectiveness of General Plan Policies. Implementation of the above policies will reduce the impacts of mine hazards by both sealing mine openings and by ensuring that construction of structures are designed adequately and located properly. Implementation of these policies will reduce mine hazard impacts to a less than significant level.

Mitigation Measures. No additional mitigation is required.

4.6.4 Hazards and Hazardous Materials Level of Significance after Mitigation

Implementation of the policies listed previously and compliance with all local, State, and Federal hazards and hazardous materials regulations would reduce potential impacts to a less than significant level.

4.7 HYDROLOGY AND WATER QUALITY

The following section discusses water quality and hydrological issues and impacts within the City of Antioch associated with the implementation of the proposed General Plan. Topics discussed in this section include drainage, flooding, groundwater, and water quality. Mitigation measures are recommended, as necessary.

4.7.1 Hydrology and Water Quality Existing Setting

Waterways. The principal waterways within the Planning Area are shown in Figure 4.7.1. They include the San Joaquin River, East Antioch Creek, West Antioch Creek, Markley Creek, Sand Creek, Marsh Creek, and Deer Creek. Parts of the City's naturally occurring floodplains are paved, and stretches of creek channels have been covered by culverts.

In addition to naturally occurring creeks, other waterways also occur within the City. The Contra Costa Canal, owned by the Bureau of Reclamation, is a channelized potable water conveyance canal. A spillway, the Los Medanos Wasteway, leads from the Contra Costa Canal near the western edge of the Planning Area and flows north to the San Joaquin River. The East Bay Municipal Utility District Aqueduct is a water transmission facility that runs from the Central Valley to the East Bay region. The lines are located south of SR 4 and are aboveground for roughly 350 feet north of Buchanan Road and west of Somersville Road.

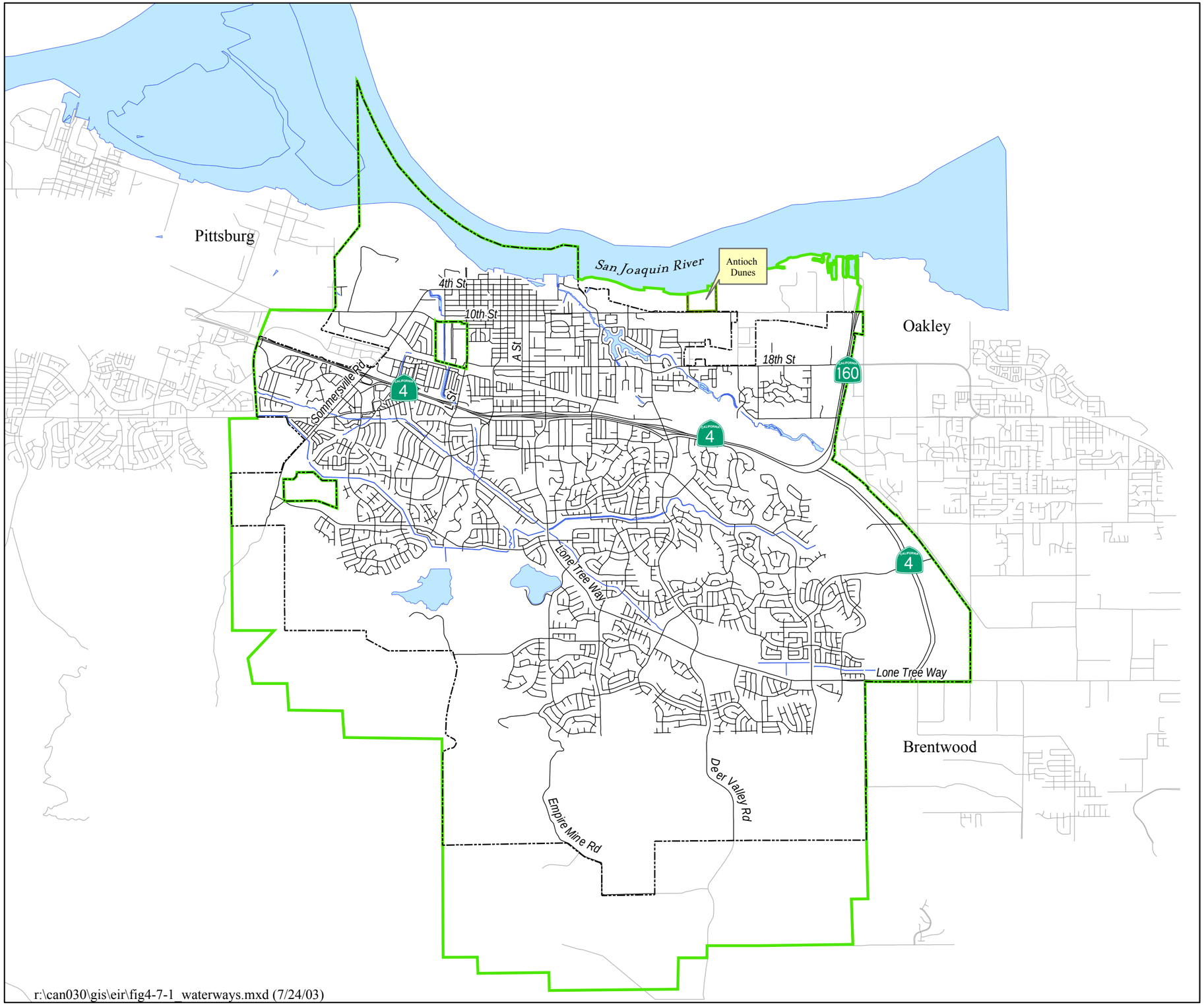
Reservoirs and Lakes. Several reservoirs are also present in the Planning Area. The Contra Loma Reservoir was built in 1967 by the Bureau of Reclamation as part of the Central Valley Water Project, and is currently managed by the Contra Costa Water District. The Reservoir, supplied by the Contra Costa Canal, provides peak demand and emergency water supplies for the Contra Costa Water District. This reservoir is contained within a regional park operated by the East Bay Regional Park District.

The Antioch Municipal Reservoir is also a key component of the City's water system. The Reservoir provides a means of equalizing demand and ensuring the reliability of the supply from the Contra Costa Canal. It also provides some flood protection in the West Antioch Creek watershed, although it is not situated on the main stem of the Creek.

Lake Alhambra, located on East Antioch Creek, is a private recreation lake for the surrounding residential area.

Flooding Hazards. Most flooding within the City of Antioch is caused by heavy rainfall, high tides, and subsequent runoff volumes that cannot be adequately conveyed by the existing storm drainage system and surface water.

Flood Hazard Zones. The National Flood Insurance Act of 1968 called for identification and mapping of flood plain hazard areas prone to flooding in major storm events. These flood hazard maps, known as Flood Insurance Maps (FIRMs), are used by the Federal Emergency Management



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WATER WAYS

WATER WAYS

CITY BOUNDARY

PLANNING AREA

ANTIOCH DUNES

N

0 5000

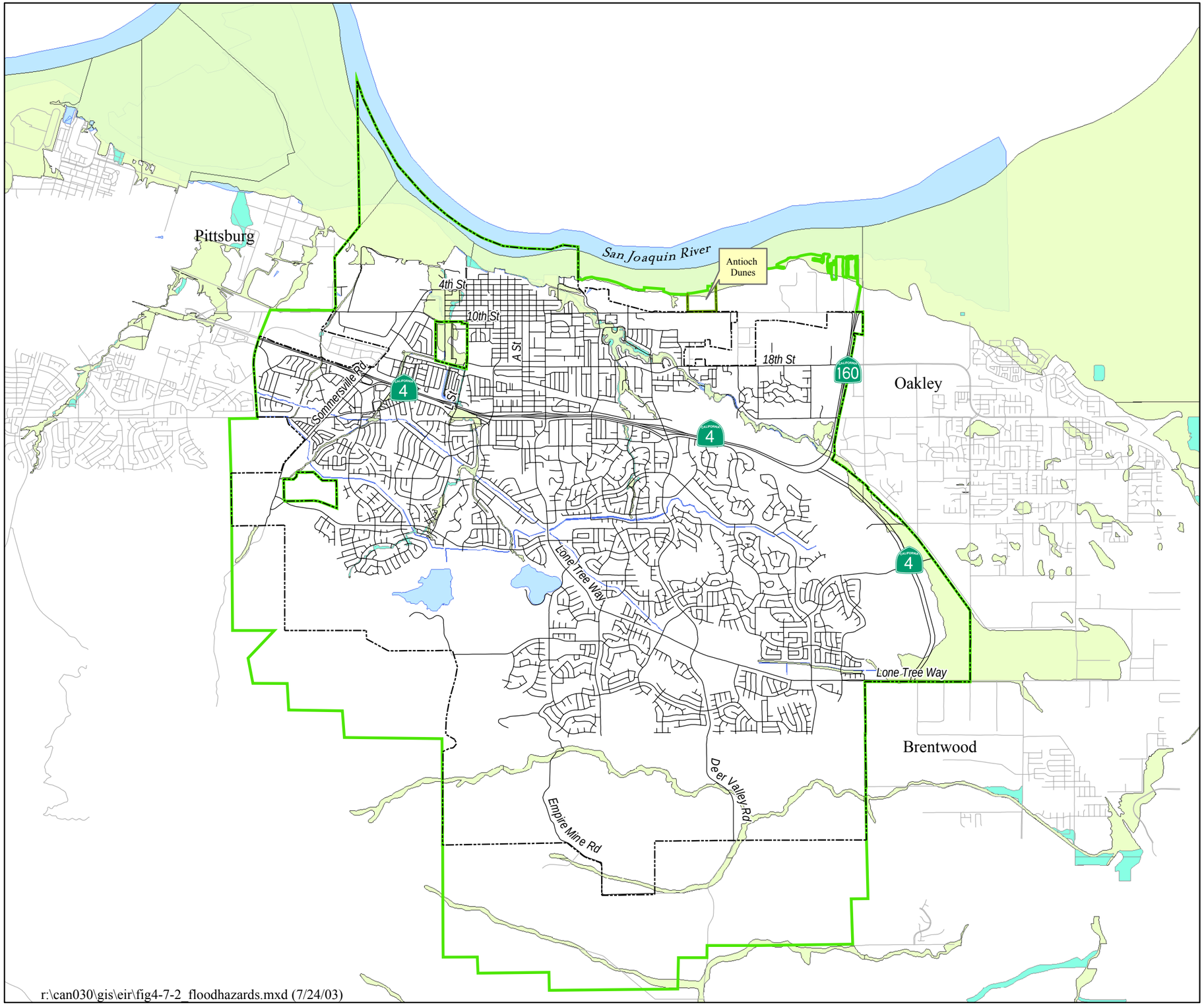
FEET

SOURCE: CITY OF ANTIOCH

LSA

FIGURE 4.7.1

City of Antioch
General Plan Update EIR
Waterways



r:\can030\gis\eir\fig4-7-2_floodhazards.mxd (7/24/03)

FLOOD HAZARDS

ZONE A - An area inundated by 1% annual chance flooding.

Zone X500 - An area inundated by 0.2% annual chance flooding.

JURDICTION AND INFRASTRUCTURE

WATER WAYS

CITY BOUNDARY

PLANNING AREA

ANTIOCH DUNES

N

0 5000

FEET

SOURCE: FEMA Q3
FLOOD DATA, MAY 1996

LSA

FIGURE 4.7.2

City of Antioch
General Plan Update EIR

Flood Hazards

Agency (FEMA) to determine eligibility areas for inclusion in the Federal flood insurance program. Portions of the City are located within the 100-year and 500-year flood hazard zones as mapped hazard zones as mapped by FEMA,[1] and are defined by FEMA as "flood prone." Except for small areas located within the 100- and 500-year flood hazard zones, the majority of Antioch is defined by FEMA as being subject to minimal flooding, as shown on Figure 4.7.2.

Areas subject to flooding are mainly found adjacent to the San Joaquin River and tributary creeks. Figure 4.7.2 shows the areas within the Antioch that are subject to flooding hazards. Within the City of Antioch Planning Area, a 100-year flood hazard zone runs adjacent to the San Joaquin River. In the west of the Planning Area, a 100-year flood hazard zone begins at the San Joaquin River and encompasses the area bounded by the Planning Area border to the west; the Atchison, Topeka, and Santa Fe Railroad to the south; and the area to the east of the mouth of West Antioch Creek. A 100-year flood hazard zone also is located adjacent to West Antioch Creek, and has its widest point at the Creek's mouth; encompassing an area that is bounded by Contra Costa County Fairgrounds on the south; Lone Tree Way on the west; and M Street on the east. In the vicinity of B Street, the 100-year flood hazard zone extends from the San Joaquin River south across the Atchison, Topeka, and Santa Fe Railroad, and then spans East Antioch Creek until the Creek reaches SR 4. This flood zone is widest, spanning a width of approximately 1,600 feet, just south of the railroad. Just north of Lake Alhambra, the flood hazard zone spans an area of similar width. In the southern portion of the Planning Area, flood hazard zones are intermittently located adjacent to East Antioch Creek on its west and main branch. A 100-year flood zone also is located adjacent to Markley Creek, Los Medanos Wasteway, and Sand Creek.

Localized Drainage Issues. Within the City of Antioch, flooding tends to occur in the West 10th Street/O Street area, impacting a Holiday Lodge and a multiple-family housing unit. This area, along with the County Fairgrounds, floods every year or two due to a substandard box culvert in the old State Highway, along with an undersized channel to the north and south of the culvert. Occasional flooding also occurs in the Lake Alhambra neighborhood, causing little, if any, property damage. Flooding at Lake Alhambra is typically due to heavy rains during high tides.[2] The Somersville Road/4th Street intersection also tends to flood.[3]

Dams. The Bureau of Reclamation Division of Dam Safety conducted a safety analysis of the Contra Loma Reservoir in 1983 and determined that "safe performance of the dam can be expected under all anticipated loading conditions, including the MCE (maximum credible earthquake) and PMF (probable maximum flood) events."[4] The overall safety classification of the dam is registered as satisfactory. As shown in Figure 4.7.3, in the unlikely event of dam failure, the estimated inundation

1 FEMA, 1987. Flood Insurance Rate Map, City of Antioch, California. September 4.

2 Brandt, Joseph G., 2001. City Engineer and Director, Public Works Department. Written correspondence with LSA Associates, Inc. April 10.

3 Brandt, Joseph G, City Engineer and Director, and Ron Bernal, Assistant Engineer, 2000. Public Works Department. Personal Communication with LSA Associates, Inc. at the Antioch General Plan meeting. November 7.

4 Parrettett, Neil F., 1983. Chief, Division of Dam Safety. Memo to Regional Director, LBR. September 6.

DAM FAILURE

Cross Section	Mile	Landmark	*Travel Time (min.)	+Travel Time (min.)	Maximum Discharge (ft.3/s)	Maximum Velocity (ft./sec.)	Maximum Elevation (ft.)	Stream-bed Elevation (ft.)	Maximum Depth (ft.)
1	0.0	Contra Loma Dam	12	2	177,300	17	149	130	19
2	1.36	Near Hwy 4	22	12	143,400	7	56	45	11
3	1.93	S-P Railroad	29	17	112,500	7	42	31	11
4	2.42	W. 10th St.	35	26	106,500	5	25	18	7
5	3.03	San Joaquin R.	47	32	82,000	5	13	2	11

DIKE FAILURE

Cross Section	Mile	Landmark	*Travel Time (min.)	+Travel Time (min.)	Maximum Discharge (ft.3/s)	Maximum Velocity (ft./sec.)	Maximum Elevation (ft.)	Stream-bed Elevation (ft.)	Maximum Depth (ft.)
1	0.0	Dike No. 2	15	2	28,800	11	192	183	9
2	1.14	Mokelumne Aqueduct	23	15	27,500	6	85	80	5
3	1.74	Near Hwy 4	31	24	26,400	4	48	44	4
4	2.35	S-P Railroad	45	35	22,500	4	35	31	4
5	2.82	W. 10th St.	56	47	21,300	3	21	18	3
6	3.41	San Joaquin R.	74	61	18,900	3	6	1	5

* Time to maximum depth

\+ Time when water starts rising

INUNDATION BOUNDARY FOR DAM FAILURE

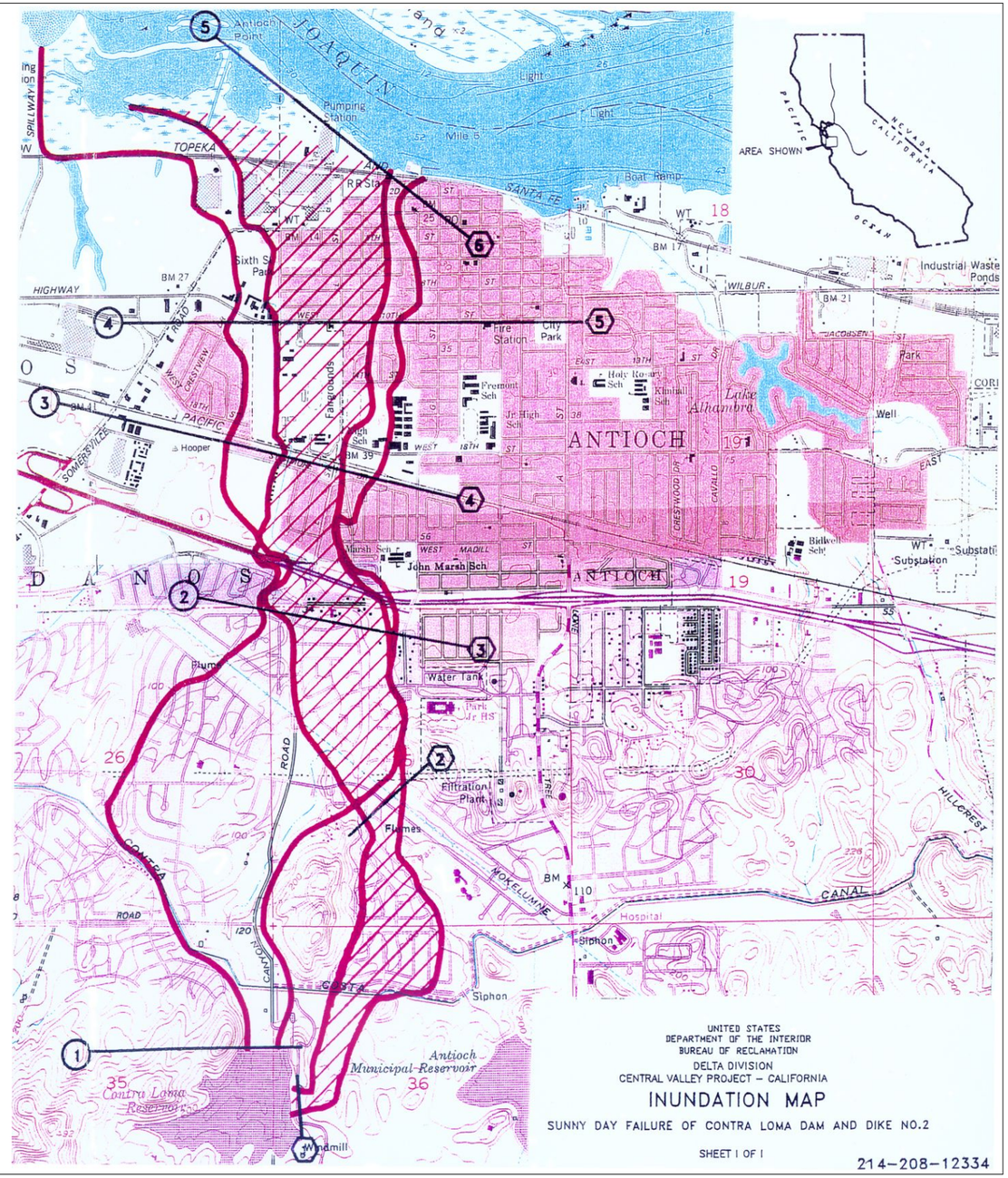
INUNDATION BOUNDARY FOR DIKE FAILURE

N

0 .5 1

MILES

Publication of this map is not intended to reflect in any way upon the intergrity of CONTRA LOMA DAM.



LSA

FIGURE 4.7.3

SOURCE: U.S. DEPT. OF THE INTERIOR, BUREAU OF RECLAMATION, DELTA DIVISION, 2001

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area would essentially follow the West Antioch Creek drainage from the dam to the San Joaquin River; it would extend to a half-mile-wide area south of SR 4, and a more than ½-mile wide area at West 10th Street.[1] The anticipated maximum depth would be 19 feet directly south of the dam to 7 feet at West 10th Street to 11 feet at the San Joaquin River.

Flood Prevention Measures. The City has implemented a number of flood prevention measures. The City has constructed or is planning to construct several detention basins. The most significant of these are Trembath, Oakley, and Lindsay basins on East Antioch Creek and the Sand Creek Basin on Sand Creek. In addition, significant portions of Markley Creek, West Antioch Creek, and East Antioch Creek have been improved to contain the 100-year flood within their channels. A flap gate protects the Lake Alhambra area where the East Antioch Creek enters the San Joaquin River. This gate is adequate in normal tides; however, during high tides, the river overflows its adjacent banks and contributes to flooding potential upstream.

Existing Policies and Regulations

Existing Federal Policies and Regulations

National Flood Insurance Program. The National Flood Insurance Program (NFIP) is a relatively recent Federal program. The Federal government has been actively involved in flood control since 1927, following major floods on the Mississippi River. Beginning with the Flood Control Act of 1936, Congress assigned the U.S. Army Corps of Engineers (USACE) the responsibility for flood control engineering works and later for floodplain information services. Flood control was provided through the construction of dams and reservoirs.

Despite these programs and rapidly rising Federal expenditures for flood control, flood losses continued to rise. In 1968, Congress passed the National Flood Insurance Act, which created the NFIP. The Flood Disaster Protection Act of 1973, which also amended the 1968 Act, required the purchase of flood insurance by property owners who were located in special flood hazard areas and were being assisted by Federal programs, or by federally supervised, regulated, or insured agencies or institutions.

National Flood Insurance Program Reform Act of 1994. In 1994, the National Flood Insurance Program Reform Act went through its first major revision since its inception. Included in this revision were provisions that if a lender were to escrow an account and if the structure were in the floodplain, then the lender *must* escrow for flood insurance. The revised legislation also included increased flood insurance limits and the elimination of the 1962 buy-out program. However, the legislation did initiate the Hazard Mitigation Fund as part of the flood insurance policy. This made it possible to cover the cost of elevating a continuously flood damaged home through the insurance policy. Also included in this legislation was the increase from a 5-day to a 30-day waiting period for a new policy to become effective. It also prohibits the waiver of flood insurance purchase requirements as a condition of receiving Federal disaster assistance. If the flood insurance policy

[1] U.S. Department of the Interior, Bureau of Reclamation, 1983. Inundation Map, Sunny Day Failure of Contra Loma Dam and Dike No. 2.

were not maintained, in the event of another disaster, no disaster assistance would be made available for that structure.

Executive Order 11988, Flood Plain Management. Executive Order 11988 requires USACE to provide leadership and to take action to:

- Avoid development in the existing 100-year floodplain, unless such development is the only practicable alternative;
- Reduce the hazards and risks associated with floods;
- Minimize the impact of floods on human health, safety, and welfare; and
- Restore and preserve the natural and beneficial values of the current floodplain.

To comply with Executive Order 11988, the policy of USACE is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with use of the floodplain, and avoid inducing development in an existing floodplains unless there is no practicable alternative.

Federal Water Project Recreation Act of 1965, as amended. The Federal Water Project Recreation Act reestablished recreation as a full project purpose, directing that full consideration be given to the outdoor recreation opportunities, if any, of any Federal navigation, flood control, reclamation, hydroelectric, or multipurpose water resource project. The Act also placed additional requirements on recreation as a project purpose, defining the basis for sharing financial responsibilities in joint development, enhancement, and management of recreation and fish and wildlife resources of Federal water projects.

Clean Water Act. The Federal Clean Water Act is the principal Federal law that addresses water quality. The primary objectives of the Clean Water Act are to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and to make all surface waters "fishable" and "swimmable." The implementation plan for these objectives includes the regulation of pollutant discharges to surface water, financial assistance for public wastewater treatment systems, technology development, and non-point source pollution prevention programs. The Clean Water Act also requires that states adopt water quality standards to protect public health or welfare and enhance the quality of water. The use and value of state waters for public water supplies, propagation of fish and wildlife, recreation, agriculture, industrial purposes, and navigation must also be considered by the states.

According to Section 404 of the Clean Water Act, USACE regulates discharges of dredged or fill material into "Waters of the United States," including wetlands. "Waters of the United States" is defined (33 CFR 328.3) as:

(1) All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce;

(2) All interstate waters, including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams) the use, degradation or destruction of which could affect interstate or foreign commerce;

(4) All impoundments of waters otherwise defined as Waters of the United States with the definition; and

(5) Tributaries of waters.

USACE typically regulates any body of water displaying an "ordinary high water mark" (OHWM). USACE jurisdiction over non-tidal waters of the United States extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if they are present (33 CFR 328.4). The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3). Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

Federal Water Pollution Control Act. The Federal Water Pollution Control Act requires discharges (from point and non-point sources) into navigable water to meet stringent NPDES permit standards. The U.S. Environmental Protection Agency (EPA) has published regulations establishing requirements for application of stormwater permits for specified categories of industries, municipalities, and certain construction activities. The regulations require that discharges of stormwater from construction activity of 5.0 acres or more must be regulated and covered by a NPDES permit. When a construction area exceeds 5.0 acres in size, the applicant must develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to control non-point pollution.

Existing State of California Policies and Regulations

Cobey-Alquist Flood Plain Management Act 8401. The Flood Plain Management Act states that a large portion of land resources of the State of California is subject to recurrent flooding. The public interest necessitates sound development of land use, as land is a limited, valuable, and irreplaceable resource, and the floodplains of the State are a land resource to be developed in a manner that, in conjunction with economically justified structural measures for flood control, will result in prevention of loss of life and of economic loss caused by excessive flooding. The primary responsibility for planning, adoption, and enforcement of land use regulations to accomplish floodplain management rests with local levels of government. It is State of California policy to encourage local levels of government to plan land use regulations to accomplish floodplain management and to provide State assistance and guidance.

Water Code Section 8100. The Water Code states that the boards of supervisors, in their respective counties, may appropriate and expend money from the general fund of a county for any of the following purposes in connection with streams or rivers in the county:

- The construction of works, improvements, levees, or check dams to prevent overflow and flooding;

- The protection and reforestation of watersheds;
- The conservation of the floodwaters;
- The making of all surveys, maps, and plans necessary to carry out any work, construction, or improvement authorized by this article; and
- The carrying out of any work, construction, or improvement authorized by this article outside the county if the rivers or streams affect flow in or through more than one county.

Water Quality. The California Water Code is the principal State law regulating water quality in California. The Health and Safety Code, Fish and Game Code, Harbors and Navigation Code, and the Food and Agriculture Code all contain water quality provisions that require compliance.

The California Water Code contains provisions regulating water and its use. This portion of the California Water Code, Division 7 (Porter-Cologne Act), establishes a program to protect water quality and beneficial uses of the State water resources and includes groundwater and surface water. The State Water Resources Control Board and the Regional Water Quality Control Boards (RWQCBs) are the principal State agencies responsible for control of water quality. They establish waste discharge requirements, water quality control planning and monitoring, enforcement of discharge permits, and ground and surface water quality objectives. They also prevent waste and unreasonable use of water, and adjudicate water rights.

The Health and Safety Code, Fish and Game Code, Harbors and Navigation Code, and the Food and Agriculture Code all contain provisions concerning water quality. The Health and Safety Code provides for protection of ground and surface waters from hazardous waste and other toxic substances. The Harbors and Navigation Code provides regulations designed to prevent the unauthorized discharge of waste from vessels into surface waters. The Fish and Game Code has provisions to prevent unauthorized diversions of any surface water and discharge of any substance that may be deleterious to fish, plant, animal, or bird life. The Food and Agriculture Code provides for the protection of groundwater that may be used for drinking water supplies.

The California Code of Regulations also contains administrative procedures for the State and RWQCBs in Title 23 and for water quality for domestic uses, wastewater reclamation, and hazardous waste management in Title 22.

The California Department of Fish and Game (CDFG), through provisions of the California Fish and Game Code (Sections 1601 through1603), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. The presence of a channel bed and banks, and at least an intermittent flow of water define streams (and rivers). CDFG regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by CDFG.

Surface water quality is the responsibility of the RWQCB, water supply and wastewater treatment agencies, and city and county governments. The principal means of enforcement by the RWQCB is through the development, adoption, and issuance of water discharge permits. The basin plan established by the San Francisco Bay RWQCB, for example, establishes water quality objectives that

are defined as the limits or levels of water quality constituents or characteristics for the reasonable protection of beneficial uses of water.

Water Conservation in Landscaping Act. To ensure adequate supplies are available for future uses, and to promote the conservation and efficient use of water, local agencies were required to adopt a water efficient landscape ordinance. When such an ordinance had not been adopted, a finding as to why (based on the climatic, geologic, or topographical conditions) such an ordinance is not necessary, must be adopted. In the absence of such an ordinance or findings, the policies and requirements contained in the "model" ordinance drafted by the State of California shall apply within the affected jurisdiction.

Water Recycling in Landscaping Act. This Act requires that a water producer capable of providing recycled water that meets all of the conditions of described in Section 13550 of the State Water Code, shall notify local agencies of the area(s) eligible to receive the recycled water, and the necessary infrastructure that the recycled water producer or retail water supplier will provide to support the delivery of recycled water. Within 180 days of receipt of such a notification from a recycled water producer, a local agency shall adopt and enforce a recycled water ordinance pursuant to this Act.

Sections 13550-13556 of the State Water Code. These sections of the State Water Code set state that local, regional, or State agencies shall not use water from any source of quality for nonpotable uses if suitable recycled water is available as provided in Section 13550 of the Water Code.

Urban Water Management Planning Act. Since 1984, the Urban Water Management Planning Act, has required "urban water suppliers" to develop written Urban Water Management Plans (UWMPs). While generally aimed at encouraging water suppliers to implement water conservation measures, it also created long-term planning obligations. In preparing UWMPs, urban water suppliers must describe the following:

- Existing and planned water supply and demand;
- Water conservation measures and a schedule for implementing and evaluating such measures; and
- Water shortage contingency measures.

The Urban Water Management Planning Act requires urban water suppliers to use a 20-year planning horizon and to update the data in the urban water plans every 5 years. UWMPs are exempt from CEQA, and thus do not generate any EIRs of use for future land use or water planning.

In preparing their 20-year management plans, water suppliers must directly address the subject of future population growth. The suppliers must also identify sources of supply to meet demand. The plan must "identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier." In identifying these future water sources, through, the suppliers need not conduct environmental review.

Senate Bill 221. Signed into law on October 8, 2001, Senate Bill 221 established a process whereby sufficient water supply must be identified and available for new development for any residential development of 500 homes or more, or, in the case wherein a water supplier has fewer than 5,000 service connections or the proposed development would increase the number of connections by at least 10 percent, unless there is proof of adequate water over at least the next 20 years, including long periods of drought.

Senate Bill 901. Signed into law on October 16, 1995, Senate Bill 901 required every urban water supplier to identify as part of its UWMP, the existing and planned sources of water available to the supplier over a prescribed five-year period. SB 901 required additional information to be included as part of an UWMP if groundwater is identified as a source of water available to the supplier. Provisions of SB 901 would require an urban water supplier to include in the plan a description of all water supply projects and programs that may be undertaken to meet total project water use. A city or county, at the time it submits the Notice of Preparation (NOP) for an EIR for a project, shall request each public water system serving a project to assess the projected water demand associated with said project and an assessment of whether the projected water demand associated with selected projects was included as part of the most recent UWMP. As part of this assessment, the public water system is required to indicate whether its total projected water supplies available during normal, single-dry, and multiple-dry water years will meet the project demand associated with the proposed project, in addition to the public water system's existing and planned uses. Compliance with the provisions of SB 901 was required if a project required the adoption of a specific plan; or the amendment to, or revision of the land use element of a general plan or specific plan, that would result in a net increase in the stated population density of building intensity. Pursuant, to Section 10913 of the State Water Code, a "project" was specifically defined as development meeting any of the following criteria:

- 500 or more dwelling units;
- Commercial center employing more than 1,000 persons or having more than 500,000 square feet;
- Office building employing more than 1,000 persons or having more than 250,000 square feet; or
- A hotel/motel with 500 or more rooms;
- An industrial, manufacturing, processing plant, or industrial park employing more than 1,000 persons or occupying more than 40 acres, or having more than 650,000 square feet of floor area;
- A mixed-use project that would demand an amount of water equivalent of equal to the amount of water required by a 500-dwelling unit project; or
- In areas where the public water system has fewer that 5,000 service connections, any development that would increase water demand by 10 percent or greater in the number of existing service connections, or in the case of a mixed-use development, an increase in water required by residential development representing a 10 percent or greater in the number of existing service connections.

After receiving such information, cities and counties may agree or disagree with the conclusions of the water purveyors, but cannot approve projects in the face of documented water shortfalls without first making certain findings.

Senate Bill 610. Signed into law October 9, 2001, Senate Bill 610 resulted in amendments to Section 21151.9 of the Public Resources Code. Additionally, Sections 10631, 10656, 10910, 10911, 10912, and 10915 of the Water Code were amended. Section 10913 of the Water Code was repealed, while portions of Section 10657 were added and/or repealed. Revising provisions established by Senate Bill 901, SB 610 requires that any city or county having determined that a project is subject to CEQA to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment. Such an assessment would include, among other information, the identification of existing water entitlements, water rights, or water service contracts relevant to the water supply identified for a proposed project, and the amount of water received pursuant to such entitlements, rights, or contracts. Senate Bill 610 requires the public water system, city, or county to submit plans for acquiring the required water supply for a proposed project if the water supply assessment concludes that water supplies are or will become insufficient. Any such water supply assessment and other information would be included in the environmental document prepared for the project pursuant to CEQA. Pursuant to Section 10912 of the State Water Code as amended (Section 10913 was repealed and added to Section 10912), changes to the definition of a "project" were not made, except for the changes pertaining to the definition of a mixed-used project.

4.7.2 Hydrology and Water Quality Thresholds of Significance

A potentially significant environmental impact related to hydrology and water quality would result if implementation of the proposed General Plan would:

- Violate any water quality standards or waste discharge standards set by the RWQCB or otherwise substantially degrade surface or groundwater quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the local groundwater table would be lowered;
- Substantially reduce the amount or quality of water otherwise available for public water supplies;
- Substantially alter an existing drainage such that substantial erosion, siltation, or flooding would occur in the City or property in adjacent municipalities;
- Create or substantially contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or create an increase in calculated peak flood discharges;
- Substantially alter a natural water course;
- Place housing or other structures within a 100-year flood hazard zone, as defined by FEMA; or
- Expose people or property to a significant risk of loss, injury, or death from flooding, including flooding by seiche inundation, dam or reservoir failure, tsunami, or mud flows.

4.7.3 Hydrology and Water Quality Impacts and Mitigation

Less than Significant Impacts

The following potential hydrology and water quality impacts were analyzed and found to be less than significant.

Impacts to Groundwater Supplies. The City of Antioch receives water from the San Joaquin River and the Sacramento-San Joaquin Delta. Although the City is located within the Tracy sub-basin in the Greater San Joaquin Basin, no municipal water is pumped from groundwater. Therefore, implementation of the Proposed General Plan would not contribute to the depletion of groundwater supplies or reduce the amount of water available for public water supplies. Furthermore, implementing proposed General Plan Policy 10.6.2-c would require the protection of groundwater recharge areas. Policy 10.6.2-a requires that adequate long-term water supplies are available prior to the approval of new development. To further assist in the conservation of water supplies, Policies 10.6.2-b and 10.6.2-f require new development to be designed with water conservation devices and utilize drought-resistant landscaping.

Impacts to Water Quality. Impacts associated with new development can include erosion and sedimentation associated with groundbreaking and clearing activities. Additionally, stormwater runoff from urban areas contains a variety of pollutants that may reduce the quality of groundwater resources when introduced into groundwater aquifers. To mitigate for the potential violation of water quality or waste discharge standards set by the RWQCB and the degradation of surface or groundwater quality, the proposed General Plan contains Policies 8.7.2-e and 8.7.2-f that would require new development to provide erosion and sedimentation control measures and Best Management Practices (BMPs) when designing new drainage systems. Additionally, implementation of Policy 10.6.2-b would protect groundwater recharge areas. Policies 10.6.2-d through 10.6.2-f would require that proposals are opposed that could degrade water quality in the Delta; stormwater pollution is reduced, and BMPs are implemented to minimize erosion and sedimentation. Implementation of these proposed policies will reduce impacts to water quality to less than significant.

Risk of Seiche, Tsunami or Mudflows. The City of Antioch is located over 50 miles from the Pacific Coast and is surrounded by moderate hillsides to the south. Due to this geographic location, implementation of the proposed General Plan would not expose people or property to flooding associated with seiches or tsunamis. Additionally, the hillside topography surrounding the City to the south is generally stable and is not prone to mudflows.

As stated in the proposed General Plan Policy 3.5.9.2-a, all future development would be subject to project specific environmental review in accordance with the local, State and Federal environmental analysis requirements. Environmental review required for new development would address the potential impacts that could result from mudflow hazards within the City of Antioch. Potential impacts and applicable mitigation measures would be identified on a project-specific basis. Implementation of policy 3.5.9.2-a will reduce potential impacts to a less than significant level.

Risk of Dam Failure. The City of Antioch is located below the Contra Loma Reservoir. The Bureau of Reclamation Division of Dam Safety determined that "safe performance of the dam can be expected under all anticipated loading conditions, including the maximum credible earthquake and

probable maximum flood events."[1] The overall safety classification of the dam is registered as satisfactory. To mitigate the potential flooding hazard related to dam failure, the proposed General Plan provides Policy 11.8.2-f that requires regular review and clarification of emergency evacuation plans in the event of dam failure. Implementation of policy 11.8.2-f will reduce potential impacts to a less than significant level.

Proposed General Plan Policies. The proposed General Plan includes the following policies to mitigate groundwater and water quality impacts and risk of seiche, tsunami or mudflows. Implementation of the following policies will reduce potential impacts to a less than significant level.

Policy 3.5.9.2. Entitlement Process and Capital Improvement Program Policy.

a. Ensure that discretionary development projects comply with the City's performance standards, by approving such projects only after environmental review has been completed and one or more of the following findings are made.
    - The City's adopted performance standards will be maintained following project occupancy; or
    - Project-specific mitigation measures or conditions of approval have been incorporated into the project.

Policy 3.7.2. Regional Cooperation Policies.

a. Maintain ongoing communications with agencies whose activities affect and are affected by the activities of the City of Antioch (e.g., Cities of Brentwood, Oakley and Pittsburg; Contra Costa County; Antioch Unified School District; Contra Costa County Fire Protection District; Delta Diablo Sanitation District). The primary objective of this communication will be to:
    - Identify opportunities for joint programs to further common interests in a cost efficient manner;
    - Assist outside agencies and the City of Antioch to understand each other's interests, needs, and concerns; and
    - Resolve differences in these interests, needs, and concerns between Antioch and other agencies in a mutually beneficial manner.
b. Continue to refer major planning and land use proposals to all affected jurisdictions for review, comment, and recommendation.

Policy 8.7.2. Storm Drainage and Flood Control Policies.

a. Continue working with the Contra Costa County Flood Control District to ensure that runoff from new development is adequately handled.
b. Require adequate infrastructure to be in place and operational prior to occupancy of new development, such that:

[1] Bureau of Reclamation, Dam Safety Division, 1983. Safety Analysis of the Contra Loma Reservoir.

- New development will not negatively impact the performance of storm drain facilities serving existing developed areas and
- The performance standards set forth in the Growth Management Element will continue to be met.

c. Design flood control within existing creek areas to maximize protection of existing natural settings and habitat.

d. Provide retention basins in recreation areas where feasible to reduce increases in the amount of runoff resulting from new development.

e. Require new developments to provide erosion and sedimentation control measures to maintain the capacity of area storm drains and protect water quality.

f. Require implementation of BMPs in the design of drainage systems to reduce discharge of non-point source pollutants originating in streets, parking lots, paved industrial work areas, and open spaces involved with pesticide applications.

Policy 10.3.2. Open Space Policies.

a. Where significant natural features are present (e.g., ridgelines, natural creeks), require new development to incorporate natural open space areas into project design. Require dedication to a public agency or dedication of a conservation easement, preparation of maintenance plans, and provision of appropriate maintenance in perpetuity of such open space areas.

b. Encourage public access to creek corridors through the establishment of trails adjacent to riparian resources.

Policy 10.6.2. Water Resources Policies.

a. As part of implementing the City's residential growth management program development review process for non-residential development, ensure that adequate long-term water supplies are available to serve the development being granted new allocations, including consideration of peak drought and peak fire fighting needs.

b. Require new development to be equipped with drought-tolerant landscaping and water conservation devices. Where feasible, require the installation of dual water systems, using treated wastewater for irrigation.

c. Protect, where possible, groundwater recharge areas, including protection of stream sides from urban encroachment.

d. Oppose proposals with the potential to increase the salinity of the Delta and/or endanger the City's rights to divert water from the San Joaquin River.

e. Participate in the Contra Costa Clean Water program to reduce stormwater pollution and protect the water quality of the City's waterways.

f. Require the implementation of BMPs to minimize erosion and sedimentation resulting from new development.

Policy 11.8.2. Disaster Response Policies.

a. Maintain and update the City's Emergency Response Plan, as required by State law.

b. Regularly review and clarify emergency evacuation plans for dam failure, fire, and hazardous materials releases.

Potentially Significant Impacts

Increased Stormwater Runoff

Impact 4.7.1. *Future development under the proposed General Plan would likely result in a net increase in impervious surfaces (i.e., roads, parking lots, buildings). An increase in impervious surface reduces the amount of rainfall that can infiltrate into the subsurface. Increases in runoff can amplify drainage volumes and velocities causing storm drainage facilities that are at or near capacity to fail during peak events, causing localized ponding and flooding. Therefore, the implementation of development in accordance with the proposed General Plan may result in significant impacts related to existing drainage facilities.*

Build out within the City of Antioch will result in an increase in residential and non-residential structures and associated facilities (e.g., roads), increasing the amount of area that would be covered in impermeable surfaces, thereby limiting the amount of ground infiltration during storm events. The passage of storm flows over impermeable surfaces would increase the volume and rate of storm runoff. Roads and buildings generate greater amounts of runoff than typical forested land. Fixed drainage channels in urban areas may be unable to contain the runoff generated by relatively small, but intense rainfall events. In addition, with the substantial increase in stormwater runoff caused by new land uses, there would be the potential for an increase in pollutants conveyed to the groundwater basins and surface waters in creeks and rivers. These effects are considered to be significant.

Proposed General Plan Policies. The proposed General Plan includes the following policies to mitigate the effects of prospective growth on existing drainage facilities. Policy 8.7.2 listed previously mitigates the impacts to storm drainage and flood control facilities to a level below significance. Additional proposed policies to mitigate these impacts are as follows:

Policy 11.4.2. Flood Protection Policies.

a. Prohibit all development within the 100-year floodplain, unless mitigation measures consistent with the National Flood Insurance Program are provided.

b. Minimize encroachment of development adjacent to the floodways in order to convey flood flows without property damage and risk to public safety. Require such development to be capable of withstanding flooding and to minimize the use of fill.

c. Prohibit alteration of floodways and channelization of natural creeks if alternative methods of flood control are technically and financially feasible. The intent of this policy is to balance the need for protection devices with land use solutions, recreation needs, and habitat preservation.

d. Require new development to prepare drainage studies to assess storm runoff impacts on the local and regional storm drain and flood control system, along with implementation of appropriate

detention and drainage facilities to ensure that the community's storm drainage system capacity will be maintained and peak flow limitations will not be exceeded.

e. Where construction of a retention basin is needed to support new development, require the development to provide for the perpetual funding and ongoing maintenance of the basin.

f. Eliminate hazards caused by local flooding through improvements to the area's storm drain system or creek corridors.

Effectiveness of Proposed General Plan Policies. Implementation of these proposed General Plan policies would ensure that future development proposed under the proposed General Plan would not substantially alter existing drainages or contribute to runoff water causing substantial erosion, flooding, exceeding the capacity of existing or planned stormwater drainage systems within the City or adjacent municipalities. Implementation of these policies will reduce potential impacts to less than significant.

Mitigation Measures. No additional mitigation is required.

Flood Hazards

Impact 4.7.2. *Implementation of the proposed General Plan would contribute to an increase in development within the City. Development has the potential to increase the risk of flooding, which leads to damage to structures and risk to the health and safety of people. This is a potentially significant impact of the implementation of the proposed General Plan.*

The proposed General Plan requires new development to incorporate natural features (e.g., creeks) into project design. As described in the Land Use Element of the proposed General Plan, the City proposes to provide economic incentives to encourage urban infill development along First Street and at other locations close to, and visible from, the river as a means of re-establishing the Downtown area's relationship to the river (see *Policies 4.4.6.1-i* and *j).* Development in these areas could expose structures and people to increased flooding hazards. Extended periods of substantial precipitation could potentially cause adjacent water levels to rise, inundating surrounding structures and severing public and vehicular points of access. Elevated water levels coupled with overloaded storm drain systems could present an increased flooding hazard. Portions of the City are located within the 100-year and 500-year flood hazard zones as mapped by FEMA, and are defined by FEMA as "flood prone." Except for small areas located within the 100- and 500-year flood hazard zones, the majority of Antioch is defined by FEMA as being subject to minimal or no flooding.

Areas subject to flooding are mainly found adjacent to the San Joaquin River and tributary creeks. A 100-year flood hazard zone runs adjacent to the San Joaquin River in the City of Antioch. In the western portion of the Planning Area, a 100-year flood hazard zone begins at the San Joaquin River and encompasses the area bounded by the Planning Area border to the west; the Burlington Northern Santa Fe (BNSF) railroad to the south; and the area to the east of the mouth of West Antioch Creek. A 100-year flood hazard zone is located adjacent to West Antioch Creek, and has its widest point at the Creek's mouth. In the vicinity of B Street, the 100-year flood hazard zone extends from the San

Joaquin River south across the BNSF railroad, and then spans East Antioch Creek until the Creek reaches SR 4. This flood zone is widest, spanning a width of approximately 1,600 feet, just south of the railroad. Just north of Lake Alhambra, the flood hazard zone spans an area of similar width. In the southern portion of the Planning Area, flood hazard zones are intermittently located adjacent to East Antioch Creek on its west and main branch. A 100-year flood zone also is located adjacent to Markley Creek, Los Medanos Wasteway, and Sand Creek. Existing structures as well as future development within these identified flood hazards zones would be subjected to inundation and water damage potentially compromising structural integrity during a 100-year flood event.

Proposed General Plan Policies. The proposed General Plan includes policies to mitigate the effects of prospective growth from flooding hazards. To mitigate potential impacts associated with a 100-year flood event within the City, the proposed General Plan provides Policy 11.4.2-b, previously listed, that would minimize development adjacent to floodways in order to convey floodwater without property damage and risk to public safety. In order to reduce human risk associated with flood hazards, Policy 11.8.2-a, previously described, requires the maintenance and periodic update of the City's Emergency Response Plan. To further minimize potential flooding hazards, Policies 11.4.2-a and b, listed previously, prohibit all development within a 100-year floodplain unless flood mitigation measures consistent with the NFIP are implemented to ensure development minimizes the use of fill and is capable of withstanding flooding. Additionally, the following policy would mitigate the effects of future growth and development in the City on and from flood hazards.

Policy 3.5.6.2. Flood Control Performance Standard.

Provide sufficient facilities development to protect structures for human occupancy and roadways identified as evacuation routes from inundation during the 100-year flood event.

Effectiveness of Proposed General Plan Policies. Implementation of these proposed General Plan policies would ensure that future development under the proposed General Plan would not have a significant impact on flooding hazards and would reduce the impacts and minimize the risks associated with 100-year flood hazards to a less than significant level.

Mitigation Measures. No additional mitigation is required.

Alteration of the San Joaquin River

Impact 4.7.3. *Revitalization and development of Rodgers Point, including a proposed marina and a new access road, may substantially alter a portion of the San Joaquin River. This is a potentially significant impact due to implementation of the proposed General Plan.*

Development under the proposed General Plan involves construction on or next to the San Joaquin River (e.g., Rodgers Point recreational area, the continuous waterfront park located in the Rivertown/Urban Waterfront Focus Area), that could substantially alter a portion of the river. Examples of proposed development within Rodgers Point include a double ramp boat launch, a new marina with berths, fishing piers, and restaurant/retail/recreational equipment rental facilities.

Additionally, a new access road from Downtown to Rodgers Point would need to be constructed. This new road would include a railroad undercrossing to provide, at a minimum, a low flow crossing. Since the undercrossing would be below the river waterline in an area with unconsolidated peat soils having little load-bearing capacity, the undercrossing would require special construction features and a pumping system to keep the roadway dry. While the proposed General Plan identifies proposed land uses within Rodgers Point and the Rivertown/Urban Waterfront Focus Area, it does not specifically address potential environmental impacts that could result from construction of such uses. The following mitigation measure is proposed to reduce potential impacts to a less than significant level.

Mitigation Measure. The City shall modify the proposed General Plan to incorporate a policy with the following provision: Prior to or concurrent with approvals of any development applications, at Rodgers Point a Master Plan for the area shall be prepared and approved by the City. The Master Plan shall provide detailed guidance for environmental review, project-related land use, provision and financing of required public services and facilities, open space preservation, community design, recreational amenities, and community improvements.

4.7.4 Hydrology and Water Quality Level of Significance after Mitigation

Implementation of the policies in the proposed General Plan and mitigation measures will reduce the flood hazard impacts by keeping development out of flood-prone areas and ensuring that drainage facilities are kept adequate. In addition, adherence to the National Flood Insurance Program Reform Act of 1994, Federal Executive Order 11988, the Cobey-Alquist Flood Plain Management Act 8401, and Water Code Section 8100 will minimize the effects of flood hazards to a less than significant level.

4.8 LAND USE

The following section evaluates potential adverse impacts to land uses within the City of Antioch that could result from implementation of the Draft Antioch General Plan. Mitigation measures are recommended, as necessary.

4.8.1 Land Use Existing Setting

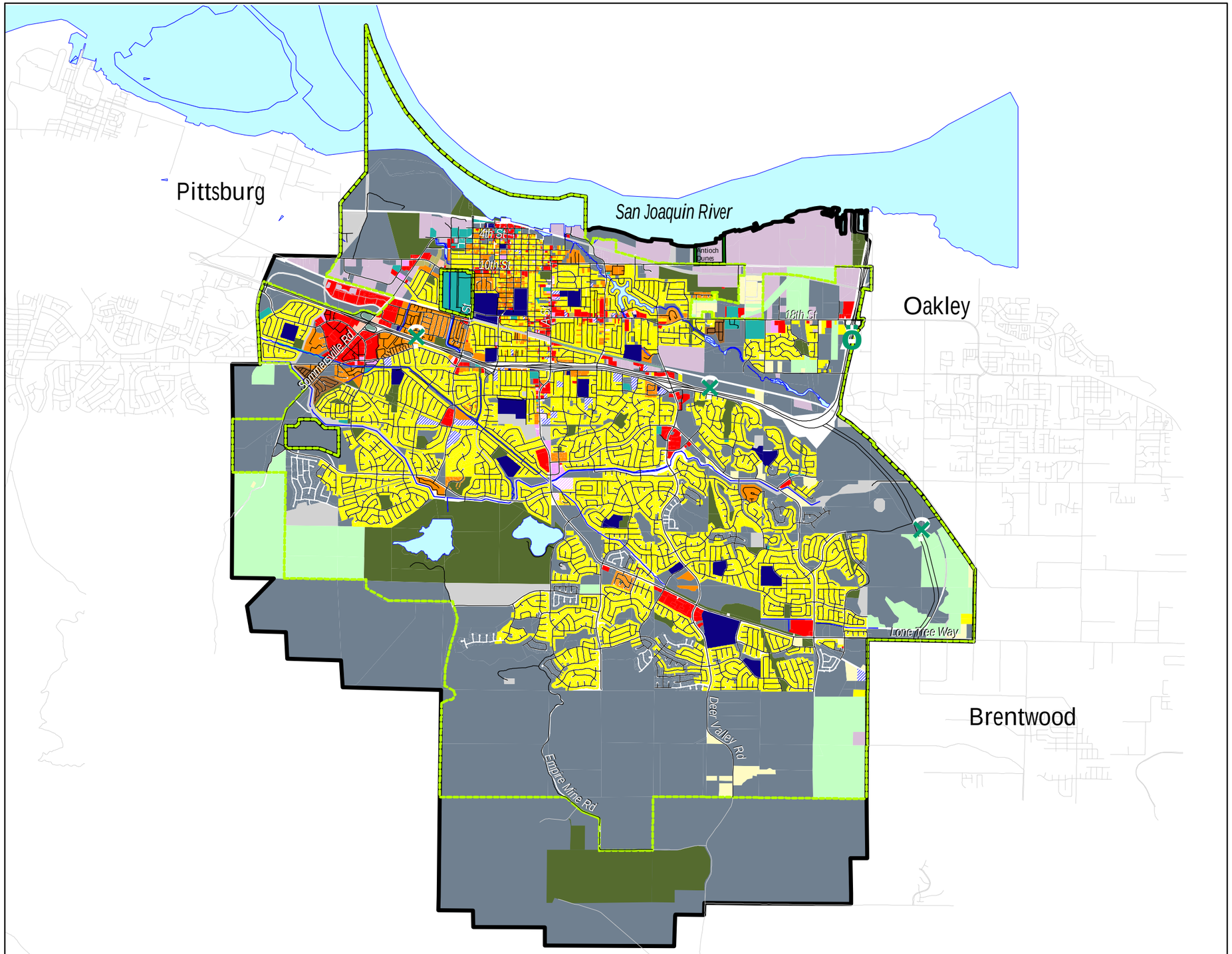
Despite substantial development in the past, Antioch has a great deal of open land that remains available for future development. Approximately 38 percent of the land within the City (6,383 acres) and nearly 46 percent of the land within the unincorporated portion of the General Plan study area (2,240 acres) are vacant (Figure 4.8.1 through 4.8.3). Additional land (928 acres in the City and 381 acres in unincorporated areas) is in agricultural use, and, may be available for future development, depending upon its land use designation. Overall, open space uses, including agriculture, open water, recreational lands, and vacant lands account for approximately half of the land within the City, and over 60 percent of the unincorporated land within the General Plan Study Area. Major open space areas include Black Diamond Mines and Contra Loma regional parks, Antioch Dunes National Wildlife Refuge, and municipal parklands.

Within the developed portion of the City, single-family residential uses cover the largest area (3,871 acres, 23%). Industrial uses account for 831 acres (3.8% of the land within the study area), the majority of which (431 acres) is located within the unincorporated northeastern portion of the Study Area. Currently, industrial uses are concentrated in the northern portion of the Study Area to the west and east of Rivertown. Existing commercial uses are limited in extent, encompassing 456 acres (2.7% of the land within the City); only 3.8 acres of commercial use are located within unincorporated portions of the Study Area. Commercial use is concentrated within Rivertown, and along major roadway corridors, such as Somersville Road, Hillcrest Avenue, and "A" Street/Lone Tree Avenue.

Existing Policies and Regulations

Contra Costa County 65/35 Land Preservation Plan (Urban Limit Line). In 1990, the voters of Contra Costa County approved Measure C-1990, which states that urban development within the County is to be limited to no more than 35 percent of the land within Contra Costa County. Thus, at least 65 percent of all land in the County is to be preserved for agriculture, open space, wetlands, parks and other non-urban uses. To ensure the enforcement of the "65/35" standard, the County has established an Urban Limit Line (ULL), which is incorporated into the County's General Plan Open Space and Conservation Element, providing a clear distinction between non-urban and urban use areas. The criteria set by the County for determining lands that should be located outside the ULL include:

- Prime agricultural lands (U.S. Soil Conservation Service Class I and Class II);
- Open space, parks and other recreation areas;
- Lands with slopes in excess of 25 percent;
- Wetland areas; and
- Other areas not appropriate for urban growth because of physical unsuitability for development.



EXISTING LAND USE

- RURAL RESIDENTIAL
- SINGLE FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- MOBILE HOMES
- GENERAL COMMERCIAL
- OFFICE COMMERCIAL
- HOTEL
- MEDICAL
- CHURCHES
- PUBLIC FACILITIES
- SCHOOLS
- INDUSTRIAL
- AUTO DEALERS
- UTILITIES
- TRANSPORTATION
- RECREATION
- AGRICULTURE
- VACANT

JURISDICTIONAL AND INFRASTRUCTURE

- CITY BOUNDARY
- ANTIOCH DUNES
- PLANNING AREA
- WATER

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SOURCE: AERIAL PHOTOGRAPHY 2000

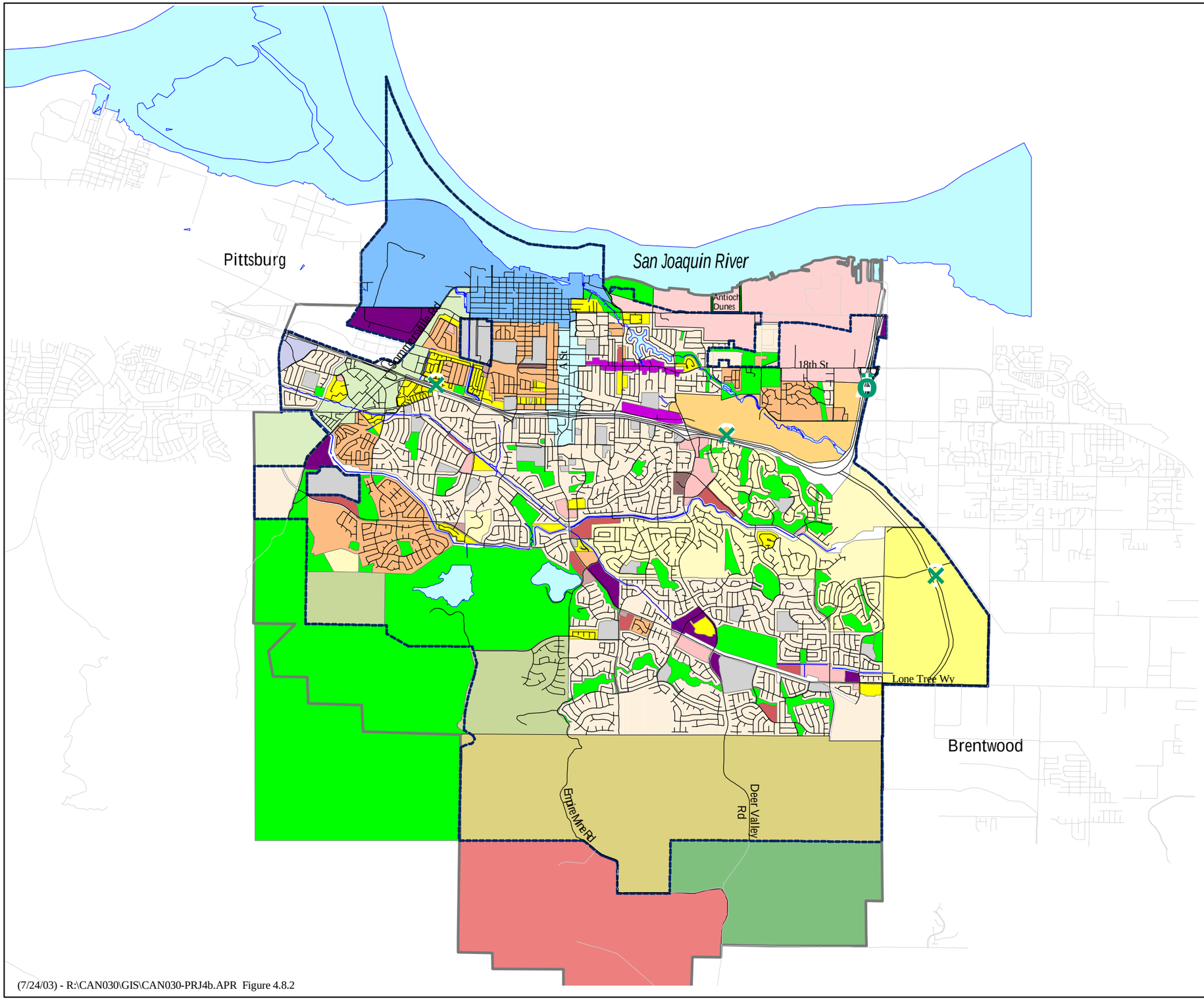
LSA

FIGURE 4.8.1

City of Antioch
General Plan Update EIR

Existing Land Use 2000

r:\can030\gis\can030-prj4b.apr Figure 4.8.1 (7/24/03)



GENERAL PLAN LAND USE DESIGNATIONS

- ESTATE RESIDENTIAL (1 du/ac)
- LOW DENSITY RESIDENTIAL (4 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (6 du/ac)
- MEDIUM DENSITY RESIDENTIAL (10 du/ac)
- HIGHT DENSITY RESIDENTIAL (up to 20 du/ac)
- CONVENIENCE COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- SERVICE COMMERCIAL
- MIXED USE
- OFFICE
- BUSINESS PARK
- HEAVY INDUSTRIAL
- PUBLIC/INSTITUTIONAL
- OPEN SPACE

FOCUS AREAS

- A STREET INTERCHANGE
- EAST LONE TREE SPECIFIC PLAN
- EASTERN EMPLOYMENT AREAS
- GINOCHIO
- RIVERTOWN/URBAN WATERFRONT
- RODDY RANCH
- SR 4 INDUSTRIAL FRONTAGE
- SAND CREEK SPECIFIC PLAN
- SOMERSVILLE ROAD CORRIDOR
- WESTERN GATEWAY

JURISDICTIONAL AND INFRASTRUCTURE

- CITY BOUNDARY
- ANTIOCH DUNES
- PLANNING AREA
- WATER

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SOURCE: CITY OF ANTIOCH (5/21/01)

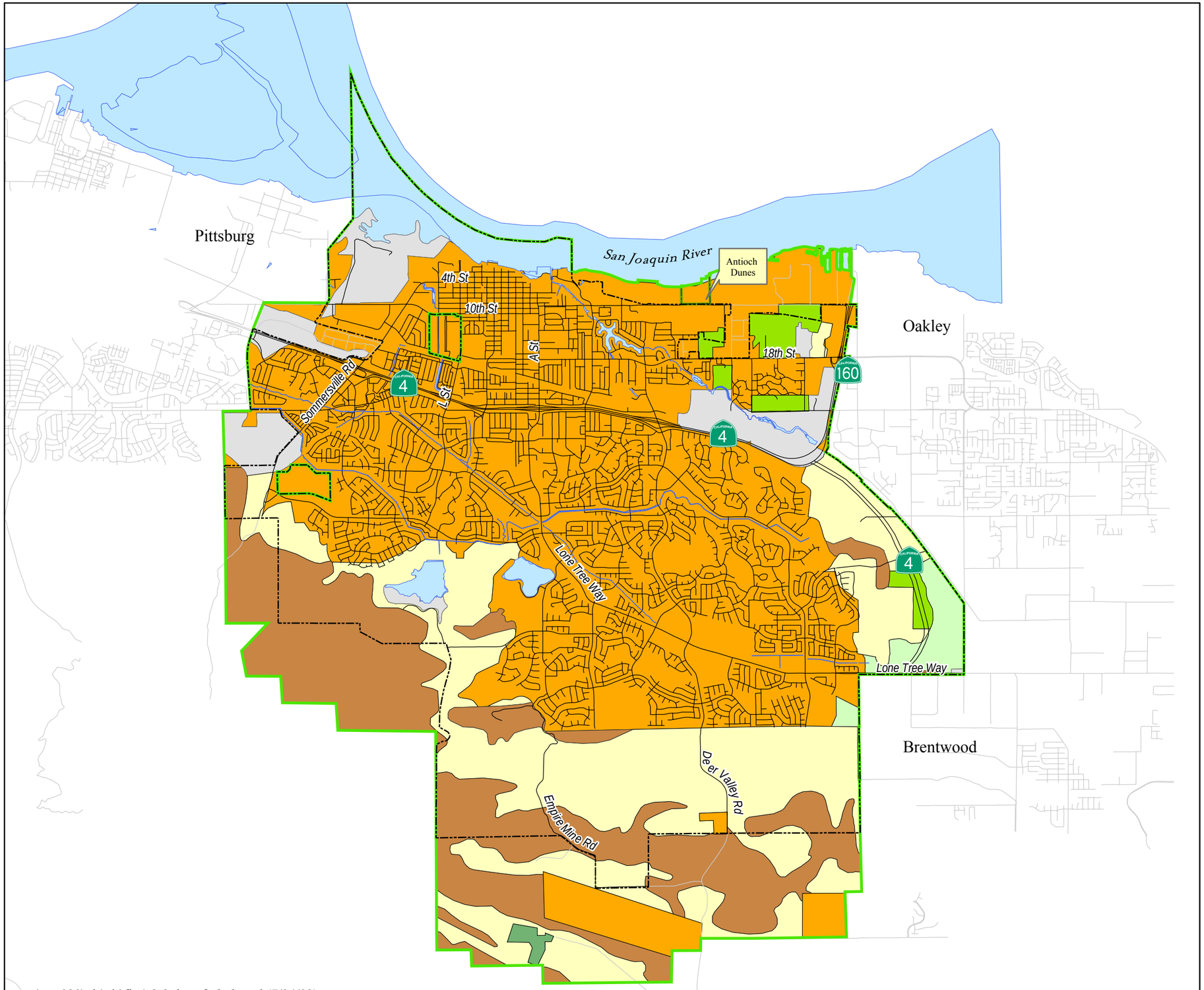
LSA

FIGURE 4.8.2

City of Antioch
General Plan Update EIR

Proposed General Plan Land Use

(7/24/03) - R:\CAN030\GIS\CAN030-PRJ4b.APR Figure 4.8.2



IMPORTANT FARMLANDS

- URBAN AND BUILT-UP LAND
- GRAZING LAND
- FARMLAND OF LOCAL IMPORTANCE
- PRIME FARMLAND
- FARMLAND OF STATEWIDE IMPORTANCE
- UNIQUE FARMLAND
- OTHER LAND

JURISDICTION AND INFRASTRUCTURE

- CITY BOUNDARY
- PLANNING AREA
- WATER WAYS
- ANTIOCH DUNES

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SOURCE: FMMP 2000

LSA

FIGURE 4.8.3

City of Antioch
General Plan Update EIR

Important Farmland

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Measure C-1990 requires that there be no changes made to the ULL that would violate the 65/35 standard. The ULL can be changed by a 4/5 vote of the Board of Supervisors after holding a public hearing and making one or more of the following findings based on substantial evidence in the record:

- A natural or man-made disaster or public emergency has occurred that warrants the provision of housing and/or other community needs within land located outside the ULL.
- An objective study has determined that the ULL is preventing the County from providing its fair share of affordable or regional housing, as required by state law. The Board of Supervisors must find that a change to the ULL is necessary and the only feasible means to enable the County to meet these requirements.
- A majority of the cities is party to a preservation agreement, and the County have approved a change to the ULL affecting all or any portion of the land covered by the preservation agreement.
- A minor change to the ULL will more accurately reflect topographical characteristics or legal boundaries.
- A five-year periodic review of the ULL has determined that, based on the criteria for establishing the ULL, new information is available or circumstances have occurred, warranting a change to the ULL.
- An objective study has determined that a change to the ULL is necessary or desirable to further the economic viability of the East Contra Costa County Airport, and either (i) mitigate adverse aviation-related environmental or community impacts, or (ii) further the County's aviation-related needs.
- A change is required to conform to applicable to California or Federal law.

Although the direct land use effects of the ULL are limited to unincorporated areas of the County, the Contra Costa Local Agency Formation Commission (LAFCO) has consented to support the County's 65/35 Preservation Standard, ULL, and Growth Management Standards in the review of proposed city spheres of influence and annexations. Thus, LAFCO has stated that it would not approve annexation of lands outside of the ULL to a city. Measure C-1990 states that the County is to review the location of the ULL every five years. The provisions of Measure C-1990 will remain in effect until December 31, 2010.

In 2000, the County revised its ULL in the East County area. Within the Antioch area, the Urban Limit Line was moved to coincide with the southern boundary of the City, placing lands in the unincorporated area outside the ULL. This move shifted approximately 1,922 acres out of the ULL within the Antioch area. Thus, the Roddy Ranch and Ginochio Property Focus Areas are currently outside of the County's ULL.

Contra Costa County Measure C. In 1988, Contra Costa County voters approved Measure C, the "Contra Costa Transportation Implementation and Growth Management Program," which increased the sales tax within Contra Costa County by ½ cent, allocating the additional revenue to a list of specific transportation improvements. Measure C stipulated that 18 percent of the revenue be returned to cities and towns to implement local growth management programs, including adoption of Growth Management elements as part of municipal General Plans. Under Measure C, municipal

growth management elements are required to contain traffic level of service standards, as well as performance standards for parks, fire, police, sanitary sewer, water, and flood control facilities.

Under Measure C, the County and cities within the County were also required to adopt a Transportation Systems Management Program, and maintain a five-year Capital Improvements Program. Measure C also requires the County and cities within the County to address the balancing of local jobs and housing opportunities, and to participate in regional transportation planning efforts. Measure C is set to expire in 2009.

Antioch's Advisory Measure U. In November 1998, Measure U was approved by a large majority of Antioch voters (69%). Measure U was an advisory measure calling for the City to phase the rate of new development to:

> "Provide adequate schools, street improvements, and Highway 4 improvements for a sustained high quality of life, by making new growth pay its own way through maximizing fees, assessment districts, matching fund programs, and any other means effective to expedite the construction of needed infrastructure."

A series of community workshops was conducted during early 1999, leading to an interim ordinance, which was subsequently replaced by a permanent ordinance that is consistent with the provisions of the General Plan Element.

LAFCO. The broad mission of the Local Agency Formation Commission of Contra Costa County is to provide for an orderly pattern of growth that reconciles the varied needs of the County and cities within the County. LAFCO accomplishes this objective through its statutory responsibility to adopt spheres of influence for cities and special districts and its authority to review and approve or not approve proposed annexations to cities and special districts. One of the fundamental principles of LAFCO is to ensure the establishment of appropriate and logical city and special district boundaries, as well as appropriate and logical municipal government structure for the distribution of efficient and appropriate public services. LAFCO Land Use Objectives include:

- Discourage urban spraw1;
- Preservation of the physical and economic integrity of agricultural lands;
- Preservation of open space within urban development patterns;
- Orderly formation and development of agencies by shaping local agency boundaries;
- Minimize the number agencies providing services to a given area; and
- Utilization of Spheres of Influence to guide future development of agency boundaries.

Regional Growth Projections. The Association of Bay Area Governments functions as the Metropolitan Planning Organization (MPO) for the San Francisco Bay Area, including the counties of Sonoma, Napa, Solano, Marin, San Francisco, San Mateo, Santa Clara, Alameda, and Contra Costa. As the designated MPO, ABAG is mandated by the Federal government to research and draw up

plans for transportation, growth management, hazardous waste management, and air quality based on regional growth projections prepared by ABAG. These projections are set forth in ABAG's *Projections 2002: Forecasts for the San Francisco Bay Area to the Year 2025*. Projections 2002 provides population, household, labor force, income, and jobs forecasts for five-year increments through the Year 2025. An analysis of Antioch's existing jobs/housing ratio and ABAG jobs/housing projections through 2025 is presented in Table 4.8.A.

Table 4.8.A - ABAG Growth Projections

	1990	2000	2010	2020	2025
Antioch City and Sphere of Influence					
Population	63,062	91,293	102,900	115,800	118,800
Total Jobs	13,980	17,060	21,400	27,300	29,850
Employed Residents	30,130	43,811	51,700	59,800	62,500
(Total Jobs/Employed Residents)	0.46	0.39	0.41	0.46	0.48
Contra Costa County					
Population	803,732	1,013,200	1,074,500	1,179,500	1,209,900
Total Jobs	314,550	361,110	419,140	470,480	495,460
Employed Residents	409,351	518,700	573,800	647,500	677,500
(Total Jobs/Employed Residents)	0.77	0.70	0.73	0.73	0.73

ABAG projections are largely based on existing trends, and indicate that the Bay Area as a whole will continue to experience job growth in excess of housing growth, requiring even greater numbers of workers to commute long distances into the Bay Area from the Central Valley and other locations. Within the Bay Area, ABAG projects that jobs growth will continue to concentrate in existing employment centers, while residential growth will continue to concentrate in existing bedroom communities.

Important Farmlands. Important farmland maps are compiled by the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP), pursuant to the provisions of Section 65570 of the California Government Code. These maps utilize data from the USDA Natural Resource Conservation Service (NRCS) soil survey and current land use information using eight mapping categories and represent an inventory of agricultural resources within Riverside County. The maps depict currently urbanized lands and a qualitative sequence of agricultural designations. Maps and statistics are produced biannually using a process that integrates aerial photo interpretation, field mapping, a computerized mapping system, and public review.

Williamson Act Land Preserves. In 1965, The California Land Conservation Act, also known as the Williamson Act, was adopted. This voluntary program allows property owners to have their property assessed on the basis of its agricultural production rather than at the current market value. The property owner is thus relieved of having to pay higher property taxes, as long as the land remains in agricultural production. The purpose of the Act is to encourage property owners to continue to farm their land, and to prevent the premature conversion of farmland to urban uses.

Participation requires that the area consist of 100 contiguous acres of agricultural land under one or more ownerships.

Upon approval of an application by the City Council (or Board of Supervisors within unincorporated areas), the agricultural preserve is established, and the land within the preserve is restricted to agricultural and compatible uses for 10 years. Williamson Act contracts are automatically renewed annually for an additional one-year period, unless the property owner applies for non-renewal or early cancellation. The Williamson Act also contains limited provisions for cancellation of contracts.

Specific findings regarding the non-viability of the agricultural use must be made, and a substantial penalty for the cancellation is assessed.

4.8.2 Land Use Thresholds of Significance

The proposed General Plan would result in a significant land use impact if it would:

- Create adverse changes in the functional role and/or predominant pattern of uses within a geographical area;
- Result in an intensification of development density that negatively changes an area's character;
- Result in a substantial loss of open space; or
- Physically divide an established community.

4.8.3 Land Use Impacts and Mitigation Measures

This section outlines criteria of significance, evaluates potential land use impacts, and identifies mitigation measures to address these impacts, as necessary.

Less than Significant Impacts. The following land use impacts were analyzed, and found to be less than significant.

Physically Divide an Established Community

The physical arrangement of proposed land use designations within the City is proposed to be changed with implementation of the proposed General Plan. The proposed General Plan is designed to protect existing neighborhoods. The proposed General Plan will guide where and in what manner future development may occur. Because the proposed General Plan provides policies reflective of the unique combination of conditions within each area of the City, implementation of the proposed General Plan will not disrupt or divide the physical arrangement of any established neighborhood. No significant impacts related to this issue will occur.

Potentially Significant Impacts

Changes in the Pattern of Land Use

Impact 4.8.1. *Implementation of the proposed General Plan would alter the amount of land designated for various types of urban, rural, and open space uses. Changes in the pattern of land uses would result in the development of structures or facilities within areas that are currently undeveloped. Relative to adjacent land uses, this intensification of development may contribute to or create significant land use impacts.*

One of the primary purposes of land use planning is the generation of a land use plan that represents the City's vision of its future and determines how currently open lands will be developed or protected in open space in the future. Thus, implementation of the proposed Antioch General Plan would result in new development consistent with the provisions of the General Plan. Such "build out" of the General Plan will entail construction of new residential, commercial, employment-generating, institutional, public, recreational, and other uses; and will result in a loss of existing open space areas.

Development of the land uses in the proposed General Plan is dependent upon a number of variables, including site-specific constraints and market forces. Development at the maximum allowable intensity would occur in instances where a proposed project provides public amenities or benefits; however, due to site-specific constraints and project-specific market objectives, new development may also occur at an intensity less than maximum that might nominally be permitted. Potential land use compatibility impacts will be determined on a case-by-case basis as development occurs, and will be evaluated against policies that are set forth in the General Plan to eliminate such conflicts. The intent of the proposed General Plan policies is to provide guidance regarding compatibility, including eliminating reducing negative impacts on adjacent uses and the sensitive siting and design of uses. To ensure that land use compatibility issues are limited or reduced, development will be subject to the policies outlined in the proposed General Plan, other City standards, applicable provisions of State law (including CEQA), and Federal law.

The amount of developed land and the pattern of land use envisioned under the proposed General Plan is different than that which currently exists. An analysis of Year 2000 citywide land use revealed that approximately 38 percent of the land within the City (6,383 acres) and nearly 46 percent of the land within the unincorporated portion of the General Plan study area (2,240 acres) are vacant and that an additional 928 acres in the City and 381 acres in unincorporated areas are in agricultural use. Land identified as "vacant" during the 2000 existing land use analysis consisted of undeveloped parcels located within developed areas, undeveloped lands with various levels of development approvals (e.g., East Lone Tree Specific Plan, tentative tract maps), and other open space. Table 4.8.B identifies the land use designations proposed in the General Plan for vacant lands within the General Plan study area. Implementation of the proposed General Plan will result in an increase in the amount of residential, industrial, commercial, and other non-residential development within the present Antioch city limits and the unincorporated portions of its General Plan study area (see Table 4.8.C).

Generally, areas currently developed and planned for residential development will be retained for this use. New single family development will typically occur as infill development, and in large planned communities within General Plan Focus Areas. Within the "A" Street Focus Area, the General Plan proposes conversion of existing single family residential uses along "A" Street and the SR-4 freeway

to commercial and office development. Although there will be displacement of existing housing, the location of the existing residential development to be displaced along the freeway and a busy arterial roadway results in a number of existing impacts including noise, traffic [1], and air quality. Commercial and office uses will reduce land use compatibility problems along "A" Street and the SR-4 freeway west of "A" Street. The proposed General Plan will not increase densities of existing single family residential neighborhoods. Although the Housing Element addresses the potential for second dwelling units, such second units will not be permitted to exceed the maximum allowable densities set forth in the General Plan.

The proposed General Plan maintains the City's existing pattern of multi-family development. New multi-family uses permitted by the General Plan will occur within areas currently converting to multi-family use (e.g., Rivertown), as well as within large-scale planned communities (General Plan Focus Areas) and transit-oriented development areas. Within these areas, there is a potential for intermixing of dwelling unit types and densities, resulting in the possibility of significant land use compatibility impacts. The extent to which this might occur is dependent upon the design and density of actual development projects that would be proposed to the City following adoption of the updated General Plan.

Table 4.8.B – Anticipated General Plan Build Out within the Existing City of Antioch

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Residential				
Estate Residential	905	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	14,775	--	--	--
Medium Density Residential	6,490	4,330	--	--
High Density Residential		5,310	--	--
Subtotal	***26,270***	***9,640***		
Commercial				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
Subtotal	--	--	***4,168,330***	--
Industrial				
Business Park	--	--	--	3,503,210
Special				
Mixed Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
Subtotal	--	***325***	--	***9,796,510***
Focus Areas[1]				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	5,926,125
Ginochio Property	--	--	--	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100

[1] Existing residential uses along "A" Street have direct driveway access to the roadway, creating congestion problems along the street.

Table 4.8.B – Anticipated General Plan Build Out within the Existing City of Antioch

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Roddy Ranch	--	--	--	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek				
Option 1	4,537	433	1,240,000	2,600,000
Option 2	3,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	360	2,045,530	--
Western Gateway	--	340	560,350	--
Subtotal				
Sand Creek Option 1	***7,524***	***3,856***	***6,929,165***	***20,046,425***
Sand Creek Option 2	***6,524***	***3,856***	***6,929,165***	***20,046,425***
TOTAL				
Sand Creek Option 1	**33,794**	**13,821**	**11,097,495**	**29,842,935**
Sand Creek Option 2	**32,794**	**13,821**	**11,097,495**	**29,842,935**

Population	
Sand Creek Option 1	**131,260**
Sand Creek Option 2	**128,060**
Employed Population	
Sand Creek Option 1	**73,505**
Sand Creek Option 2	**71,715**
Total Jobs	**67,100**
Retail Jobs	**14,850**
Non-retail Jobs	**52,250**
Jobs/Population Ratio	
Sand Creek Option 1	**0.91**
Sand Creek Option 2	**0.94**

[1] Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

Table 4.8.C – Anticipated General Plan Build Out in the Unincorporated Areas

Land Uses	Single-Family (Dwelling Unit)	Multi-Family (Dwelling Unit)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Residential				
Estate Residential	15	--	--	--
Low Density Residential	--	--	--	--
Medium Low Density Residential	250	--	--	--
Medium Density Residential	30	--	--	--
High Density Residential	--	--	--	--
Subtotal	***295***	**--**	**--**	**--**
Commercial				
Convenience Commercial	--	--	--	--
Neighborhood Commercial	--	--	--	--
Service Commercial	--	--	--	--
Commercial Office	--	--	--	--
Subtotal	**--**	**--**	**--**	**--**
Industrial				
Business Park	--	--	--	--
Special				
Mixed Use	--	--	--	--

Table 4.8.C – Anticipated General Plan Build Out in the Unincorporated Areas

Land Uses	Single-Family (Dwelling Unit)	Multi-Family (Dwelling Unit)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Public Institutional	--	--	--	--
Open Space	--	--	--	--
Subtotal	**--**	**--**	**--**	**--**
Focus Areas[1]				
"A" Street Interchange	--	--	--	--
East Lone Tree Specific Plan	--	--	--	--
Eastern Employment Areas	--	--	--	7,137,875
Ginochio Property[2]	1,215	135	175,000	
Rivertown/Urban Waterfront	--	--	--	--
Roddy Ranch[2]	2,350	275	425,000	--
SR-4 Frontage	--	--	--	--
Sand Creek Specific Plan	--	--	--	--
Somersville Road Corridor	--	240	--	1,581,690
Western Gateway	--	--	--	--
Subtotal	***3,565***	***650***	***600,000***	***8,719,565***
TOTAL	**3,860**	**650**	**600,000**	***8,719,565***

Population	**15,525**
Employed Population	**8,695**
Total Jobs	**8,155**
Retail Jobs	**310**
Non-Retail Jobs	**7,845**
Jobs/Population Ratio	**0.94**

[1] Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

[2] Urban development is dependent upon future revisions to the Urban Limit Line (see Policy 4.3.2F).

Table 4.8.D – Anticipated General Plan Build Out in the General Plan Study Area

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Residential				
Estate Residential	1,830	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	15,025	--	--	--
Medium Density Residential	6,520	4,330	--	--
High Density Residential	--	5,310	--	--
Subtotal	***27,475***	***9,640***	**-**	**--**
Commercial				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
Subtotal	**--**	**--**	***4,168,330***	**--**
Industrial				
Business Park	--	--	--	3,503,210

Table 4.8.D – Anticipated General Plan Build Out in the General Plan Study Area

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
Special				
Mixed Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
Subtotal	--	***325***	--	***9,796,510***
Focus Areas[1]				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	13,064,000
Ginochio Property[2]	1,480	240	175,000	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch[2]	1,500	200	425,000	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek				
Option 1	4,537	433	1,240,000	2,600,000
Option 2	3,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	--	--	--
Western Gateway	--	340	--	560,350
Subtotal	***10,504***	***4,003***	***4,923,285***	***27,744650***
TOTAL	**37,979**	**13,968**	**9,091,615**	**37,541,160**

Population	
Sand Creek Option 1	**146,785**
Sand Creek Option 2	**143,585**
Employed Population	
Sand Creek Option 1	**82,200**
Sand Creek Option 2	**80,410**
Total Jobs	**75,255**
Retail Jobs	**15,160**
Non-Retail Jobs	**60,095**
Jobs/Population Ratio	
Sand Creek Option 1	**0.92**
Sand Creek Option 2	**0.94**

[1] Figures indicated represent the maximum permitted development intensity. The actual yield of future development is not guaranteed by the General Plan, but is dependent upon appropriate responses to General Plan policies. The ultimate development yield may be less than the maximums stated in this table.

[2] Urban development is dependent upon future revisions to the Urban Limit Line (see Policy 4.3.2F).

Table 4.8.E - Comparison of Existing Land Use and Future General Plan Build Out

	Existing City	Unincorporated	General Plan Study Area
Existing Land Use			
Single Family Residential Dwelling Units	27,329	199	27,528
Multi-Family Residential Dwelling Units	6,585	0	6,585
Commercial/Office			
Building Area (s.f.)	6,106,485	332,125	6,438,610
Employees	10,340	665	11,005

Table 4.8.E - Comparison of Existing Land Use and Future General Plan Build Out

	Existing City	Unincorporated	General Plan Study Area
Business Park/Industrial	10,860,950	7,081,935	17,879,885
Building Area (s.f.)	6,210	4,010	10,220
Employees			
General Plan Build Out			
Single Family Residential	36,119	3,860	39,979
Dwelling Units			
Multi-Family Residential	11,820	650	12,470
Dwelling Units			
Commercial/Office			
Building Area (s.f.)	11,097,495	600,000	11,697,495
Employees	18,790	1,200	19,990
Business Park/Industrial	29,842,935	8,719,565	38,562,500
Building Area (s.f.)	17,035	4,935	21,970
Employees			
Increase Resulting from General Plan Build Out			
Single Family Residential	8,465	3,661	12,451
Dwelling Units			
Multi-Family Residential	5,235	650	5,885
Dwelling Units			
Commercial/Office			
Building Area (s.f.)	4,991,010	267,875	5,258,885
Employees	8,450	535	8,985
Business Park/Industrial	18,981,985	1,637,630	20,619,615
Building Area (s.f.)	10,825	925	11,750
Employees			

The proposed General Plan also maintains the City's existing pattern of commercial development. With the exception of the East County Mall and commercial development along "A" Street, the General Plan does not call for intensification of existing commercial development. New commercial uses permitted by the General Plan will occur within areas currently devoted to commercial development (infill), as well as within large-scale planned communities (General Plan Focus Areas) and transit-oriented development areas. Within these areas, there is a potential for intermixing of residential and commercial development, resulting in the possibility of significant land use compatibility impacts. The extent to which this might occur is dependent upon the design and density of actual development projects that would be proposed to the City following adoption of the updated General Plan.

Generally, implementation of the proposed General Plan would maintain Antioch's existing pattern of industrial use. Heavy industrial uses along the San Joaquin River west of Rivertown would be

transitioned over time into lighter industrial uses that are more compatible with nearby commercial and residential uses than are the current heavy industrial uses.

The Antioch General Plan proposes that non-residential development be located adjacent to residential uses in several locations. These instances range from residential development adjacent to neighborhood shopping areas to industrial development proposed adjacent to existing and future residential neighborhoods in the northeastern portion of the General Plan study area.

Short-term land use incompatibility impacts will occur as the result of construction activities for new development permitted by the proposed General Plan. These impacts include noise, dust, and traffic from construction activities. Because they are short-term in nature and subject to a variety of regulations aimed at reducing their impacts, they are not considered to be significant.

The specific nature of potential land use incompatibilities is dependent upon the particular existing and proposed land uses at the transition between residential and non-residential and at the transition between lower and higher density residential development. Potential land use compatibility impacts can only be addressed on a case-by-case basis, and will thus be evaluated for individual projects as development occurs. The intent of the proposed General Plan's policies is to provide guidance regarding compatibility, including reducing the potentially negative impacts that may occur between adjacent uses and requiring the sensitive siting and design of new uses. To ensure that land use compatibility issues are limited or reduced, development will be subject to the policies outlined in the proposed General Plan, other City standards, applicable provisions of State law (including CEQA), and Federal law.

Proposed General Plan Policies. The proposed General Plan includes the following policies to ensure that impacts related to potential land use incompatibilities resulting from the development of non-residential uses adjacent to residential development and from areas where higher density residential uses abut lower density residential development.

4.3.2 Community Structure Policies

d. Concentrate large-scale industrial uses along the waterfront east of Rodgers Point and within areas designated for industrial use along existing rail lines. Limit employment-generating uses adjacent to residential areas and within mixed-use planned communities to business parks and office uses.

4.3.3 Employment Generating Land Use Policies

d. Ensure appropriate separation and buffering of manufacturing and industrial uses from residential land uses.

e. All manufacturing and industrial uses shall be adequately screened to reduce glare, noise, dust, and vibrations.

5.4.12 Transitions and Buffering Policies

a. Minimize the number and extent of locations where non-residential land use designations abut residential land use designations. Where such land use relationships cannot be avoided, strive to use roadways to separate the residential and non-residential uses[1].

b. Ensure that the design of new development proposed along a boundary between residential and non-residential uses provides sufficient protection and buffering for the residential use, while maintaining the development feasibility of the non-residential use. The burden to provide buffers and transitions to achieve compatibility should generally be on the second use to be developed. Where there is bare ground to start from, both uses should participate in providing buffers along the boundary between them.

c. Provide appropriate buffering to separate residential and non-residential uses, using one or more of the following techniques as appropriate.

   - Increase setbacks along roadways and common property lines between residential/non-residential uses.
   - Provide a heavily landscaped screen along the roadway or common property line separating residential and non-residential use.
   - Locate noise-generating activities such as parking areas; loading docks; and service, outdoor storage, and trash collection areas as far from residential uses as possible.
   - Where a multifamily residential use is located adjacent along a common property line with a non-residential use, locate the noise-generating activities of both uses (e.g., parking areas; loading docks; and service, outdoor storage, and trash collection areas) along the common property line.
   - Design the residential area with cul-de-sacs running perpendicular to and ending at the non-residential use, facilitating greater separation of residential and non-residential structures than would be possible if residential streets ran parallel to the boundary of the non-residential use.

d. Where a difference in residential density is indicated on the General Plan land use map, the size of parcels and character of development facing each other across a street or along a common property line should be similar, creating a transition between the densities in each area.

e. Where multifamily development is located adjacent to a single-family neighborhood, appropriate buffering is to be provided.

   - Increase setbacks for multifamily development along common property lines with single family development.
   - Provide a heavy landscaped screen along the property line of the multifamily use.
   - Locate noise-generating activities such as parking and trash collection areas as far from the single family neighborhood area as possible.

f. The transition from lower to higher residential density should occur within the higher density area.

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[1] It is recognized that residential and non-residential properties will sometimes abut along a common property line (such as between neighborhood shopping centers and adjacent neighborhoods).

g. Uninterrupted fences and walls are to be avoided, unless they are needed for a specific screening, safety, or sound attenuation purpose.

h. Where they are needed, fences or walls should relate to both the site being developed and surrounding developments, open spaces, streets, and pedestrian ways.

i. Fencing and walls should respect existing view corridors to the greatest extent possible.

j. Fencing and walls should incorporate landscape elements or changes in materials, color, or texture in order to prevent graffiti, undue glare, heat, or reflecting, or aesthetic inconsistencies.

Mitigation Measures. No additional mitigation is required.

Development Outside Urban Limit Line

Impact 4.8.2. *The General Plan proposes urban development within areas that are currently outside of the County's urban limit line. Such development might not be consistent with the provisions of the Contra Costa County 65/35 Land Preservation Plan.*

The Roddy Ranch and the Ginochio Property Focus Areas are located in the southerly portion of the General Plan study area, within unincorporated territory that is outside of the existing ULL. As noted in Land Use Element Policy 4.3.2, the General Plan recognizes the ULL as a means of phasing urban and suburban development and maintaining a compact urban form. Until such time as the ULL is moved to include Roddy Ranch and the Ginochio Property or the ULL expires, development is to be limited to rural land uses consistent with the Contra Costa County General Plan and compatible open space/recreational uses.

Measure C-1990, which implemented the ULL, states that the County is to review the location of the ULL every five years. The ULL can be changed by a 4/5 vote of the Board of Supervisors after holding a public hearing and finding that certain criteria are met. The provisions of Measure C-1990 will remain in effect until December 31, 2010.

The proposed General Plan respects the ULL, and contains development policies for Roddy Ranch and the Ginochio Property that are to be implemented only after the expansion of the ULL includes these areas. Hence, impacts related to the implementation of the proposed General Plan regarding the provisions of the Contra Costa County 65/35 Land Preservation Plan would remain less than significant.

Proposed General Plan Policies. The proposed General Plan includes the following policy to ensure that impacts related to the provisions of the Contra Costa County 65/35 Land Preservation Plan remain less than significant.

4.3.2 Community Structure Policies

a. Recognize the ULL as a means of phasing urban and suburban development and maintaining a compact urban form. Prior to Measure C-1990's expiration in 2010:

- Maintain rural land uses (residential densities less than one dwelling unit per five acres (0.2 du/ac) and compatible open space/recreational uses which do not require urban levels of public services and facilities in areas outside of the ULL;
- Work with Contra Costa County to review the location of the ULL on a five-year basis; and
- As lands within the ULL become increasingly committed to urban, suburban, or permanent open space use and additional land is required for future residential and other development, work with Contra Costa County to review and expand the ULL prior to Measure C-1990's expiration in 2010.

Effectiveness of Proposed General Plan Policies. The implementation of the proposed General Plan policy will ensure that impacts resulting from the proposed General Plan related to the provisions of the Conta Costa County 65/35 Land Preservation Plan remain less than significant.

Mitigation Measures. No additional mitigation is required.

Consistency with ABAG Growth Projections

Impact 4.8.3. *The General Plan proposes employment-generating development in excess of that which is projected by ABAG.*

The projections for employment within the ABAG Projections 2002 document are theoretical. ABAG utilizes information on land that planning agencies have indicated is available for development. As local plans and policies change, the land supply estimates will also change. ABAG's employment projections show 45,405 fewer jobs than the proposed General Plan expects at build out in 2030. A comparison of the proposed General Plan build out compared to that forecasted by ABAG is provided in Table 4.8.F.

Table 4.8.F - Comparison of the Proposed General Plan and ABAG Projections

ABAG Projections 2025	Antioch General Plan Build Out (2030)	Difference	Percentage Difference
29,850 Jobs	75,255	45,405	152%
Jobs/Population Ratio 0.48	Jobs/Population Ratio 0.92		

One of the objectives of the proposed General Plan is to create a larger employment base within the City by the year 2030, and to provide a local balance between employment and housing opportunities. Due to the current jobs/housing imbalance within the Bay Area and eastern Contra Costa County in particular, home to work commutes are long, and traffic congestion along commute routes such as the SR-4 freeway is severe. The City of Antioch has placed importance on creating more local job opportunities within the City as a means of addressing congestion relief and air quality issues associated with long commutes. Because ABAG projections are based on the continuance of a lack of local employment opportunities, the proposed Antioch General Plan provides for considerably more local employment than is reflected in ABAG projections. Increasing the job opportunities within the City will allow people to live closer to their place of employment, and may assist in

lessening future impacts related to air quality and traffic within the region. The policy choice by the City to provide more employment than is shown in ABAG projections is intended to benefit the existing and future residents of the City, long-term air quality and traffic impacts, and the jobs/housing imbalance.

If the City is successful at building out this larger employment base by 2030, there would be two possible effects on regional job growth. The first is that the City will obtain employers that ABAG projections assumed would have located elsewhere in the Bay Area. If the increase in new employment opportunities simply reflects a different locational choice within the Bay Area than was assumed by ABAG, the result would be no increase in projected regional employment, but a better balance between jobs and housing, lessening the length of commuter trips for Antioch residents who are employed locally.[1] Alternatively, the increase in new employment opportunities is due to increased attraction of jobs from outside of the Bay Area, total employment growth within the region will exceed the annual growth projected by ABAG. In this case, the increased local employment opportunities will not result in regional air quality and traffic benefits, but will reflect the environmental analyses set forth in the air quality and traffic sections of this EIR.

Another possible scenario is that employment growth within Antioch follows ABAG projections, meaning that build out of employment-generating uses within the City of Antioch will take longer to build out, with build out occurring beyond 2030. If this occurs, employment growth within the City would be consistent with ABAG projections. Which of these three scenarios occurs will be a matter of the regional and local market conditions through 2030. A definitive conclusion as to which of these scenarios is most likely would be speculative at this time. Although the employment-generating development expected at build out of the proposed General Plan is different from the ABAG projections, the effects will result in a less than significant impact because a balance between jobs and housing is a regional objective and the implementation of the proposed General Plan is working toward meeting this objective.

Proposed General Plan Policies. The proposed General Plan includes the following policies to provide for a mix of employment generating uses and ample employment opportunities for residents of Antioch.

3.8.2 Employment and Housing Balance Policies

a. Maintain an inventory of employment-generating lands, providing for a variety of office-based, industrial, and commercial (retail and service) employment opportunities.

b. Maintain an inventory of residential lands that provides for a broad range of housing types including executive housing in both urban and rural settings, traditional single-family neighborhoods, middle to upper end attached housing products, and affordable housing.

- Provide a balance between the types and extent of employment-generating lands planned within the City of Antioch with the types and intensity of lands planned for residential development.

[1] These potential regional benefits are not factored into the analysis of traffic and air quality impacts set forth in this document.

- Encourage businesses to locate and expand within Antioch through an aggressive economic development program that provides essential information to prospective developers and businesses, along with tangible incentive programs for new and expanding businesses.

4.4.4.2 Employment-Generating Land Use Policies.

a. Focus the use of employment-generating lands on high value and high employment-generating uses (e.g., office environments, manufacturing and assembly).

b. Provide for an appropriate mix of uses within employment-generating lands, including commercial and commercial service uses.

c. Take advantage of existing rail facilities within the community by permitting the development of rail-served industrial uses.

Effectiveness of Proposed General Plan Policies. The implementation of the proposed General Plan policies will provide for a variety of employment generating land uses, which will support a diversified economic base and employment opportunities for the existing and future residents of Antioch. This will result in a more jobs/housing balanced community. The increase in employment-generating development resulting from the proposed General Plan will remain less than significant.

Mitigation Measures. No additional mitigation is required.

Displacement of Residents and Residential Development

Impact 4.8.4. *Implementation of the proposed General Plan would result in the displacement of existing residents and residential development.*

Implementation of the proposed General Plan Land Use Element includes the "A" Street Interchange Focus Area, which encompasses 160.26 acres of land in the center of Antioch. Within this area, revitalization of uses at the interchanges, as well as uses along the route into Rivertown, is needed. Currently, "A" Street is a suburban commercial strip with some single family residential fronting on the roadway north of SR-4 freeway. Many uses along "A" Street are deteriorating or have a typical suburban commercial strip design. Most commercial parcels are too shallow to allow for modern design, and existing residential uses fronting on "A" Street are in need of upgrade. Relatively high traffic volumes make it undesirable for single-family residential uses to front along and take access from "A" Street, as they currently do.

The General Plan envisions a cluster of commercial and office uses with high design quality, transforming the "A" Street corridor from a strip commercial area into a pedestrian-oriented village with well-designed retail and office uses. To accomplish this requires relocation of deteriorating residential uses from the "A" Street frontage, and increasing the depth of commercial/office uses to provide a more sensible development pattern.

The redevelopment of the "A" Street corridor will result in a less than significant impact related to the displacement of residents and residential development for several reasons. The location of the existing residential structures is inappropriate because the houses front a busy commercial street or are adjacent to the freeway, and are located within a commercial area, which is an important gateway into Rivertown and southeastern Antioch. Secondly, the proposed General Plan calls for the redevelopment of this area and the conversion of land uses; which would include residents being relocated as part of the revitalization effort. These residents will be afforded all of the protections and relocation benefits provided under State law. Additionally, impacts would remain less than significant because the loss of these housing units is accounted for in the Housing Element and noted in the remaining housing construction needs to be met.

Proposed General Plan Policies. The proposed General Plan includes the following policy to ensure that impacts related to the displacement of existing residents and residential development remain less than significant.

4.4.6.5 "A" Street Interchange

h. The City should, if feasible, expand Antioch Development Agency Project Area 1 or establish a new redevelopment project area for the "A" Street Interchange Focus Area. The primary purpose of such a redevelopment project would be to:

- Assist in the conversion of existing residential dwellings to commercial and office uses:
- Assist residents with relocation costs;
- Assist area businesses in financing façade and sign improvements;
- Assist in funding improvements within the public right-of-way (e.g., streetscape improvements, special paving at intersections, street furniture)
- Facilitate the consolidation of parcels along "A" Street as a means of encouraging new, high quality, pedestrian-oriented commercial and office development.

Effectiveness of Proposed General Plan Policies. The implementation of the proposed General Plan policy will ensure that impacts resulting from the proposed General Plan related to the displacement of existing residents and residential development remain less than significant.

Mitigation Measures. No additional mitigation is required.

4.8.4 Land Use Level of Significance After Mitigation

Land use impacts will be less than significant with the application of General Plan policies as identified above.

4.9 NOISE

Measurement of Noise

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect our ability to hear. Pitch is the number of complete vibrations or cycles per second of a wave that result in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment, and it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. Sound intensity can be precisely measured with instruments. Sound intensity and its effect on adjacent sensitive land uses are evaluated as part of the noise environment of a project area.

Sound intensity is measured through an "A-weighted" measure to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units such as inches or pounds, decibels (dBA) are measured on a logarithmic scale, representing points on a sharply rising curve. All sound levels in this section are A-weighted unless reported otherwise.

For example, 10 dBA are 10 times more intense than 1 dBA, 20 dBA are 100 times more intense and 30 dBA are 1,000 times more intense. A measurement of 30 dBA represents 1,000 times as much acoustic energy as 1 dBA. The decibel scale increases as the square of the change, representing the sound pressure energy. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-dBA increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single-point source, sound levels decrease approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source such as highway traffic or railroad operations, the sound decreases 3 dBA for each doubling of distance in an environment generally characterized by hard surfaces. Line source noise in a relatively flat environment with absorptive vegetation decreases 4.5 dBA for each doubling of distance.

The predominant rating scales for human communities in the State of California are the Equivalent-Continuous Sound Level (L_{eq}) and the Community Noise Equivalent Level (CNEL), based on A-weighted decibels. L_{eq} is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a weighting factor of 5 dBA applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours), and 10 dBA adjustment for events occurring between 10:00 p.m. and 7:00 a.m. (defined as sleeping hours). The noise adjustments are added to the noise events occurring during the more sensitive evening and

nighttime hours. The Day-Night Average Level (L_{dn}) is similar to the CNEL scale, but with no adjustments for the evening hours between 7:00 p.m. and 10:00 p.m. CNEL and L_{dn} are typically within one dBA of each other and are interchangeable.

Other noise rating scales of importance when assessing annoyance factor include the maximum noise level (L_{max}), which is the highest exponential-time-averaged sound level that occurs during a stated time period, and noise standard in terms of percentile exceedence noise levels (L_n). L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise. The percentile exceedence noise levels are the levels exceeded during a stated period of time. For example, an L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time, and is considered the lowest noise level experienced during a monitoring period. It is normally referred to as the background noise level.

Psychological and Physiological Effects of Noise

Physical damage to human hearing occurs with prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions and thereby affecting blood pressure, functions of the heart, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 130 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 140 dBA will rupture the eardrum and permanently damage the inner ear. Table 4.9.A lists acoustical term definitions, and Table 4.9.B identifies common sound levels and their sources.

Table 4.9.A - Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit or level that denotes the ratio between two quantities that are proportional in power; the number of decibels is ten times the logarithm (to the base 10) of this ratio.
Frequency (Hz)	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level (dBA)	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level (L_{eq})	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level (CNEL)	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of five decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level (L_{dn})	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and

Table 4.9.A - Definitions of Acoustical Terms

Term	Definitions
	7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter during a designated time interval using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, 1991.

Table 4.9.B - Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environment	Subjective Evaluations
	0	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing
Rustling Leaves	20	Very Faint	
Soft Whisper	30	Faint	
Average Residence Without Stereo Playing	40	Faint	? as Loud
Large Transformer	45	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	¼ as Loud
Suburban Street	55	Moderate	
Average Office	60	Moderate	½ as Loud
Near Freeway Auto Traffic	70	Moderately Loud	
Busy Restaurant	75	Moderately Loud	
Pneumatic Drill; Vacuum Cleaner	80	Moderately Loud	2 times as Loud
Freight Cars; Living Room Music	85	Moderately Loud	
Garbage Disposal	90	Very Loud	4 times as Loud
Ambulance Siren; Food Blender	95	Very Loud	
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as Loud
Accelerating Motorcycle at a few feet away	110	Very Loud	16 times as Loud
Hard Rock Band	120	Threshold of Feeling	32 times as Loud
Civil Defense Siren	130	Threshold of Pain	64 times as Loud
Jet Engine in close proximity	140	Deafening	128 times as Loud

Source: Compiled by LSA Associates, Inc. 2001.

Audible Noise Changes

Noise impacts can be classified in three categories. The first category, audible impacts, refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or more, since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Noise Abatement

Three basic mechanisms are effective at reducing excessive noise exposure: 1) reduce the strength of the noise at the source; 2) increase the distance between the source and the receiver; and 3) place an obstruction between the noise source and the receiver.

Given that vehicular noise is exempt from local control and relocation of sensitive land uses away from freeways or major streets is not practical, a noise wall is often the remaining practical solution. A properly sited wall can reduce noise levels by almost 10 dB. A decrease of 10 dB would be perceived by people to be about one-half as loud as before. However, a freeway that is one-half as loud as before may still be very loud. Construction costs of noise walls are expensive at approximately $100 to $200 per linear foot, making each mile of wall cost approximately $500,000 to $1,000,000 dollars.

Because of the competing impact of noise or sound wall costs versus benefits, the California Department of Transportation (Caltrans) is sensitive to the wishes of the affected community regarding wall construction. When building or upgrading roadways, Caltrans will generally support design features that minimize local objections as long as their own design standards are met. Those standards include the following:

- Walls must reduce noise levels by a minimum of 5 dB.
- Walls must be able to block truck exhaust stacks that are located at 11.5 feet above the pavement.
- Walls within 15 feet of the outside of the nearest travel lane must be built upon safety-shaped concrete barriers.

The preferred wall material is concrete or masonry. The effectiveness of a material in stopping sound transmission is called the transmission loss (TL). Materials other than a heavy metal or concrete masonry unit are more typically used on a single unique project basis rather than along several miles of freeway.

Another method of obstructing noise for residential or commercial buildings involves the use of design features, site planning, or building materials to protect the users of buildings in the interior of the building. Features such as dense landscaping and the use of double-paned windows are two examples.

4.9.1 Noise Existing Setting

Transportation noise is the single dominant noise source in the City of Antioch. Other noise sources include routine activities of daily life and equipment noise that are part of the non-transportation noise sources. The most important difference between transportation and non-transportation noise sources is that municipalities can generally exercise control on the level and duration of noise at the property line of any non-transportation source of noise. Cities can adopt noise exposure standards for noise levels generated by mobile sources, such as trucks, trains, or planes, and then make permitting decisions regarding sensitivity of land uses in areas with excessive noise. Cities play a role in enforcing the requirement in the State Vehicle Code regarding properly operating mufflers, and may also set speed limits or weight restrictions on streets. In general terms, a city's actions are primarily proactive with respect to stationary noise sources versus reactive for those mobile sources beyond City control.

Bus Noise

Bus service is provided on major streets, collectors, and local streets within the Antioch circulation system. In general, for noisier streets, even ten buses in each direction (one every 6 minutes) does not significantly worsen the noise level (i.e., increase the ambient noise level by 3 dBA). Given that few routes run more than six buses in each direction per hour except on already heavily traveled roadways, Antioch bus routes are not a major source of noise for those residents with average noise perception thresholds.

Railroad Noise

Railroad noise is produced by the combination of the interaction between wheels and rails; the propulsion system of the railcars and locomotives; auxiliary equipment, and aerodynamic noise. Maximum rail noise (L_{max}) at 50 feet from the rail tracks ranges from 75 to 95 dBA when the train travels at 50 mph. For main line railroad corridors carrying 5 to 10 trains per day at speeds of 30 to 40 mph, the 24-hour weighted average noise level of CNEL or L_{dn} would be approximately:

- 75 dBA at a distance of 10 to 30 feet (from the rail line);
- 70 dBA at 30 to 60 feet;
- 65 dBA at 60 to 120 feet;
- 60 dBA at 120 to 240 feet;
- 55 dBA at 240 to 500 feet;
- 50 dBA at 500 to 800 feet; and
- 45 dBA or less at 800 feet and up.

Stationary Noise Sources

Heavy and light industrial and commercial uses within the City of Antioch are sources of stationary noise.

Other Noise Sources

There are no major airports in Antioch; therefore, aircraft noise is not typically a problem in the City. Transportation noise in Antioch is dominated by automobiles and trucks on the freeways and major streets.

Existing Traffic Noise Modeling Results

For the purposes of identifying the existing noise environment in the City of Antioch, the existing traffic noise levels along roadway links in the City of Antioch were calculated using the FHWA Highway Traffic Noise Prediction Model (with Calveno vehicle emissions). Average daily traffic (ADT) volumes were provided by Dowling Associates, Inc. (June 2001). Table 4.9.C lists the calculated existing traffic noise levels along the measured roadway segments in the City of Antioch. The 70-dBA CNEL contour is either confined within the roadway right-of-way (<50 feet) or extends from to 59 to 118 feet from the roadway centerline. The 65-dBA CNEL contour is either confined within the roadway right-of-way or extends from 55 to 247 feet from the roadway centerline. The 60-dBA CNEL contour is either confined within the roadway right-of-way or extends from 66 to 528 feet from the roadway centerline. As shown in Table 4.9.C, most land uses at 50 feet from the outermost travel lane along these roadway links are currently exposed to traffic noise exceeding the 60-dBA CNEL. Some land uses are exposed to noise levels exceeding 70-dBA CNEL traffic noise, notably along portions of Hillcrest Avenue, Somersville Road between Delta Fair and SR 4, and along Lone Tree Way south of Putnam Street.

Table 4.9.C - Existing Traffic Noise

Roadway Segment	Average Daily Traffic Volume	Distance to Noise Contour, in feet			CNEL(dBA) at 50 feet from Outermost Travel Lane
		70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
"A" Street between 13th and 15th Streets	13,838	59	114	239	67.6
Buchanan Road between Mission Drive & Lucena Way	14,595	61	118	247	67.8
Cavallo Road between East 18th Street & Parker	6,658	<50	59	123	64
Contra Loma Boulevard between Longview Road & Putnam Street	9,504	<50	74	156	65.6
East 18th Street between Crestwood Drive & Marie Avenue	16,481	65	127	268	68.3
Hillcrest Avenue between Davison Drive & Larkspur Drive	28,354	88	180	383	70.7
James Donlon Boulevard between Gentrytown Drive & Silverado Drive	10,094	<50	94	194	66.2
Lone Tree Way south of James Donlon Boulevard	19,723	71	142	301	69.1
Somersville Road between Delta Fair Boulevard & SR 4	46,016	118	247	528	72.8
18th Street north of "L" Street	8,830	<50	<50	96	62.4
18th Street west of "D" Street	10,547	<50	97	200	66.4
Bluerock Drive east of Lone Tree Way	1,307	<50	<50	<50	57
Buchanan Road at western City Limits	18,754	69	138	291	68.9

Table 4.9.C - Existing Traffic Noise

Roadway Segment	Average Daily Traffic Volume	Distance to Noise Contour, in feet			CNEL(dBA) at 50 feet from Outermost Travel Lane
		70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
Carpinteria Drive at Welch Way	1,818	<50	<50	54	58.4
Cavallo Drive north of Sunset Drive	10,037	<50	94	193	66.2
Clayburn Road west of Lone Tree Way	3,223	<50	<50	77	60.9
County Hills Drive at Buckskin Drive	6,432	<50	58	121	63.9
County Hills Drive at Chism Way	2,529	<50	<50	66	59.8
Davison Drive west of Deer Valley Road	10,555	<50	97	200	66.4
Davison Drive at Mountaire Drive	10,908	<50	98	204	66.5
Deer Valley Road north of Davison Drive	22,204	76	154	326	69.6
Deer Valley Road between Carpinteria Drive & Wildflower Drive	19,220	70	140	296	69
Delta Fair Boulevard west of Belle Drive	15,953	64	124	262	68.2
Delta Fair Boulevard north of Buchanan Road	16,939	66	129	272	68.4
Delta Fair Boulevard south of Fairview Avenue	20,624	73	146	310	69.3
East 18th Street at Evergreen Avenue	17,442	67	132	278	68.6
East Tregallas Road between Harbour Drive & Hillcrest Avenue	4,670	<50	<50	98	62.5
Fairview Drive east of Delta Fair Boulevard	6,820	<50	60	125	64.2
"G" Street & Putnam Street	5,826	<50	55	113	63.5
Gentrytown Drive north of Putnam Street	10,334	73	146	310	69.3
Hillcrest Avenue north of Deer Valley Road	25,658	83	169	358	70.2
James Donlon Boulevard west of "G" Street	16,987	66	130	273	68.5
James Donlon Boulevard & Lone Tree Way	17,258	66	131	276	68.5
"L" Street & SR 4	12,374	<50	106	222	67.1
Lone Tree Way south of Putnam Street	26,505	84	172	366	70.4
Mahogany Way south of Somersville Road	5,264	<50	<50	106	63
Putnam Street east of Gentrytown Drive	3,898	<50	<50	87	61.7
Ridgerock Drive east of Lone Tree Way	3,016	<50	<50	74	60.6
San Jose Drive east of Delta Fair Boulevard	3,658	<50	<50	84	61.4
Somersville Road north of Contra Costa Canal	9,188	<50	72	152	65.4
Somersville Road south of Costco Way	19,056	70	139	294	69
Somersville Road south of County East Mall	16,118	64	125	264	68.2
Somersville Road south of SR 4 Eastbound on-ramp	21,359	74	150	317	69.5
Somersville Road north of Delta Fair Boulevard	14,680	61	118	248	67.8
Sunset Avenue east of Lone Tree Way	2,134	<50	<50	60	59.1
Wildhorse Road east of Folsom Drive	1,450	<50	<50	<50	57.4
Wildhorse Road between Hillcrest Road & Folsom Drive	5,948	<50	56	115	63.6
Wildhorse Road east of Hillcrest	5,286	<50	<50	106	63

Source: LSA, 2001.

Existing Policies and Regulations

City of Antioch Zoning Ordinance. The City of Antioch Zoning Ordinance (1994), Article 19, provides noise attenuation requirements for proposed development. Specifically, Section 9-5-1901 of the Code provides:

a. Uses adjacent to outdoor living areas (e.g., back yards for single-family homes and patios for multi-family units) and parks shall not cause an increase in background ambient noise which will exceed 60 dBA CNEL.

b. The Zoning Administrator may require an acoustic study for any proposed projects that could have or create a noise exposure greater than 60 dBA CNEL or than that which is otherwise deemed acceptable.

c. The Zoning Administrator may require the incorporation into a project of any noise attenuation measures deemed necessary to ensure that noise standards are not exceeded.

d. No use, activity, or process shall produce vibrations that are perceptible without instruments by a person at the property lines of a site (City of Antioch 1994).

Federal Standards. The U.S. Department of Housing and Urban Development (HUD) has set a goal of 65 dBA L_{dn} as a desirable maximum exterior standard for residential units developed under HUD funding. This level is also generally accepted within the State of California. While HUD does not specify acceptable interior noise levels, standard construction of residential dwellings constructed under Title 24 standards typically provides in excess of 20 dBA of attenuation with the windows closed. Based on this premise, the interior L_{dn} should not exceed 45 dBA L_{dn}.

State of California. The State of California Department of Health Services in coordination with the Governor's Office of Planning and Research for the State of California have prepared "Guidelines for the Preparation and Content of Noise Elements of the General Plan." These guidelines are intended to provide a basis for comprehensive local programs to control and abate environmental noise and protect citizens from excessive exposure. Within these guidelines, the State considers a maximum acceptable exterior noise level for residential development to be 60 dBA CNEL.

Residential land uses, as well as churches, libraries, and hospitals are considered conditionally acceptable between 60 and 70 dBA CNEL and normally unacceptable in areas exceeding 70 dBA CNEL. Professional and commercial office buildings are considered normally unacceptable in areas exceeding 75 dBA CNEL and conditionally acceptable between 67 and 77 dBA CNEL. However, the State stresses that these guidelines can be modified to reflect localized noise sensitivities of a particular community.

4.9.2 Noise Thresholds of Significance

Mobile sources of noise, such as truck deliveries and railroad operations are exempt from local ordinance but are still subject to CEQA and would be significant if a project generates a volume of traffic that would result in a substantial increase in mobile source-generated noise or site-sensitive land uses in incompatible noise areas.

CEQA does not define "substantial increase." Webster's Dictionary defines "substantial" as "considerable in quantity." As noted earlier in the discussion of noise definitions, the human ear can detect changes of 3 dBA and changes of less than 3 dBA, while audible under controlled circumstances, are not readily discernable in an outdoor environment. Thus, a change of 3 dBA is considered as a barely audible change. However, CEQA uses "substantial change" as its criterion. Because most people can readily hear a change of 5 dBA L_{dn} in an exterior environment, this value was established for the proposed General Plan as the CEQA criterion for substantial change. As a point of reference, Caltrans defines a noise increase as substantial when the predicted noise levels with the project would exceed existing noise levels by 12 dBA L_{eq}.

The proposed General Plan would have a significant effect on noise if implementation of its policies would result in:

- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels; or
- An increase in long-term ambient noise by 5 dBA L_{dn} or more.

4.9.3 Noise Impacts and Mitigation

Potentially Significant Impacts

Short-Term Construction Noise Impacts

Impact 4.9.1. *Noise levels from grading and other construction activities would potentially result in noise levels reaching 91 dBA L_{max} at off-site locations 50 feet from the site boundary. This would result in potentially significant noise impacts to off-site sensitive receptors adjacent to the individual construction site. Compliance with the City's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level.*

Short-term noise impacts would be associated with excavation, grading, and erecting buildings during construction of individual projects allowed through the implementation of the proposed General Plan. Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area today, but would no longer occur once construction of the project is completed.

Two types of short-term noise impacts would occur during construction of any individual project site. First, construction crew commute and the transport of construction equipment and materials to the specific project site would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single event noise exposure potential, i.e., up to 87 L_{max} dBA at 50 feet from passing trucks resulting in potential short-term intermittent annoyances, the effect in long-term ambient noise levels would be small when averaged over a longer period of time. In addition, truck traffic on public roads is regulated by Federal and State governments, not local governments. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during excavation, grading, and building erection on the specific individual project site. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics.

These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 4.9.D lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Table 4.9.D - Typical Construction Equipment Maximum Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81 to 96	93
Rock Drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	68 to 80	77
Bulldozers	85 to 90	88
Tractors	77 to 82	80
Front-End Loaders	86 to 90	88
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 86	86
Trucks	81 to 87	86

Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987.

Typical noise levels range up to 91 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels, because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery, such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

Construction is expected to require the use of earthmovers, bulldozers, and water and pickup trucks. This equipment would be used on the project site. As seen in Table 4.9D, the maximum noise level generated by each earthmover is assumed to be 88 dBA at 50 feet from the earthmover. Each bulldozer would also generate 88 dBA at 50 feet. The maximum noise level generated by water and pickup trucks is approximately 86 dBA at 50 feet from these vehicles. Each doubling of the sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates as an individual noise source, the worst-case combined noise level at each off-site receptor location would be 91 dBA L_{max} at a distance of 50 feet from an active construction area. Each individual project would be required to comply with the construction hours specified in the City's noise control ordinance to reduce the construction noise impacts to a less than significant level.

Proposed General Plan Policies. The proposed General Plan includes the following policies to mitigate short-term construction noise impacts associated with future growth within the City of Antioch.

11.6.2 Temporary Construction

i. Ensure that construction activities are regulated as to hours of operation in order to avoid or mitigate noise impacts on adjacent noise-sensitive land uses.

j. Require proposed development adjacent to occupied noise sensitive land uses to implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance areas, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.

k. Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Effectiveness of Proposed General Plan Policies. While the proposed General Plan policies above provide guidance and some standards for reducing noise impacts due to construction, significant impacts could remain. Additional measures are provided to further ensure that the impacts are reduced to less-than-significant levels.

Mitigation Measures

4.9.1A. The General Plan shall be revised to incorporate the following provisions:

Prior to the issuance of any grading plans, the City shall condition approval of subdivisions and non-residential development adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the City for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:

- The construction contractor shall use temporary noise attenuation fences where feasible, to reduce construction noise impacts on adjacent noise sensitive land uses.
- During all project site excavation and grading on site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.
- The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

4.9.1B. The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by the City.

Long-Term Vehicular Noise Impacts

Impact 4.9.2. *The implementation of the proposed Antioch General Plan would result in potential project-related long-term vehicular noise than could affect sensitive land uses along the roads. New development, particularly residential uses along and adjacent to major transit corridors, could be exposed to excessive traffic-related noise levels.*

As discussed in Section 4.13, implementation of the proposed General Plan will result in increased traffic volumes along area roadways and highways. Increased traffic volumes will, in turn, cause increases in noise throughout the community. Table 4.9.E identifies maximum anticipated noise generation along area roadways that would occur at build out of the General Plan.

Table 4.9.E - Projected Maximum Noise Contours at Build Out

	Distance In Feet From Outer Edge Of Curb To Noise Contour			
	70 dBa	**65 dBa**	**60 dBa**	**55 dBa**
Freeways	303 Feet	736 Feet	1,673 Feet	3,692 Feet
Arterials	86 Feet	242 Feet	583 Feet	1,318 Feet
Major Collectors	33 Feet	103 Feet	256 Feet	588 Feet

Proposed General Plan Policies. Policies and strategies in the proposed Antioch General Plan address existing noise issues and ways of reducing noise generation associated with new development, which produce both short-term impacts during construction and long-term operational impacts, such as traffic. The goal of the Noise Element, compiled under the mandate of Section 65302(g) of the California Government Code and guidelines prepared by the California Department of Health Services (DHS), is to identify and control noise levels appropriate to specific areas consistent with mental and physical health and enjoyment of the environment.

A primary way of reducing the potential for noise impacts is to ensure separation between noise-sensitive uses **S** such as residences, schools and churches **S** and noise generators, such as manufacturing businesses and major transportation corridors. However, since such incompatibilities already exist, measures need to be taken to minimize noise impacts. These include site planning, design and construction methods that absorb or deflect sound. The proposed General Plan contains the following specific land use standards.

11.6.1 Noise Objectives

Achieve and maintain exterior noise levels appropriate to planned land uses throughout Antioch, as described below.

- Residential

  Single-Family: 60 dBA within rear yards
  Multifamily: 60 dBA within interior open space

- Schools

  Classrooms: 65 dBA
  Play and sports areas: 70 dBA

- Hospitals, Libraries: 60 dBA
- Commercial/Industrial: 70 dBA at front setback

11.6.2 Noise Policies

Noise Compatible Land Use and Circulation Patterns

a. Maintain a pattern of land uses that separates noise-sensitive land uses from major noise sources to the extent possible, and guide noise-tolerant land uses into the noisier portions of the Planning Area.

b. Minimize motor vehicle noise in residential areas through proper route location and sensitive roadway design.

   - Provide planned industrial areas with truck access routes separated from residential areas to the maximum feasible extent.

c. Where needed, provide traffic calming devices to slow traffic speed within residential neighborhoods.

Noise Analysis and Mitigation

d. Where new development (including construction and improvement of roadways) is proposed in areas exceeding the noise levels identified in the General Plan Noise Objective, or where the development of proposed uses could result in a significant increase in noise, require a detailed noise attenuation study to be prepared by a qualified acoustical engineer to determine appropriate mitigation and ways to incorporate such mitigation into project design and implementation.

e. When new development incorporating a potentially significant noise generator is proposed, require noise analyses to be prepared by a qualified acoustical engineer. Require the implementation of appropriate noise mitigation when the proposed project will cause new exceedences of General Plan noise objectives, or an audible (3.0 dBA) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development.

f. In reviewing noise impacts, utilize site design and architectural design features to the extent feasible to mitigate impacts on residential neighborhoods and other uses that are sensitive to

noise. In addition to sound barriers, design techniques to mitigate noise impacts may include, but are not limited to:

- Increased building setbacks to increase the distance between the noise source and sensitive receptor.
- Orient buildings which are compatible with higher noise levels adjacent to noise generators or in clusters to shield more noise sensitive areas and uses.
- Orient delivery, loading docks, and outdoor work areas away from noise-sensitive uses.
- Place noise tolerant use, such as parking areas, and noise tolerant structures, such as garages, between the noise source and sensitive receptor.
- Cluster office, commercial, or multi-family residential structures to reduce noise levels within interior open space areas.
- Provide double glazed and double paned windows on the side of the structure facing a major noise source, and place entries away from the noise source to the extent possible.

g. Where feasible, require the use of noise barriers (walls, berms, or a combination thereof) to reduce significant noise impacts.
    - Noise barriers must have sufficient mass to reduce noise transmission and high enough to shield the receptor from the noise source.
    - To be effective, the barrier needs to be constructed without cracks or openings.
    - The barrier must interrupt the line of sight between the noise source and noise receptor.
    - The effects of noise "flanking" the noise barrier should be minimized by bending the end of the barrier back from the noise source.
    - Require appropriate landscaping treatment to be provided in conjunction with noise barriers to mitigate their potential aesthetic impacts.

h. Continue enforcement of California Noise Insulation Standards (Title 25, Section 1092, California Administrative Code).

Effectiveness of Proposed General Plan Policies. Proposed General Plan policies reduce the effect of mobile and vehicular noise on sensitive land uses, and include mechanisms to ensure appropriate review and placement of noise reduction requirements into new development. As a result, impacts of mobile noise will be reduced to less than significant levels.

Mitigation Measures. No new mitigation measures are needed.

Long-term Stationary Noise Impacts

Impact 4.9.3. *New development associated with implementation of the proposed General Plan could expose existing and/or new sensitive uses to stationary noise sources, such as industrial and/or commercial uses.*

The development of new industrial uses pursuant to the proposed General Plan may increase noise levels in their vicinity doe to the establishment of new stationary noise sources. Although vehicular

noise is exempt from local regulation when operating on public streets, cities and counties can regulate vehicular noise while operating on private property. The use of heavy trucks on private properties (e.g., making deliveries to commercial and industrial uses) will result in noise levels of 73 dBA at 50 feet from the source of the noise (e.g., truck's engine). The use of multiple trucks on a site, such as might occur at a warehouse, could generate noise levels of about 80 dBA L_{eq} as measured at a distance of 50 feet. Industrial processing equipment and conducting outdoor industrial activities could also generate increased noise levels. New projects developed under the proposed General Plan would be subject to the City's noise ordinance and the provisions of the proposed General Plan.

Proposed General Plan Policies. The proposed General Plan includes the following policies to mitigate long-term stationary source noise impacts associated with future growth within the City of Antioch.

Stationary Source Noise

d. Require that industrial and commercial uses be designed and operated (including application mitigation) so as to avoid the generation of noise within sensitive land use areas (e.g., residential, churches, schools, hospitals) from exceeding the following noise levels.

- 55 dBA L_{eq} (7:00 a.m. – 10:00 p.m.)
- 45 dBA L_{eq} (10:00 p.m. – 7:00 p.m.)

The above stationary source noise standards may be exceeded within the receiving land use by

- 5 dBA for a cumulative period of no more than fifteen (15) minutes in any hour.
- 10 dBA for a cumulative period of no more than five (5) minutes in any hour.
- 15 dBA for a cumulative period of no more than one (1) minute in any hour.

The above stationary noise standard shall not be exceeded within the receiving land use by more than 20 dBA for any period of time.

The following sources of noise are exempt from this standard:

- Motor vehicles on public streets;
- Trains;
- Emergency equipment, vehicles, devices, and activities; and
- Temporary construction, maintenance, or demolition activities conducted between the hours of 6:00 a.m. and 7:00 p.m.

Policies 11.6.2 d-h, identified above, will also mitigate future stationary noise impacts.

Effectiveness of Proposed General Plan Policies. Proposed General Plan policies reduce the effect of mobile and vehicular noise on sensitive land uses, and include mechanisms to ensure appropriate review and placement of noise reduction requirements no new development. As a result, impacts of mobile noise will be reduced to less than significant levels.

Mitigation Measures. No new mitigation measures are needed.

Long-term Railroad Noise Impacts

Impact 4.9.4. *Although the proposed General Plan would not necessarily result in potential project-related increases in railroad noise, there could be new proposed sensitive land uses along and adjacent to the railroads that would be affected by high noise levels from railroad operations.*

New development, particularly residential uses along and adjacent to railroad corridors, could be exposed to excessive train-related noise levels. Future increases in rail usage are anticipated as the result of establishment and expansion of commuter rail service. However, it is not possible to quantify impacts as specific plans for commuter operations (e.g., number and size of trains) are not available.

Proposed General Plan Policies. The proposed General Plan's land noise compatibility and mobile source noise policies cited above would also apply to railroad noise within Antioch.

Effectiveness of Proposed General Plan Policies. Proposed General Plan policies would reduce the effect of railroad noise on sensitive land uses, and include mechanisms to ensure appropriate review and placement of noise reduction requirements into new development. As a result, impacts of railroad noise will be reduced to less than significant levels.

Mitigation Measures. No new mitigation measures are needed.

4.9.4 Noise Level of Significance After Mitigation

All impacts associated with nose will be reduced to a less than significant level.

4.10 POPULATION AND HOUSING

This section establishes the baseline population, employment, and housing conditions in the City of Antioch. The *1990* and *2000 U.S. Census* and *ABAG Projections 2002* are the major sources of data for this section.

4.10.1 Population and Housing Existing Setting

Regional Population Trends. The population of the nine-county San Francisco Bay Area was 6.8 million in 2000 as compared to 6.0 million in 1990, 5.2 million in 1980, and 4.6 million in 1970. The Association of Bay Area Governments (ABAG) estimates the region's population will be 7.6 million in 2010, and will reach 8.0 million by 2020.[1] Research in 1977 projected that growth in the region would occur mostly outside the central cities. This expectation still holds, unless significant changes occur in the region's land use and transportation patterns.

Current Population and Population Projections. Antioch's population more than doubled between 1970 and 1990, from 28,060 to 63,062 residents.[2] Since 1990, the population has increased by 44 percent, to 90,814 residents in the year 2000.[3] Contra Costa County's population has increased as well, growing by 22 percent during the 1980s and by 18 percent from 1990 to 2000.[4] Population, housing, and job projections are listed in Table 4.10.A.

Table 4.10.A - Population Trends and Projections for the City of Antioch

Year	1990	2000	2010	2020	2025
Total Population[1,3]	63,062	91,293	102,900	115,800	118,800
Households[1,3]	21,729	29,656	34,660	39,330	40,870
Persons per Household[1,3]	2.89	3.06	2.96	2.93	2.90
Mean Household Income ($1995)[1]	$59,800	$63,200	$77,500	$88,600	
Total Jobs[1]	13,980	17,060	21,400	27,300	29,850
Employed Residents[1]	30,130	43,811	51,700	59,800	62,500
Jobs/Housing Ratio[4] (Total Jobs/Employed Residents)	0.46	0.46	0.48	0.53	0.48

[1] ABAG, 1999. Projections 2002: Forecasts for the San Francisco Bay Area to the year 2020.

[2] U.S. Census, 1990. *C90STF1A database.*

[3] U.S. Census, 2000.

[4] LSA Associates. 2001.

Source: ABAG, 1999; U.S. Census 2000; LSA Associates, 2001.

1 ABAG. *Projections 2002: Forecasts for the San Francisco Bay Area.* U.S. Census. 2000. *Census 2000.*

2 City of Antioch. 1987. *Antioch General Plan, Work Product One: Analysis of Baseline Conditions.* September. U.S. Census. 1990. *C90STF1A database.*

3 U.S. Census. 2000. *Census 2000.*

4 ABAG. *Projections 2002: Forecasts for the San Francisco Bay Area.*

Growth in the 1980s can be largely attributed to the relocation of jobs to Contra Costa County, resulting in the subsequent relocation of some employees to the County and the City of Antioch. In the 1990s, population growth mainly occurred due to increases in household size and the City's supply of vacant land, which increased the availability of affordable housing units and, therefore, the number of households relocating to Antioch.

ABAG estimates that the City's population will be 102,900 in 2010 and 115,900 in 2020.[1] These figures project a slower growth of population over the next 20 years in the City, 13 percent and 27 percent by 2010 and 2020, respectively.

Households and Household Size. In 2000, there were 29,656 households in Antioch,[2] an increase of 36 percent since 1990. According to ABAG projections, the number of households is projected to increase steadily to 34,660 (or by 17%) by the year 2010 and to 39,330 (or by 33%) by the year 2020.[3] Household size has increased slightly as well, from 2.89 persons per household in 1990 to 3.06 persons in the year 2000. Persons per household in Antioch was higher than for Contra Costa County as a whole, which averaged 2.72 persons per household in 2000, due to a larger percentage of households with children in the City versus the County. Current projections anticipate household size in the City to decrease to 2.93 persons per household by the year 2020 as the population ages and children leave home.[4]

Income. A strong regional economy has generated high household incomes in the Bay Area. The mean household income within the City of Antioch was $59,800 in 1990 and $63,200 in 2000, a moderate 6 percent increase in 10 years.[5] Mean household income in Contra Costa County in 1990 was $67,800, increasing to $79,000 in 2000. The City ranks 15th in median household income in the 23 ABAG-designated subregions in Contra Costa County. Contra Costa County ranks 4th in mean household income in the nine-county Bay Area region.[6]

Resident Labor Force. The civilian labor force includes those people who are employed (except in the armed forces), and those people who are unemployed, but considered to be actively looking for work. People who have never held a job, people who have stopped looking for work, and people who have been unemployed for a long period are considered not to be in the labor force. In 1990, 48 percent of Antioch households (30,130 people) had some wage or salary income. In 2000, that

1 ABAG. *Projections 2002: Forecasts for the San Francisco Bay Area.*

2 ABAG. *Projections 2002: Forecasts for the San Francisco Bay Area..*

3 ABAG. *Projections 2002: Forecasts for the San Francisco Bay Area*.

4 Ibid.

5 Ibid.

6 Ibid.

number was 43,811 or 48 percent.[1] This slight decrease is possibly due to an aging population or an influx of retirees into the community.

Total Jobs. Antioch's economy functions as a small part of the Bay Area economy, comprising only 1.1 percent of the Bay Area labor force. In 2000, the total number of jobs in Antioch was estimated to be 17,060, and is estimated to increase to 21,400 jobs by 2010 and 27,300 by 2020.[2] Contra Costa County added approximately 113,300 new jobs during the 1980s, a 56 percent growth rate that is nearly double the rate overall for the Bay Area. One factor influencing job growth in the County is the decentralization of office-related employment to the County from other parts of the Bay Area.

Housing

The following section discusses existing housing conditions within the City of Antioch, in terms of type of housing, value, and affordability.

Housing Stock. In 2000, the City had 30,116 housing units. Single-family homes constituted 79.1 percent of all housing units, small apartment buildings with two to four units made up 6.4 percent, and larger apartment buildings accounted for 13.1 percent of housing units. A summary of housing stock is shown in Table 4.10.B.

Table 4.10.B - Housing Stock by Building Type – 2000

Structure	Number of Units
Single-Family Residences	23,967
Multi-Family Residences (2-4) units	1,953
5 or more units	3,975
Total Units	**30,267**

Sources: California Department of Finance; City of Antioch.

Housing Value/Rental Costs. Housing costs in Antioch are slightly lower than the Contra Costa County average. According to the *Data Quick Real Estate News*, the median price for a home in Antioch in 2001 was $265,000, compared to $282,000 countywide. This relationship is similar to comparable figures from the 1990 Census. With conventional financing and current interest rates (about 7 percent on a 30-year conforming mortgage), the monthly payment on a $265,000 mortgage would be $1,763. The 2000 Census identifies 6,171 (31.6%) of homeowners in the City of Antioch that are paying more than 30 percent of their household incomes on housing ownership costs.

Rental housing is generally a lower cost alternative than purchasing housing for very low- and low-income households in most California communities. Based on a review of newspaper advertisements, a two-bedroom apartment in Antioch can be currently rented for $920 to $1,440 per month, with

1 ABAG, 2001. *Projections 2002: Forecasts for the San Francisco Bay Area*. December.

2 ABAG, 2001. *Projections 2002.*

three-bedroom units now renting for approximately $1,095 to $1,295 per month. Allowing 30 percent of gross income for housing costs, an Antioch household would have to earn $37,000 to $58,000 annually to afford the average two-bedroom rental unit and $45,000 to $55,000 to afford the average three-bedroom rental unit in Antioch at current market rates. Thus, the average two-bedroom rental is not affordable to very low-income, three-member households, and the average three-bedroom rental is not affordable to very low-income, four-member households. Average rentals are, however, affordable for low-income households. The 2000 Census identifies 3,988 (46.6% of renters) households within the City of Antioch that are paying more than 30 percent of the household income on rent.

Housing Element. All cities and counties in California are required by State law to prepare and adopt a Housing Element of their General Plan which complies with State law and guidelines issued by the State Department of Housing and Community Development (HCD). Antioch's most recent Housing Element was adopted by the City Council on October 27, 1992. The Housing Element is being updated as part of the current General Plan update.

The Housing Element is the primary document which describes the City's objectives, policies, and programs regarding all aspects of housing. It analyzes the housing needs of all segments of the population using categories of very low-, low-, moderate- and above-moderate income. It also addresses the needs of the homeless and the disabled.

Fair Share Housing. The Housing Element has extensive legal requirements that make it much more detailed than any other element of the General Plan. ABAG projects housing need figures for the State-mandated time frame of the Housing Element period. The main obligation of the State law is that each city must designate sufficient land for relatively high-density development to permit, if the necessary funding is available, construction of enough housing units for very low-, low- and moderate-income households to meet the city's "fair share" of such units. The California Department of Housing and Community Development will need to certify that the 2000 Housing Element meets those requirements.

ABAG's fair share housing need allocation for the City for the years of 1996 to 2006 is shown in Table 4.10.C.

Table 4.10.C - Regional Housing Needs, 1999-2006 Allocation

Jurisdiction	Total Projected Need	Very Low	Low	Moderate	Above Moderate	Average Yearly Need
Antioch	4,459	921	509	1,156	1,873	595
Contra Costa County	34,710	6,683	3,782	8,596	15,649	4,628

Source: ABAG, 2001.

Existing Policies and Regulations

California Government Code (Sections 65580-65589.8) requires the preparation of a Housing Element as part of each jurisdictions General Plan. While General Plan Housing Elements were

mandated by State legislation enacted in 1967, the State undertook a major revision of Housing Element law in response to rapidly increasing housing prices. This revision included Section 65588 of the California Government Code, which requires that housing elements be updated not less frequently than every five years. To comply with these Government Codes, each city must analyze local housing needs, and provide a realistic set of programs to meet those needs.

4.10.2 Population and Housing Thresholds of Significance

Potential impacts related to housing and population shall be considered significant if implementation of the proposed General Plan results in any of the following conditions:

- Existing population and housing projections are substantially exceeded;
- The displacement of substantial numbers or residential units, requiring the construction of replacement housing elsewhere; and/or
- The displacement of a substantial number of persons, necessitating the construction of replacement housing.

4.10.3 Population and Housing Impacts and Mitigation

Potentially Significant Impacts

Population and Housing Projections are exceeded

Impact 4.10.1. *Build out of the City of Antioch due to implementation of the proposed Housing Element will result in a substantial increase in population and residential and non-residential structures, and associated infrastructure. A General Plan is, by definition, growth inducing in that it provides a plan for accommodating future increased in population, housing, and employment. It also provides a plan for ensuring that adequate infrastructure is available to serve that growth. The effects of the growth that will be induced by the proposed General Plan are potentially significant.*

Projections for population, employment, and residential dwellings were identified to reflect the *theoretical* build out of Antioch, utilizing land use designations and assumptions detailed in the proposed General Plan. ABAG's population projections show the City growing by approximately 1,079 persons annually through 2025. A comparison of the proposed General Plan build out compared to that forecast by ABAG is provided in Table 4.10.D.

Table 4.10.D - ABAG Projections and the Proposed General Plan

Forecast Category	ABAG (2025)	Proposed General Plan Build Out (2030)	Number Difference	Percentage Difference
Population	118,800	146,785[1]	+ 27,985	+23.5
Households	40,870	50,615	+ 9,745	+23.5
Jobs	29,850	75,255	+45,405	+152.1

[1] Population build out was determined by multiplying ABAG's projected persons per household in 2025 (2.90) by the total number of dwelling units at build out.

Source: ABAG Projections 2002, December 2001.

As shown in Table 4.10.D, build out of the proposed General Plan in 2030 would result in a larger population and household, and a much larger employment base than ABAG has projected. However, Table 4.10.E indicates that the population projections have been exceeded in 2001 and the housing projections have almost been met in 2001 and been exceeded in 2003. This data indicates that the region is growing at a faster rate than ABAG projected. Therefore, projections for 2025 will be exceeded whether or not the proposed General Plan is implemented.

Table 4.10.E - ABAG Projections and Department of Finance Data

Source	Population	Households
ABAG projections for 2005	95,000	31,920
Department of Finance 2002	96,626	31,779
Department of Finance 2003	99,295	32,623

Source: State of California, Department of Finance, *E-5 City/County Population and Housing Estimates, 2003, Revised 2002 and Revised 2001, with 2000 DRU Benchmark.* Sacramento, California, May 2003; ABAG, 2000. *Projections 2002.*

Proposed General Plan Policies. The proposed General Plan includes the following policies to mitigate the effects of growth and manage the amount of growth within the City of Antioch.

3.6.2 Rate of Growth Policies

a. Limit the issuance of single-family development allocations to a maximum annual average of 600, recognizing that the actual rate of growth will vary from year to year. Thus, unused development allocations may be reallocated in subsequent years, and development allocations may be moved forward from future years, provided that the annual average of 600 development allocations may not be exceeded during any given five-year period (i.e., no more than 3,000 development allocations may be issued for any given five-year period).

b. To move development allocations forward from future years, the following finding must be made:

   The constraints posed by needed infrastructure phasing or capital facilities financing require that development allocations be moved forward from future years to avoid jeopardizing the feasibility of existing infrastructure financing mechanisms or the financing of infrastructure for the development allocations that would otherwise be granted during the calendar year.

c. To facilitate the development of housing required to meet the needs of all economic segments of the community and special needs groups identified in the Housing Element, age-restricted housing and multiple-family dwellings shall be counted as less than one single-family dwelling unit for the purposes of residential development allocations. The relationship between an allocation for a single-family dwelling and an allocation for age-restricted housing and multiple-family dwellings shall be based on such factors as differences in traffic generation, school impacts, and demand for new recreation facilities.

d. In order to avoid a predominance of any one housing type, limits shall be placed on the number of annual allocations that may be granted to age-restricted senior housing, single-family detached housing, and multifamily housing.

e. Permit residential projects that are subject to limitations on development allocations to proceed with other necessary approvals not directly resulting in the division of land or construction of residential dwelling units (e.g., General Plan amendments, rezoning, environmental review, annexation, etc.). The processing of such applications is not, however, a commitment on the part of the City that the proposal will ultimately receive development entitlements or allocations.

f. To facilitate the development of housing required to meet the needs of all economic segments of the community and special needs groups identified in the Housing Element, exempt the following types of developments from limitations on the annual issuance of development allocations, whether for single-family or multifamily residential development. Dwelling units approved pursuant to the following exemptions shall not be counted against the established maximum annual development allocation.

   (1) Income-restricted housing needed to meet the quantified objectives for very low and low income housing set forth in the Housing Element, along with "density bonus" dwelling units approved pursuant to the provisions of the Housing Element and the City's Density Bonus ordinance.

   (2) Dwelling units designed for one or more Special Needs Groups, as defined in the Housing Element (e.g., handicapped, income-restricted senior housing), pursuant to programs set forth in the Housing Element as needed to meet the Housing Element's quantified objectives for housing of special needs groups.

   (3) Dwelling units within development projects having vested rights through a valid (unexpired[1]) development agreement or vesting map.

   (4) Construction of a single dwelling unit by or for the owner of the lot of record on which the dwelling unit is to be constructed.

   (5) Construction of a second dwelling unit on a lot of record.

   (6) Development of a project of four or fewer dwelling units.

   (7) Development projects within the Rivertown Focused Planning Area.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan policies would ensure that future development proposed under the proposed General Plan would be allocated at a steady rate until build out. However, these policies allow the City to facilitate the development of housing required to meet the needs of all economic segments of the community. Implementation of these policies will reduce potential impacts to less than significant.

Mitigation Measures. No additional mitigation is required.

[1] The majority of existing development agreements expired on December 31, 2002.

4.10.4 Population and Housing Level of Significance after Mitigation

All impacts associated with housing and population remain less than significant.

4.11 PUBLIC SERVICES

The public services described in this section include police services; fire protection and emergency medical care; schools; and parks and recreation.

4.11.1 Public Services Existing Setting

Police. The primary public safety provider for the City of Antioch is the Antioch Police Department, located at 300 L Street (as shown in Figure 4.11.1). Police Department services include protection of life and property, prevention of crime, arrest of criminal offenders, and improvement of quality of life in the City of Antioch.

The Antioch Police Department consists of two divisions:

- Field Services Division. The Field Services Division responds to calls for service, and patrols the City to detect and deter criminal activity. This Division consists of the following bureaus: Patrol; Community Policing; Traffic; Communications; and Resources, Education, Apprehension, and Prevention (REAP) officers assigned to schools.
- Support Services Division. The Support Services Division augments patrol functions through administrative and clerical support; provides detectives to investigate person, property, and narcotics offenses; and provides services related to the care, control, and protection of animals at the City-operated animal shelter. This Division consists of the following bureaus: Investigations; Narcotics; Records; Administration; and Animal Services.

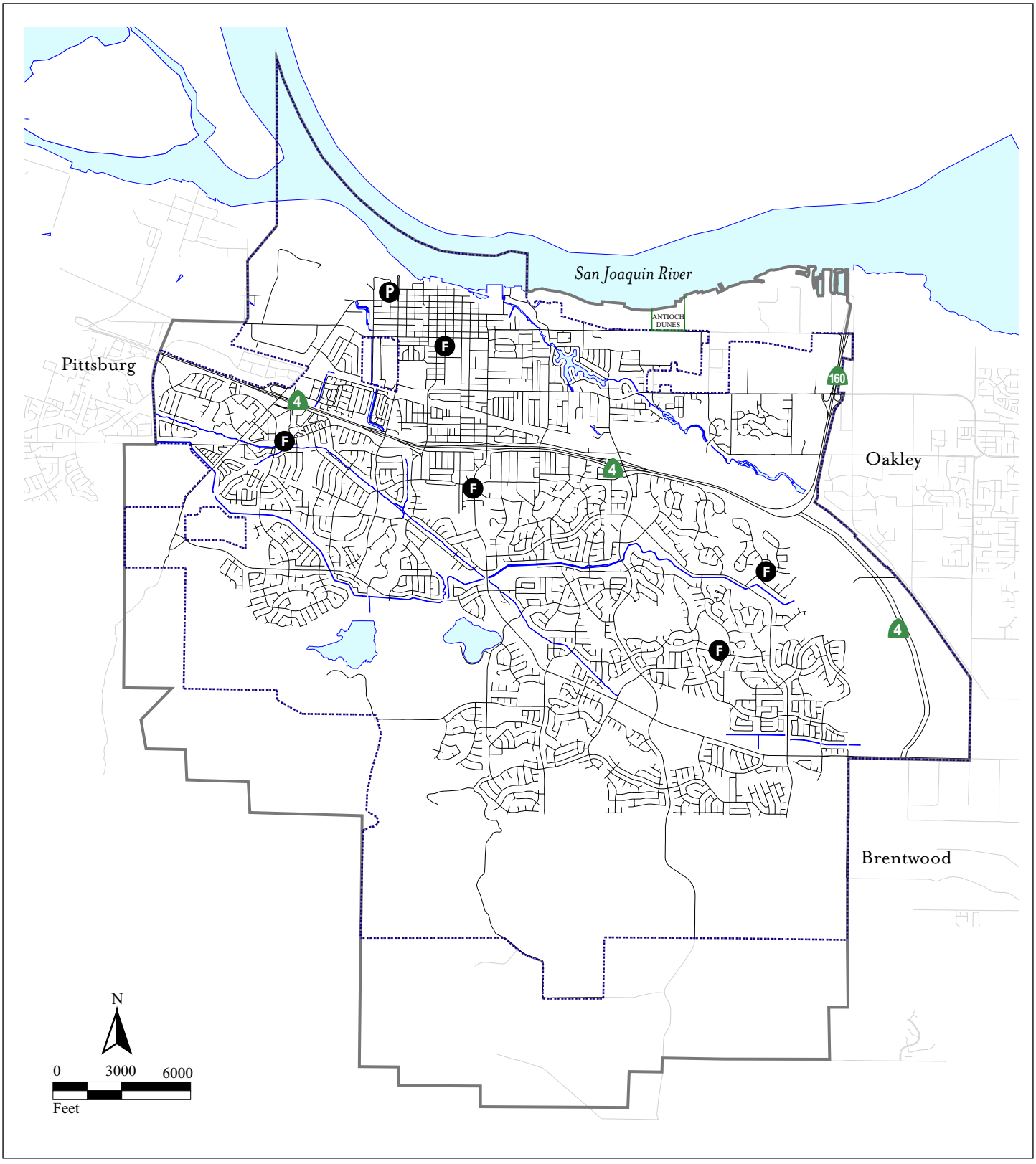
Within these two divisions, the Antioch Police Department employs a total of 146 paid police personnel and supports 27 volunteer positions. The Antioch Police Department is authorized for 105 sworn officer positions and 41 non-sworn positions. As of January 2001, 7 sworn positions were vacant, bringing the operating staff of sworn officers to 98.

Population growth has created an increased demand for police-related services, and consequently a need for additional Antioch Police Department staff. The 2001 Antioch Police Department staffing ratio is 1.25 officers per 1,000 residents, which is within the service range (1.20 to 1.50 officers per 1,000 residents) required by the 1988-2000 City of Antioch General Plan. Without new funding sources, changes in the staffing ratio is unlikely; however, as population increases, additional officers will be hired to maintain the required ratio.[1] To prevent crimes and thus reduce the demand for police services, the Antioch Police Department intends to expand proactive community policing services citywide for fiscal year 2000/2001.

For purposes of patrol, the Antioch Police Department divides the City into six "beats" (geographical areas within the City of Antioch). These beats are as follows:

- Beat 1 – northwestern area
- Beat 2 – northeastern area

[1] Thomas, Michael C., 2001. Captain, Antioch Police Department. *Written communication* with LSA Associates. January 12.



LSA

CITY LIMITS

PLANNING AREA BOUNDARY

POLICE STATION

FIRE STATION

SOURCE: LSA ASSOCIATES, INC., 2002.

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FIGURE 4.11.1

City of Antioch
General Plan Update EIR
Antioch Police and
Fire Station Locations

- Beat 3 – western and southwestern area
- Beat 4 – southern area
- Beat 5 – southeastern area
- Beat 6 – southeastern area

The Antioch Police Department assigns a priority number to every call for service. Calls are classified in the following manner:

- Priority 1 designates in-progress crimes or life-threatening situations.
- Priority 2 designates calls that demand immediate attention, but are not crimes in progress or life-threatening.
- Priority 3 designates those calls that do not require immediate response and can be dealt with as soon as is practical.

Table 4.11.A - Average Response Times in Minutes – Year 2000

Priority	Beat 1	Beat 2	Beat 3	Beat 4	Beat 5
1	6:32	7:22	7:02	7:54	9:37
2	10:36	12:33	11:27	12:15	14:53
3	28:43	31:57	27:30	31:47	35: 33

[a] Beat 5 was geographically the largest beat. In July 2001, the APD divided Beat 5, creating a sixth beat. It is anticipated that this action will result in a reduction in response times.

Source: Captain Michael C. Thomas, Antio ch Police Department, 2001.

Sheriff. The Contra Costa County Sheriff's Department provides safety protection in the City of Antioch in two capacities: 1) patrolling the Contra Costa County Fairgrounds located within the City of Antioch; and 2) responding to a City of Antioch "critical incident" in which a request has been made for "mutual aid."[1]

The Contra Costa County Sheriff's Department also provides services to the unincorporated areas of the County adjacent to Antioch. The Sheriff's Office provides contract services to the City of Oakley, with a station located at O'Hara Avenue and Acmen Street. This Sheriff's station is closest in proximity to the City of Antioch.

Fire and Emergency Medical Services. The Contra Costa County Fire Protection Department (District) provides fire and emergency services to residents of the City of Antioch. These services include fire fighting and rescue; fire prevention and training; and emergency medical care.

[1] Not one such request has actually been made in the past 16 years. (Rupf, Sheriff Warren E., 2000. Contra Costa County Sheriff's Department. *Personal communication* to LSA Associates. December 20).

Fire Fighting and Rescue. As shown in Figure 4.11.1, five District fire stations are located within the City of Antioch, each with a minimum of three personnel per engine company—including a Captain, an Engineer, and a Firefighter. All personnel are Emergency Medical Technicians with training in defibrilators (EMT-D) level and are paid professionals.

Following is a list of fire station locations within the City of Antioch.

- Station 81 – 315 West 10th Street;
- Station 82 – Bluerock Drive, between Lone Tree Way and Boulder Drive;
- Station 83 – 2717 Gentrytown Drive;
- Station 88 – 4288 Folsom Drive; and
- Administration East - 4527 Deerfield Drive.

In addition to the existing stations, a new station is proposed to serve the Antioch area.[1] This station will be located in Future Urbanization Area (FUA) #1, at Deer Valley Road and Sand Creek.

The standard response time goal of the District is 90 percent response of all emergencies in the City of Antioch within 5 minutes. Policy 4 in Chapter 3.E of the 1988 General Plan identifies 3- to 5-minute response times for urban fires. To better serve southeast Antioch, which has recently grown, Station 82 will be relocated by 2004 to Blue Rock Drive/Lone Tree Way. A long-term plan for adding an additional station in southeast Antioch is also under consideration.[2]

Fire Prevention. To prevent fire, the District strongly recommends that wildland access, or access to existing open areas, be planned into all new subdivisions. Wildland areas must be accessible by fire trail gates to ensure expedient response to grass fires in open areas and fires within the subdivisions themselves. The District also trains industries located in the City to prevent and respond to fires.[3]

Emergency Medical Service (EMS). The District is the first responder, or first on the scene of an emergency, providing supplemental Basic Life Support (BLS) and Advanced Life Support (ALS). Transportation is provided by Emergency Medical Response (EMR), a private ambulance service contracted by the District. As of January 2001, Station 86 provided part-time paramedic services. To expand services, Station 81 will have a fully staffed paramedic unit by the end of 2001.[4]

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1 Ryan, Richard, 2001. Inspector, Contra Costa County Fire District. *Personal Communication with LSA Associates.* October 15.

2 Palmer, Tim, 2000. Battalion Chief, Contra Costa County Fire Protection District. *Written communication* with LSA Associates. December 21.

3 Ibid.

4 Palmer, Tim, 2000. Battalion Chief, Contra Costa County Fire Protection District. *Written communication* with LSA Associates. December 21.

Schools. Schools in the City of Antioch include public schools operated by the Antioch Unified School District, and a number of private schools. Each is addressed below.

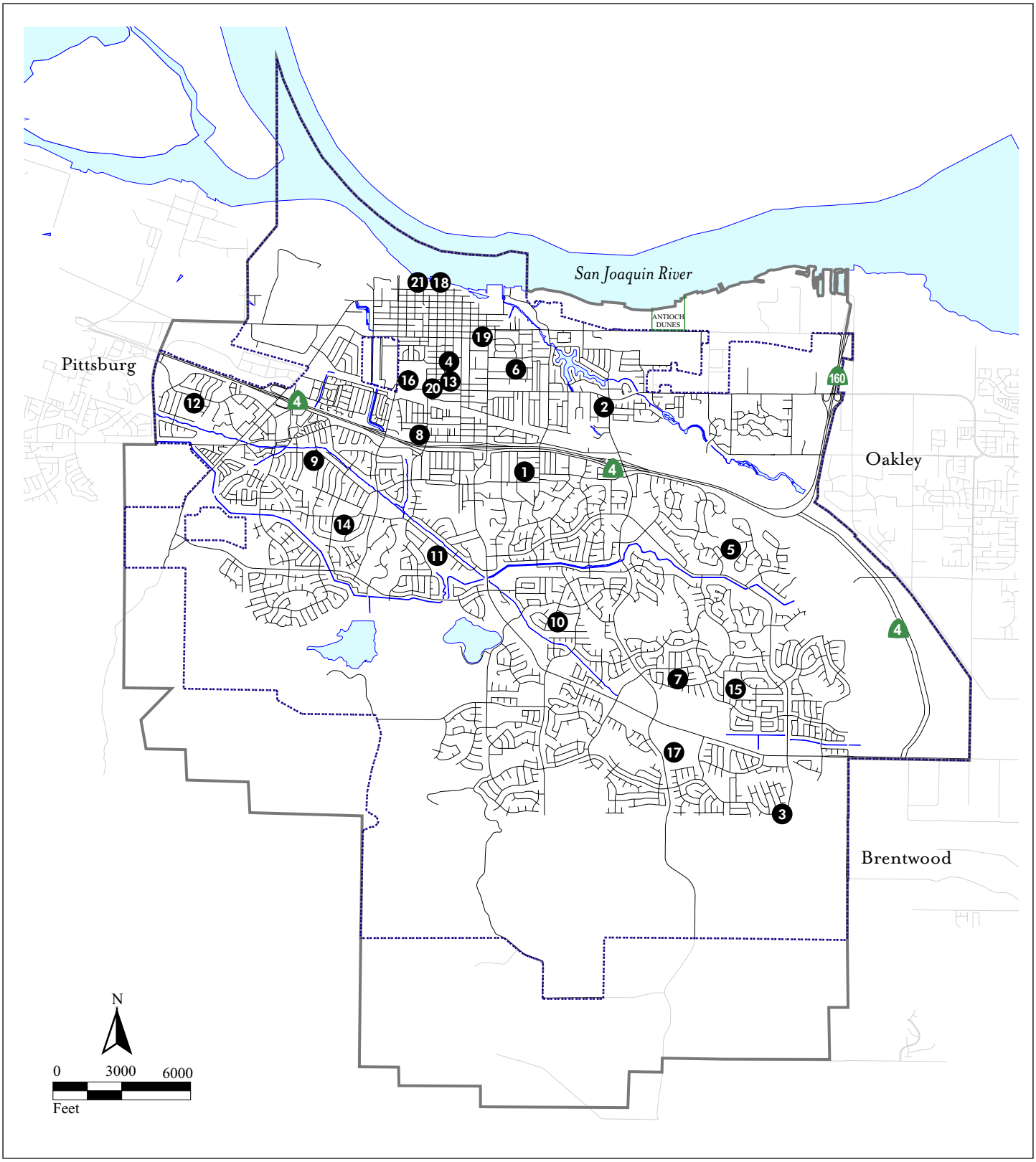
Public Schools. The City is primarily served by Antioch Unified School District (AUSD). Parts of Antioch (mostly within the Sand Creek and East Lone Tree focus areas) are served by the Brentwood Unified and the Liberty School Districts. The AUSD operates 22 schools, the locations of which are shown in Figure 4.11.2. Enrollment for each school within the AUSD is shown in Table 4.11.B. Total enrollment for the 2000-2001 school year was 20,307 students. The following types of public schools are located in Antioch:

- Twelve elementary schools (grades K through 5);
- Three middle schools (grades 6 through 8);
- Two high schools (grades 9 through 12);
- Four alternative schools (grades ranging from 7 to 12);
- One charter school (grades K through 8); and
- One adult school.

New public schools to be constructed within the City of Antioch include the Dallas Ranch Middle School, scheduled to be open in approximately July 2003; the North American Elementary School, scheduled to open in 2003-2004; and Meadow Creek Elementary School, scheduled to open in 2004-2005. The AUSD will also need to provide one additional high school as soon as possible to serve an increased enrollment due to a large cohort advancing into the high school grades and high school-aged children that have been added to the enrollment by the development of new housing in the City.[1] When Antioch FUA-1 develops, the AUSD will also need to provide one additional elementary school and to expand the middle school capacity. The funding source for FUA-1 schools is was studied by a subcommittee, which identified the use of Mello Roos District funds.

In the southeast Antioch area, the AUSD receives some funding from special taxes levied on all parcels that receive residential building permits. As a Mello Roos District, monies from this special tax are divided, with 80 percent directed to the Antioch Unified School District and 20 percent directed to the City of Antioch. The special tax rates for fiscal year 2000/2001 are listed in Table 4.11.C.

[1] Buchanan, Mary Ann, 2001. Senior Facilities Coordinator, Antioch Unified School District. *Written communication* with LSA Associates. January 9.



LSA

FIGURE 4.11.2

CITY LIMITS

PLANNING AREA BOUNDARY

1 SCHOOL LOCATIONS
(NUMBERS KEYED TO SCHOOLS LISTED IN TABLE 4.11.B).

City of Antioch
General Plan Update EIR
Location of Schools in the
Antioch Unified School District

SOURCE: LSA ASSOCIATES, INC., 2002.
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Table 4.11.B - Antioch Unified School District Enrollment 2001-2002

Map Key	Schools	Grades K-5	Total Enrollment
	Elementary		
1	Belshaw	K-5	779
2	Bidwell	K-5	665
3	Diablo Vista	K-5	990
4	Fremont	K-5	756
5	Grant	K-5	901
6	Kimball	K-5	695
7	London (Jack)	K-5	936
8	Marsh	K-5	653
9	Mission	K-5	715
10	Muir (John)	K-5	769
11	Sutter	K-5	763
12	Turner	K-5	697
	Total Elementary		***9,319***
	Middle Schools		
13	Antioch Middle School	6-8	1,320
14	Park Middle School	6-8	1,490
15	Black Diamond Middle School	6-8	1,820
	Total Middle School		***4,630***
	Traditional High Schools		
16	Antioch High School	9-12	2,589
17	Deer Valley High School	9-12	3,063
	Total High School		***5,652***
	Alternative Schools		
18	Bridges (Community Day)	7-12	26
19	Excell (College Accelerated)	12	26
20	Learner-Centered (Charter)	K-8	130
21	Live Oak (Continuation High School)	10-12	204
22	Prospects High (Independent Credit)	7-12	626
	Total Alternative School		***1,012***
	GRAND TOTAL		**20,613**

Source: California Basic Educational Data System, Enrollment in California Public Schools, by Grade, July 2002. District: Antioch Unified School District (07-61648).

Table 4.11.C - Mello Roos District Special Tax Rates Levied on Parcels Receiving Building Permits

Building Type	Square Feet	Area A[a]	Area B[b]
Single-family Detached	2,401+	$1,493.26	$1,203.78
	2,301 - 2,400	1,433.54	1,155.66
	2,201 - 2,300	1,373.80	1,107.46
	2,101 - 2,200	1,314.08	1,059.32
	2,001 - 2,100	1,254.36	1,011.16
	1,901 - 2,000	1,194.64	963.00
	1,801 - 1,900	1,134.90	914.92
	1,701 - 1,800	1,075.16	866.72
	1,601 - 1,700	1,015.44	818.56
	1,501 - 1,600	955.70	770.42
	1,401 - 1,500	895.98	722.26
	1,301 - 1,400	836.24	674.10
	1,201 - 1,300	776.52	625.96
	1,101 - 1,200	716.78	577.82
	0 - 1,100	657.06	529.66
Residential Attached	1,000+	657.06	529.66
	0 - 1,000	597.36	481.56

a Homes located in Antioch and within the Antioch Unified School District.
b Houses located in Oakley and within the Antioch Unified School District.

Source: Mary Ann Buchanan, Antioch Unified School District, 2001.

Private Schools. The City of Antioch has a number of private schools, including:

- Antioch Christian School (K-6);
- Child Day School (K);
- Delta Christian Junior/Senior High School (7-12);
- Great Beginning Elementary School (K-6);
- Heritage Baptist Academy (K-12);
- Hilltop Christian School (K-10);
- Holy Rosary School (K-8);
- Kindercare Learning Center (K);
- La Petite Academy (K);
- Promised Land Christian Kindergarten (K); and
- Stepping Stones Academy (K-6).

Parks and Recreation

Active Open Space. City residents have access to a variety of local parks, recreational facilities, regional parks, and open space areas. The City oversees the local parks and recreational facilities, while the regional facilities are overseen by the East Bay Regional Park District (EBRPD). The following description of open space and recreation facilities within the City of Antioch is divided into four sections: parks and recreation facilities; recreation programs; special use facilities; and regional facilities and trails.

Existing Facilities. The City owns and administers 28 parks, varying in size and amenities from the ½-acre Deerfield Park to the 99-acre Prewett Family Water Park. Over 400 acres of parks and open space areas are located within the City, 200 acres of which are developed. The remaining 200 acres consist of acreage awaiting development or are areas managed exclusively as open space.

The City has two categories of parks: Neighborhood Parks and Community Parks. Neighborhood parks are those parks that serve the immediate neighborhood or are a local attraction. Community Parks are community-oriented, with facilities that attract users from all over the City, such as the Antioch Community Park, Antioch City Park, Prewett Family Aquatic Park, and Barbara Price Marina.

Nearly all of the City's parks have barbeque pits, picnic tables, restrooms, turf landscaping, and youth play areas. Park amenities distributed throughout the City include softball, baseball, and soccer fields; horseshoe pits; volleyball, basketball, and tennis courts; tot lots; trails; and exercise courses. A large group picnic area is located in the Jensen Family Picnic Grove in the Antioch Community Park. The Prewett Family Water Park has a network of five pools and five water slides open seasonally, an instructional/lap swim pool open year-round, multi-use rooms available for rent, a preschool offering various classes, two sand volleyball courts, and a skate park. Figure 4.11.3 identifies City parks and special-use facility locations. Table 4.11.D lists City parks, acreage, and available amenities

Future Park Facilities. Black Diamond Estates, Dallas Ranch, Diablo West, Nelson Ranch, and the East Lone Tree Specific Plan Park are planned neighborhood parks that have not yet been developed. The City also plans to build parks within Sand Creek Focus Area, East Lone Tree Focus Area, and the southern portion of the Somersville Road Corridor Focus Area, each of which is currently undeveloped. Additionally, the City is considering development of several community parks, including Lindsay Basin, a sports park within the Sand Creek Focus Area, and development of the open space area at the Prewett Family/Aquatic Park.

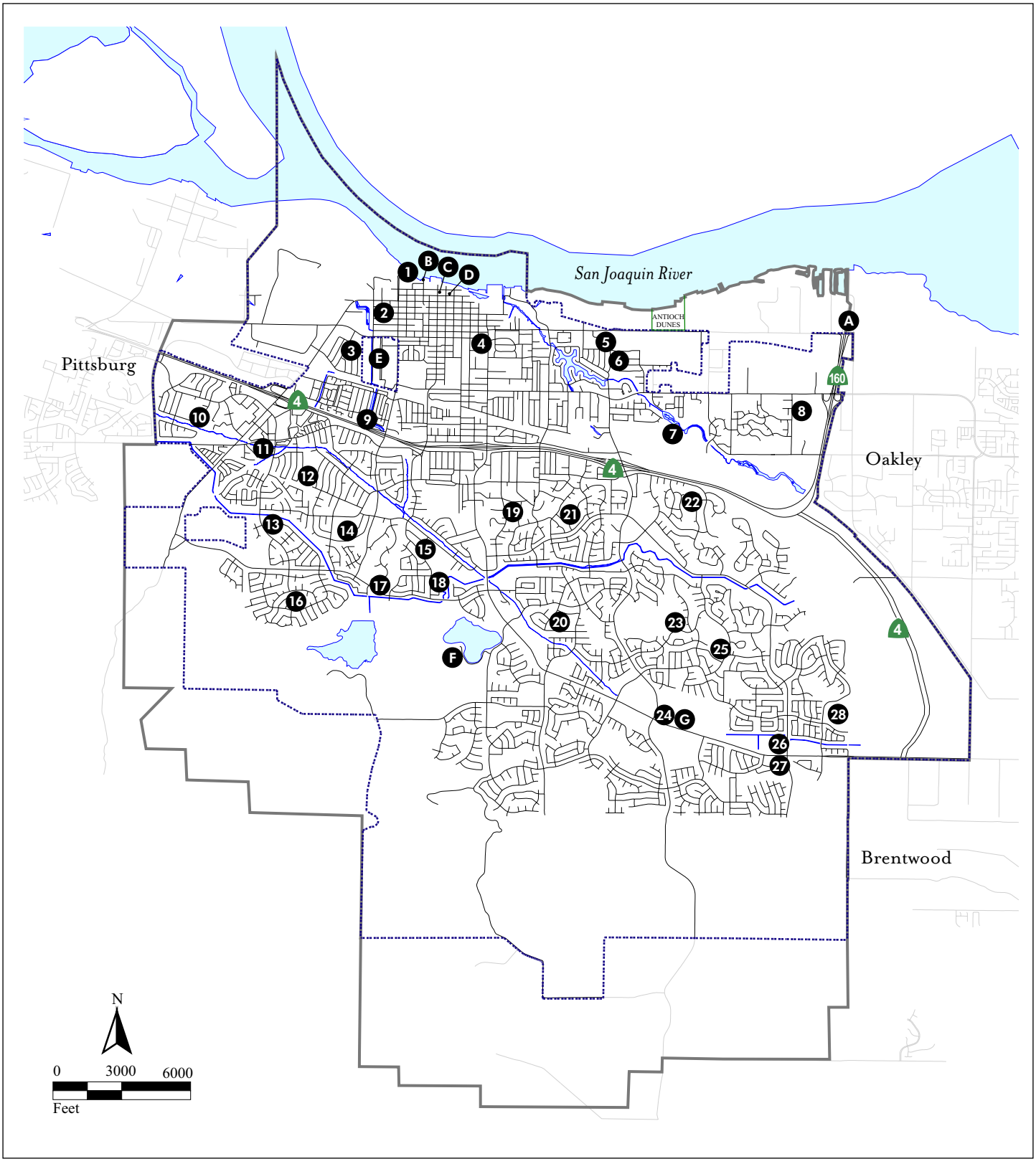

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FIGURE 4.11.3

CITY LIMITS

PLANNING AREA BOUNDARY

1 FACILITY LOCATION NUMBERS & LETTERS KEYED TO FACILITIES LISTED IN TABLES 4.11.D AND 4.11.E

City of Antioch
General Plan Update EIR
City and Regional Parks and Special Use Facility Locations

SOURCE: LSA ASSOCIATES, INC., 2002.
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Table 4.11.D – City of Antioch Park Facilities

	Park Name	Location	Acres	Barbeque Pits	Baseball Fields	Basketball Court(s)	Exercise Course	Group Picnic	Horseshoes	Picnic Tables	Restroom(s)	Soccer Field(s)	Softball Field(s)	Tennis Court(s)	Tot Play Area	Turf/Landscaping	Volleyball/Sport Court	Youth Play Area	Trails/Open Space
1	Barbara Price Marina Park	Foot of "L" Street	6.0	—			—	—		—	—				—	—			—
2	Prosserville Park	6th Street & O Street	1.6	—		—				—						—		—	
3	Fairview Park	Crestview Drive & Aster Drive	3.0	—		—				—	—					—		—	
4	City Park	10th Street & A Street	5.0	—					—	—	—		—		—	—			
5	Gaylord Sports Fields	Wilbur Avenue & Apollo Court	14.0		—					—	—	—	—			—			
6	Jacobsen Park	Jacobsen Drive	1.3	—		—				—					—	—			
7	Meadowbrook Park	Yellowstone Drive & Calaveras Drive	8.5		—											—	—		
8	Almondridge	Almondridge Drive & Beechnut Street	5.4	—						—	—	—	—	—	—	—		—	
9	Contra Loma Estates Park	Mahogany Drive & Manzanita Way	5.0											—	—	—		—	
10	Marchetti Park	Kendree Street south of Delta Fair Boulevard	5.0	—	—					—	—		—	—		—		—	
11	Village East Park	Gentrytown Drive & Melon Court	7.4	—						—						—			
12	Gentrytown Park	Carmona Way & Monterey Drive	14.0	—	—					—	—		—			—		—	
13	Canal Park	Gentrytown Drive & Curtis Drive	4.8	—						—	—				—	—		—	—
14	Mira Vista Park	San Francisco Way & Hacienda Way	6.8	—				—		—	—		—		—	—		—	
15	Chichibu Park	Longview Road & Acorn Drive	6.3	—				—	—	—	—			—	—	—		—	
16	Mira Vista Hills Park	Silverado Drive & Cordoba Way	9.2	—		—			—	—	—		—	—		—		—	
17	Antioch Community Park	James Donlon Boulevard & Blyth Drive	20.0	—				—	—	—	—	—	—		—	—	—	—	—
18	Sunnyridge Park	James Donlon Boulevard & G Street	5.3																—
19	Mountaire Park	Sunset Land & Elmo Road	5.1	—						—					—	—		—	
20	Eaglesridge Park	Eaglesridge Avenue & Greystone Drive	5.4	—						—	—				—	—		—	
21	Harbour Park	Ashburton Drive & Lindley Drive	7.9	—						—	—		—	—		—		—	
22	Hillcrest Park	Larkspur Drive & Sunflower Drive	18.0	—		—	—			—	—			—	—	—	—	—	
23	Country Manor	Asilomar Drive & Carpinteria Drive	20.0	—					—	—		—	—					—	—
24	Prewett Family Water Park and Community Center	Deer Valley Road & Lone Tree Way	99.0	—				—		—	—					—		—	—
25	Deerfield Park	Deerfield Drive & Buckskin Drive	0.5	—						—						—			
26	Knoll Park	Country Hills & Valley Way	5.0	—					—	—					—	—			
27	Williamson Ranch Park	Lone Tree Way and Hillcrest Avenue	5.0	—						—					—	—			
28	Meadow Creek Park	Vista Grande Drive	5.0	—		—				—					—	—			

Source: City of Antioch Leisure Guide, winter 2001.

Recreation Programs. The Department of Leisure organizes leisure activities, sports schedules, and senior programs for the City. The City has a wide variety of recreational programs for all age groups. Youth programs include classes, sport leagues, and camps. Classes include swimming, art, music, drama, gymnastics, martial arts, and dance. Sports leagues are offered for both boys and girls' basketball, and camps for baseball, flag football, soccer, and wrestling. For children in kindergarten through 4th grade, an adventure camp is available. Children and teens can also attend several of the creative and personal growth classes offered to adults.

Programs for adults include classes and sport leagues. Classes are offered in art, dance, music, martial arts, swimming/water aerobics, yoga, and creative or personal growth. Basketball, football, softball, and volleyball leagues are available to adults, in addition to bocce ball and swimming activities.

Seniors are offered recreation, social, information, and specialized service programs. Recreation activities include billiards, bingo, bowling, bridge, cribbage, golf, and pinochle. Social activities consist of trips and potluck gatherings. Classes are given in arts and crafts, computers, dance, exercise, music, Tai Chi, and quilting. Informational seminars are held on health and financial topics. Special senior services provided are blood pressure checks, driving, flu clinics, and health insurance. A Readers Theater Group is held weekly.

Park Standards, Acquisition, and Maintenance. Both the City of Antioch General Plan and the Subdivision Ordinance set a standard of 5 acres of parks and open space per 1,000 residents. The Subdivision Ordinance allows the 5 acres to be unimproved land. As of March 2001, the City provides 3.5 acres of improved parkland per 1,000 residents.

The City of Antioch receives land for parks through land dedications or purchases funded through fee collection. All park requirements are based on the Quimby Act, the State law regulating park exactions. The Subdivision Ordinance requires either a dedication of land at the rate of 0.015 acres per single-family unit, or payment of $1,050 per/unit. The current fee is based on a land cost of $70,000 per/acre.

Development of the new community level Prewett Park, was funded through Mello Roos and the impact fee program. The Mello Roos Community Facilities Act of 1982, California Government Code, Section 53311, allows for the financing of public facilities and services. The Antioch Area Public Facilities Financing Agency (AAPFFA) formed a Community Facilities District (CFD) which receives funding through the Community Facilities Act for use in the development of schools and Prewett. Parcels within a CFD are subject to a Special Tax according to the Special Tax Formula, although not an "assessment." Additionally, there is not a specific dollar lien attached to a parcel, as with an assessment district.

The Parks Division provides maintenance of parks in the City. Proposition 218 and subsequent propositions have limited funding mechanisms by requiring ballot measures for any changes to LLDs. Voters in Antioch defeated a ballot measure that would have adjusted the boundaries of the LLDs and which would have increased the fees. The defeat resulted in the City Council reinstating the original boundaries of the LLDs and reinstating their prior, and in some cases, a lower level of funding. Park

maintenance costs will now be largely borne by the General Fund. Park maintenance costs in the City of Antioch are approximately $1,500 per/acre, compared with the costs of nearby cities such as Dublin at $8,700 per/acre or Brentwood at $11,000/acre.[1]

The Parks and Recreation Commission, which consists of citizens-at-large appointed by the City Council, provides information and recommendations to the City Council related to management, landscaping, and recreational programs.

Special-Use Facilities. The City has several special-use facilities, the locations of which are shown in Figure 4.11.3 and listed in Table 4.11.E. The Antioch Municipal Marina is located at the foot of L Street in downtown Antioch. Facilities at the Marina consist of a fishing pier, municipal boat ramp, and marina clubhouse. The Marina is located adjacent to and shares some facilities with the Antioch Regional Shoreline. Also located along the San Joaquin River is the Riverfront Promenade, a trail facility between Barbara Price Marina Park and G Street. The Prewett Family Water Park is also considered a special-use facility, and is available for exclusive group use (called a park "buy-out"). The multi-purpose room and poolside patio may be also be rented out for events.

Table 4.11.E - Antioch Special Use Facilities

Location	Facility Name	Street Location	Amenities
A	Antioch Marina (shares some facilities with Antioch Regional Shoreline)	L Street & San Joaquin River	Marina, docks, fuel dock, fishing pier, bait and tackle shop, restrooms, showers, picnic tables, laundry facilities, restaurant, bird watching
B	Lynn House Gallery	809 1st Street	Art gallery
C	Nick Rodriquez Community Center	213 F Street	Theatre, multi-purpose room
D	Antioch Senior Citizens Club	2nd Street & E Street	Recreation programs, senior nutrition program
E	Contra Costa County Fairgrounds	10th Street & L Street	Arena, grandstand, livestock barn and stalls, judging area, pavilion stage, roller rink, maintenance shop, ballfields, turfed picnic area, manager's residence and administrative office, pre-school, exhibit buildings, parking facilities.
F	Lone Tree Golf Course	Golf Course Road & Lone Tree Way	Golf facilities, clubhouse
G	Antioch Skate Park	Deer Valley Road & Lone Tree Way	Skate and skateboard areas

Source: LSA Associates, Inc., 2001.

The Nick Rodriquez Community Center houses a 200-seat theater used for seminars, theatrical productions, music recitals, and other special services. The Community Center also has a large multi-purpose room which seats 200 people banquet style or 280 standing. Large and small meeting rooms are also available to residents.

[1] City of Antioch, 2001.

Other special use facilities are the City's Senior Citizens Center, a skate park, and the Lynn House Gallery. Most of the various programs for seniors are held at the Senior Citizens Center. The skate park, located adjacent to the Prewett Water Park, is open from dawn to dusk for in-line skating and skateboards. The Lynn House Gallery is available to show local art and exhibits.

Two golf courses are located in the area, the Lone Tree Municipal Golf Course, an 18-hole public course within the City limits, and the new Roddy Ranch Golf Course, a private course located outside the City limits. Other special-use facilities in the City include the Antioch Memorial Field and the Antioch Museum. The Contra Costa County Fairground is located on a 75-acre site outside the City limits, and has an arena, grandstand, and facilities for housing show animals. The fairgrounds are used not only for the annual Contra Costa County Fair, but is in use continually as the site of preschool classes, a roller rink, flea market, auto races, cultural and music events, and community league ballfields.

Regional Facilities and Trails. The East Bay Regional Park District (EBRPD) operates three facilities in the Antioch area (Figure 4.11.3 and Table 4.11.F). The largest facility, Black Diamond Regional Preserve, is a 5,386-acre open space area accessed by multiple use trails (i.e., pedestrian, bike, and equestrian trails). The Preserve offers naturalist programs, and visitors can tour the underground mining museum and an historic cemetery. Picnic areas and horse staging areas are also available.

Table 4.11.F - East Bay Regional Park District Facilities

Facility Name	Location	Amenities
Antioch Regional Shoreline	Wilbur Avenue & Bridgehead Street	Fishing pier, trails, open space, picnic tables, barbecue pits, restrooms, turf/landscaping
Black Diamond Mines Regional Preserve	Somersville Road	Trails, open space, historic mining exhibits, picnic tables
Contra Loma Regional Park	Fredrickson Lane	Trails, open space, fishing docks, swimming beach, boat launch, equestrian staging area, sailboat rental, food concessions, horseshoe pit, picnic tables, restrooms
Delta/De Anza Trail	Bay Point to Oakley	Multi-use trail

Source: LSA Associates, Inc., 2001.

Contra Loma Regional Park, adjacent to the Lone Tree Golf Course on the southern edge of the City, is 775 acres in size. The park surrounds the Contra Loma Reservoir, and offers multiple-use trails for hiking, biking, and horseback riding. The reservoir is available for fishing, boating, sailboarding, and swimming. The Park also provides picnic areas, horseshoe pits, and a food concession stand.

The smallest EBRPD facility in the City is the Antioch Regional Shoreline, which consists of 7 acres fronting the San Joaquin River, north of downtown Antioch. The Shoreline has a 550-foot long fishing pier, a small beach, picnic tables, barbecues, and a 4.5-acre meadow. Swimming is not allowed at the Antioch Regional Shoreline Park.

The EBRPD also oversees the Delta DeAnza Regional Trail. The Trail originates from Bay Point in the West Pittsburg area and runs east to a connection with the Marsh Creek Trail at East Cypress Road in Oakley. The Trail crosses Antioch from its western boundary with the City of Pittsburg at approximately Somersville Road, and parallels the Contra Costa Canal to Wild Horse Road at Hillcrest Avenue. The section from Hillcrest Avenue to the eastern City limits is not currently developed. This section is due to be completed as a condition of approval of the Viera Ranch project.

To serve the region, EBRPD attempts to provide open space as a buffer between development and a regional park, or by increasing local access points in appropriate areas.[1] The EBRPD is active in following planning projects in its district and working with local jurisdictions; it may request a dedication of land for park, trail, or conservation use as a condition of approval on projects.

The EBRPD general fund is supported by property taxes. Projects that have a direct impact on a regional facility may be required to dedicate land as a condition of approval. Funding for improvements for the Delta DeAnza regional trail comes from two county landscaping and lighting assessment districts (LLD) established specifically for it, which assess a fee from residential parcel taxes to pay for landscaping and lighting along the trail. The LLD establishes zones of benefit for new developments along the trail that help pay for the long-term maintenance of trail dedications.

Public Services Existing Policies and Regulations

The Uniform Fire Code established by the International Fire Code Institute and the Uniform Building Code established by the International Conference of Building Officials both prescribe performance characteristics and materials to be used to achieve acceptable levels of fire protection.

Quimby Act (California Government Code 66477). This State policy requires the dedication of land and/or imposes a requirement of fees for park and recreational purposes as a condition of approval of tentative map or parcel map.

4.11.2 Public Services Thresholds of Significance

Police. The proposed General Plan is considered to have a significant impact on police services if it would result in a substantial need for such services that could not be provided by available Police Department personnel or equipment.

Fire. An impact to fire protection is considered significant if one or more of the following conditions would result from implementation of the proposed General Plan:

- Place residents or the general public in a situation of endangerment as a result of inadequate services, resources, and/or safety measures;

[1] Chavez, Linda, 2000. Park Planner, East Bay Regional Park District. Personal communication with LSA Associates, Inc. December.

- Create or exacerbate an existing fire hazard, or expose people to high fire hazard conditions without adequate fire protection; and/or
- Result in an increase in response times in excess of five minutes for urban areas, as established by the existing and proposed General Plan.

Schools. The proposed General Plan would be considered to have a significant impact on schools if the existing or planned facilities are not adequate to serve the City's public educational needs or when the capacity of the school district is exceeded and additional students would exacerbate the problem.

Parks. The proposed General Plan would result in a significant impact on parks and recreational facilities and/or services if growth anticipated with implementation of the proposed General Plan would:

- Require additional staff and/or equipment to maintain acceptable facilities and/or levels of service;
- Result in a substantial need for new, altered, or expanded parks and/or recreational facilities and/or services; and /or
- Does not meet a standard of five (5) acres of neighborhood or community parkland per 1,000 population.

4.11.3 Public Services Impacts and Mitigation

Potentially Significant Impacts

Police Protection

Impact 4.11.1. *Increases in population and employment anticipated with the proposed General Plan would increase the need for police protection and police services, requiring additional emergency responses and the need for additional police personnel and related support facilities. This increased demand for officers and facilities is considered a significant impact.*

As of January 1, 2001, the City of Antioch Police Department had 98 sworn officers. With a projected population of 146,785 in 2020 and a need for officers estimated to be 1.2 to 1.5 officers per 1,000 residents, there would be a need for 176 to 220 sworn personnel at General Plan build out. Hence, the department would need to approximately double in size to meet police service needs generated by development consistent with the proposed General Plan. The ability of the Police Department to support the needs of future growth is dependent upon its financial ability to hire additional sworn personnel. In addition, a growing population and local employment base will require that the Police Department secure expand existing facilities to accommodate a larger force on a timely basis.

Proposed General Plan Policies. The proposed General Plan includes the following policies intended to address the effects of future residents on police protection services. These policies ensure adequate police protection as development occurs. The effectiveness of the policies at reducing such

impacts is analyzed below and additional mitigation measures are provided to ensure that future development in the City would not have significant adverse impacts on police protection services.

3.5.3 Police Service

3.5.3.1 Performance Objective. Maintain an active police force, while developing programs and police facilities that are designed to enhance public safety and protect the citizens of Antioch.

3.5.3.2 Performance Standard. Maintain a force level within a range of 1.2 to 1.5 officers per 1,000 population (Option A)[1].

Provide sufficient facilities and staffing to ensure the safety of the citizens of Antioch by:

a. Providing expedient response to emergency calls.

b. Maintaining an efficient well-trained and adequately equipped force of police personnel.

c. Providing neighborhood watch and crime prevention programs, and attempting to improve the participation of individual neighborhoods and businesses.

d. Continuing to provide a variety of programs within the Police Department (e.g., traffic crime prevention, REACH, narcotics, investigations) to meet the needs of an active community (Option B).

8.11.2 Police Services Policies

a. Provide an adequate police force meeting the performance standards for police services set forth by the Growth Management Element.

- As part of the annual budget and capital improvements program, assess crime prevention and law enforcement services, and evaluate the adequacy of Antioch's facilities and services, personnel and staffing needs, and capital needs, based on anticipated growth and the level of service standard set forth in the Growth Management Element.

b. Provide basic requirements and incentives for the provision of design features in new development to reduce the potential for crime.

- Provide well-lighted and visible streets and street names, entrances, addresses, recreation areas, and parking areas;
- Limit access into and between buildings to reduce escape routes and make undetected entry difficult;
- Provide landscaping which permits surveillance of open areas and entryways and does not create places for concealment;

[1] The proposed General Plan provides both a quantified and a non-quantified performance objective for review by the public, Planning Commission, and City Council. Only one police services performance objective will be ultimately approved by the City Council.

- Within multifamily and non-residential developments, design access systems to allow emergency vehicle access around buildings to the greatest extent possible; and
- Within multifamily and non-residential developments, eliminate the potential for access to roofs by pallets, flag poles, etc.

c. Involve the Antioch Police Department in the development review process by referring development requests to the Police Department for review and comment.

d. Promote community involvement in crime prevention.

- Promote the establishment and operation of neighborhood watch, park watch, and business watch programs; and
- Work with area schools to maintain educational programs aimed at preventing gang and drug-related activities.

Effectiveness of General Plan Policies. The proposed General Plan policies reduce the impact of growth on police services to a less than significant level by placing requirements on subsequent development projects to mitigate impacts in accordance with established performance standards.

Mitigation Measures. No additional mitigation is required.

3.5.2 Fire Protection

Impact 4.11.2. *Implementation of the proposed General Plan will result in a substantial increase in population and residential and non-residential structures, increasing the need for fire emergency services and facilities. Based on increased population figures and current staffing levels, development associated with the proposed General Plan would require additional on-duty firefighters. Therefore, the proposed General Plan could result in significant impacts on existing fire protection services and require expansion of fire protection services.*

The provision of fire stations varies more as a function of the geographic distribution of structures than of population increases. One of the most important criteria for effective firefighting is the response time needed to reach the site of the fire. Existing stations are strategically located to ensure adequate service within the area. As stated previously, Station 82 will be relocated by 2004 to Blue Rock Drive/Lone Tree Way, to better serve southeast Antioch. Nevertheless, having more structures over a larger geographic area at build out suggests that the potential for structural fires would increase with the proposed General Plan.

Additional development, particularly industrial, will increase the amount of flammable and hazardous materials, such as gasoline, crude oil, and acids stored, used, or transported within Antioch. Service calls regarding the containment of hazardous materials are serious and may require the assistance of specialists. Additionally, the increase in the amount of hazardous materials within the City would increase the potential for hazardous material accidents along roadways.

The increase in residential population and employment opportunities with the proposed General Plan and resulting demand for fire protection and emergency medical services is considered a significant impact.

To achieve fire protection for all residents of the City, the City Building Inspection Services Division and the County Fire Department enforce fire standards as they review building plans and conduct building inspections.

Proposed General Plan Policies. The proposed General Plan includes the following policies intended to address the effects of fire hazards on future residents and habitable structures. These policies reduce the effects of fire hazards by both reducing the fire threat and by maintaining adequate fire protection plans. Implementation of the listed policies, along with the implementation of the Uniform Fire Code and the Uniform Building Code, will reduce the effects of development on fire protection service impacts to a less than significant level.

3.5.2.1 Performance Objective

Maintain competent and efficient fire prevention and emergency fire, medical, and hazardous materials response services with first responder capability in order to minimize risks to life and property.

3.5.2.2 Performance Standard

Prior to approval of discretionary development projects, require written verification from the Contra Costa County Fire Protection District that a five-minute response time (including three minute running time) can be maintained for 80 percent of emergency fire, medical, and hazardous materials calls on a citywide response area basis.

8.10.2 Fire Protection Policies

a. Work with the Contra Costa County Fire Protection District to provide high quality fire protection services to area residents and businesses. The City's role should include, but not be limited to:

   - Determining the appropriateness of station location sites;
   - Enforcement of building codes to reduce fire hazards;
   - Collection of mitigation fees established by the fire district to construct needed additional stations within the Antioch Planning Area;
   - Support the District in providing funding for personnel costs to staff stations within the City;
   - Support the District in establishing fees that are adequate to mitigate the impacts of new development and income to support operation of new stations whose construction is financed with development fees; and
   - Requiring reasonable reservation of appropriate sites for new fire stations as part of new development.

b. In cooperation with the Contra Costa County Fire Protection District, conduct an annual assessment of the adequacy of facilities and services serving Antioch, personnel and staffing needs, and capital needs, based on anticipated growth and the level of service standard set forth in the Growth Management Element. This assessment should be undertaken as part of the annual review of proposed capital projects required by the California Government Code (see Chapter 12, Implementation, Section 12.4b).

c. Provide the Contra Costa County Fire Protection District with timely information on development proposals and projected levels of future growth so that it can maintain appropriate long-term master plans and refine the delivery of service and facilities to maintain the performance standards set forth in the Growth Management Element.

d. Involve the Fire Protection District in the development review process by referring development requests to the Police Department for review and comment.

Effectiveness of General Plan Policies. Implementation of the General Plan policies will reduce potential impacts related to the effects of future development on fire protection services by reducing the threat of fire, improving the firefighting infrastructure, and ensuring that growth does not exceed acceptable levels of service. Therefore, potential impacts related to fire protection services will be reduced to a less than significant level.

Mitigation Measures. No additional mitigation is required.

3.5.8 Schools

Impact 4.11.3. *Implementation of the proposed General Plan will result in increased development and associated student population throughout the City. School districts may be unable to meet future needs resulting from projected growth.*

As new residential development occurs pursuant to the proposed General Plan, new families will move into Antioch, increasing the number of school-age children within the community. To accommodate increased enrollment, area school districts will need to provide additional school facilities. Table 4.11.G shows the generation factors and number of grade school students at the proposed General Plan build out. Table 4.11.G presents a worst case scenario, since it does not assume development of any senior, age-restricted housing within Antioch.

Table 4.11.G - Student Generation at Build Out, Assuming No New Senior Housing

School Level	Build Out (New Dwelling Units)	Generation Factor	Anticipated Number of Students at Build Out
Elementary	18,336 dwelling units	0.45	8,253
Middle	18,336 dwelling units	0.21	3,850
High	18,336 dwelling units	0.17	3,117
Total			**15,220**

Note: Student generation factors are a compilation of generation factors used by the Antioch Unified School District, Brentwood Union School District, and the Liberty Union High School District.

Based on single-track year-round education, an elementary school has a capacity of 750 students, while a middle school has a capacity of 1,250 students. The assumed capacity for a new high school is 3,000 students. Thus, General Plan build out will result in the need for nearly 11 new elementary schools, 3 new middle schools, and 1 new high school.

As of the time of writing of this Draft EIR, it appears that as many as 1,899 to 2,400 of the 4,000 to 5,000 dwelling units within the Sand Creek Focus Area will be age-restricted senior units. In addition, based on recent housing trends in surrounding communities, it may be reasonable to expect that as much as 10 percent of the remaining housing within Antioch would consist of age-restricted, senior developments. Table 4.11.H identifies student generation at General Plan buildout with senior housing developed at these rates.

Table 4.11.H - Student Generation at Build Out, Assuming New Senior Housing

School Level	Build Out (New Dwelling Units)	Generation Factor	Number of New Students at Build Out
Elementary	14,702 dwelling units	0.45	6,616
Middle	14,702 dwelling units	0.21	3,087
High	14,702 dwelling units	0.17	2,499
Total			**15,220**

Note: Student generation factors are a compilation of generation factors used by the Antioch Unified School District, Brentwood Union School District, and the Liberty Union High School District.

Based on single-track year-round education, and the assumed amount senior housing, General Plan build out will result in the need for nearly 9 new elementary schools, 2-3 new middle schools, and nearly one new high school.

Existing State of California Policies

The State of California has adopted the Leroy F. Greene School Facilities Act of 1998 (SB50). The California State Legislature enacted SB50, which made significant amendments to existing State law governing school fees.

In particular, SB50 amended prior Government Code 65995(a) to *prohibit* State or local agencies from imposing school impact mitigation fees, dedications, or other requirements in excess of those provided in the statute in connection with *"any legislative or adjudicative act…by any state or local agency involving…the planning, use, or development of real property…."*

The legislation also amended Government Code 65996(b) to prohibit local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any *"legislative or adjudicative act…involving…the planning, use or development of real property…"*

SB50 establishes the base amount of allowable developer fees at $1.93 per square foot for residential construction and $0.31 per square foot for commercial (See Government Code 65995(b)). These base

amounts are commonly called "Level 1 fees" and are the same caps that were in place at the time SB50 was enacted. Level 1 fees are subject to inflation adjustment every two years.

In certain circumstances, for residential construction, school districts can impose fees that are higher than Level 1 fees. School districts can impose Level 2 fees, which are equal to 50 percent of land and construction costs if they (1) prepare and adopt a school needs analysis for facilities, (2) are determined by the State Allocation Board to be eligible to impose these fees, and (3) meet at least two of the following four conditions:

- At least 30 percent of the district's students are on a multi-track year-round schedule;
- The district has placed on the ballot within the previous four years a local school bond that received at least 50 percent of the votes cast;
- The District has passed bonds equal to 30 percent of its bonding capacity; or
- At least 20 percent of the district's teaching stations are relocatable classrooms.

Additionally, if the State's bond funds are exhausted, a school district that is eligible to impose Level 2 fees will be authorized to impose even higher fees, which are commonly referred to as "Level 3 fees," equal to 100 percent of land and construction costs of new schools required as a result of new developments.

Proposed General Plan Policies. The proposed General Plan includes the following policies intended to address the effects of future residents on school services. These policies ensure adequate school facilities and services as development occurs. The effectiveness of the policies at reducing such impacts is analyzed below.

3.5.8.1 Performance Objective

Provision of schools in locations that are readily accessible to student populations, along with sufficient facilities to provide educational services without overcrowding.

3.5.8.2 *Performance Standard*

Require new development to provide necessary funding and/or capital improvements to mitigate projected impacts on school facilities, as determined by the responsible school district.

8.8.2 School Facilities Policies

a. Maintain clear, ongoing communications with area school districts on all matters related to the need for and provision of school sites and other administrative, educational, and recreational facilities.

b. Coordinate the planning efforts of the City and local school districts by:

   - Locating school facilities to facilitate the primary educational purpose of the facility and allow for safe pedestrian, bicycle, and vehicular access, including the provision of traffic calming measures, where appropriate, in the vicinity of schools;

   - Maximizing the joint use of facilities by the City and local school district (including, joint school/park sites and, where feasible, joint use of athletic fields, community meeting facilities, and provision of child and senior chare facilities) by developing joint funding for

such facilities through a combination of school district and City sources, provided that City contributions to joint facilities are consistent with the availability of such joint facilities to meet non-school recreational and other community needs;

- Designing attractive facilities that can also serve as neighborhood and community gathering places, and contribute to neighborhood identity and pride;
- Requiring reasonable reservation of appropriate locations for development of new schools as part of new development; and
- Regularly exchanging information on (1) the status of development review and construction, (2) the capacity of area schools, (3) the status of site acquisitions by the districts, and (4) applicable student generation factors by type of development.

c. Require new development to pay all legally established fees or participate in land-based financing districts established by local school districts for the acquisition and development of school sites with adequate, permanent classroom space, as required by the local school district.

d. Maintain land development regulations permitting the development of public and private educational facilities at appropriate locations within the Planning Area.

e. Provide incentives in the City's residential growth management program for the provision of developer assistance to local school districts beyond nominally required mitigation fees. The objective of such incentives is that the combination of required fees and incentives provides a full contribution proportional to the needs of the proposed development for all school-related facilities to serve the proposed project.

f. Work with Los Medanos College to further accessibility to and the quality of local community college education.

g. Work with universities (e.g., CSU Hayward, University of Phoenix) to create satellite campuses within Antioch.

h. Work with trade schools (e.g., DeVry Institute, ITT Technical Institute, Bryman College) to locate new facilities in Antioch.

Effectiveness of Proposed General Plan Policies. Implementation of the General Plan policies would reduce potential impacts related to the effects of future development on school services. The proposed General Plan polices ensure adequate mitigation of impacts on school facilities and services to be provided as development occurs. However, SB50 states that the method of mitigating the impact of school facilities according to CEQA is to pay the maximum school fees and that such fees are "deemed to provide full and complete school facilities mitigation"(Government Code 65996(a) and (b)). Because the Government Code states that compliance with SB50 will provide full and complete mitigation, no significant impact will occur.

Mitigation Measures. No additional mitigation is required.

Parks and Recreation

Impact 4.11.4. *Build out within the City of Antioch will result in a substantial increase in population, potentially increasing the use of existing parks and recreation facilities. Based on this increased population, development associated with the proposed General Plan will require additional parkland and recreational facilities. Therefore, the proposed General Plan could result in significant impacts on existing parks, as well as recreation services and facilities. These impacts will require the expansion of existing facilities and recreation programs or the construction of new parks and recreational facilities. An increase in staff and/or equipment will be needed to maintain the new parkland and recreational facilities.*

The proposed General Plan identifies and guides future growth, development, and environmental management throughout the City. This anticipated growth and development would increase the demand for park and recreation facilities, and would require the construction of new parks and facilities. It is anticipated that there would be a population of 146,785 at build out, who would require approximately 734 acres of improved neighborhood and/or community parkland, based on a 5.0 acres per 1,000 population park acreage per resident ratio. Currently the City has approximately 400 acres of neighborhood or community parkland. Thus, to avoid a significant impact, an additional 334 acres of parkland would need to be acquired and developed as part of General Plan build out.

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects of future growth on parks and recreational facilities. As specified in these policies, new development shall also meet the parkland requirements as established in the Quimby Act and City enabling ordinances. Implementation of the proposed General Plan policies related to parks and recreational facilities would minimize the effects of growth and development.

8.9.2 Parks and Recreation Policies

a. Provide a comprehensive system of recreation and park facilities and services needed by various segments of the City's population (including specific age groups, persons with special physical requirements, and groups interested in specific recreational activities) and make these facilities and services easily accessible and affordable to all users.

b. Provide a range of public parklands for use by the community including the following:

   Neighborhood Park. A park or playground generally five to ten acres in size primarily developed to meet the recreational needs of citizens living within 0.5 to 1.0 mile.

   Joint School/Park. A neighborhood park development, improved, and maintained on or adjacent to school grounds by the City. Joint school/park facilities are utilized jointly by students and residents from the surrounding neighborhoods. Since school facilities are only available for use by the general public when school is not in session, only half of the total acreage is to be applied to the City's park standard.

   Community Park. A larger park or facility developed to meet the park and recreational needs of those living or working within a 3 to 5-mile radius. Community parks generally range in size from 10 to 60 acres.

   Regional Park. A park having a wide range of improvements not usually found in neighborhood or community parks, and designed to meet recreational needs of an entire regional population.

Regional parks are generally over 100 acres and serve a population within a 30-minute driving time. Regional parks are generally provided by County and State agencies, and are therefore not included in local park standards.

Specialized Recreation Areas. These include recreational areas of facilities devoted to specific activities or uses. Examples include linear parks (trails), sports and ball field complexes, swimming pools, bicycle facilities, riverfront trail and sitting areas, and marinas and boat launch facilities.

The facilities identified above, with the exception of regional parks devoted to preserving the natural environment, generally require relatively flat land. Areas over 10 percent slope will be reviewed by the City prior to dedication to determine the extent to which they serve the intended purposes of the park and to which dedication of such sloping lands will therefore be credited against the applicable performance standards of the Growth Management Element.

c. Maintain a minimum size for neighborhood parks of five acres or more, unless there is a specific need for a smaller facility.

d. Secure and develop a shoreline park along the San Joaquin River consisting of recreational trails, viewing areas, and natural habitat protection so as to ensure availability of the waterfront in the City for public enjoyment.

e. Provide passive and active elements within neighborhood and community parks to meet the needs of citizens of all ages and interests, and thereby ensure that the need for lands for athletics and team sports is an equal to the provision of tranquil settings for picnicking, walking, and relaxation.

f. Develop athletic field complexes and specialized recreation areas to accommodate the growing community needs for such facilities.

g. Encourage the preservation of significant natural features and development of landscaped parkways and trail systems in new developments in addition to required park development.

h. Work with Contra Costa County to establish joint use flood control/recreational facilities, including multi-use trails and open space along channels and creeks, and within detention basins.

i. Provide incentives in the City's residential growth management program for the dedication and improvement of usable parklands beyond those normally required by the City.

j. Provide incentives for private individuals to donate land and funds for park development to the City by establishing a means to accept tax-deductible donations, which may also include donation of equipment and facilities.

k. Seek partnership opportunities with the private sector and non-profit organizations for the acquisition, development, and maintenance of park facilities and the provision of leisure activities.

l. Recognize that high quality maintenance and upkeep of park facilities is necessary for the economic health of the community, and place appropriate priority on park maintenance.

m. Locate new park facilities so that they are highly visible from adjacent streets and neighborhoods to increase safety and enhance visual quality.

n. Require the provision of private play space for children in small lot single-family subdivisions and attached residential developments.

o. In addition to the provisions of the Quimby Act, pursue use of park fees through grants, the provisions of AB1600, and land-based financing districts.

p. Establish limitations on the amount of private recreational facilities (e.g., swimming pools, tennis courts, and private parks) that can be substituted for public park dedication of payment of fees. Base such limitations on the extent of public access to the facilities and the extent to which such private facilities might serve public recreation needs.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan policies will minimize the effects of growth and development to a less than significant level. These policies will guarantee that the future residents of the City will be provided with adequate parks and recreation facilities. Implementation of proposed policies would lessen the potential impacts on park and recreation facilities and/or services to less than significant levels.

Mitigation Measures. No additional mitigation is required.

4.11.4 Public Services Level of Significance after Mitigation

Implementation of the proposed General Plan polices and proposed mitigation measures would ensure the provision of public services and ensure the funding for additional personnel and facilities, thereby reducing potential impacts related to a future development's effects on public services to a less than significant level.

4.12 UTILITIES

The following section evaluates potential adverse impacts to utilities within the City of Antioch that could result from implementation of the proposed General Plan. Mitigation measures are recommended, as necessary.

4.12.1 Utilities Existing Setting

This section describes the existing conditions of the water supply and distribution system, the wastewater collection and treatment system, gas and electric utilities, telecommunications, and solid waste collection in the City of Antioch.

Included as part of this description are proposed system upgrades and improvements for the public utilities and services.

Water Supply System. The City receives water from two sources. The Contra Costa Water District (CCWD) supplies the City with raw water obtained from the Sacramento-San Joaquin Delta and delivers it to Antioch via the Contra Costa Canal. In addition to CCWD water, the City of Antioch has water rights to divert water directly from the San Joaquin River. The City has a pumping plant for this purpose. In the last several years the City has increased the amount of water pumped from the San Joaquin River to approximately 9,000 acre-feet, a level that is approaching the amount purchased annually from CCWD.

Raw water from both sources is stored in the Municipal Reservoir, located adjacent to the Lone Tree Golf Course, then treated at the Antioch Water Treatment Plant, located on Putnam Street. After treatment, the water is transmitted through a distribution system of 4- to 30- inch pipelines throughout the City. In addition to the Municipal Reservoir and Water Treatment Plant, the City owns and operates 11 storage reservoirs with a combined storage capacity of 21.5 million gallons, six booster pumping stations, and several backup wells.

Total water usage for the City has grown from 12,205 acre- feet a year in 1990 to 18,700 acre feet a year in 2000, an increase of 53 percent. Most of this increase has been supplied by water the City pumps from the San Joaquin River.[1] The amount of water received from CCWD has stayed relatively stable, increasing only two percent over the same time period.[2]

Residential users consume 86 percent of the treated water. The City currently has 25,700 meter connections, 90 percent of which are residential.[3] Daily water usage for the City varies from 8 to 9-million gallons per day (mgd) in winter to 26 mgd in summer. The Maximum Day Demand (MDD) of almost 26 mgd is nearly 100 percent of the Water Treatment Plant's capacity. The Water

1 Jon Billeci, Public Works Department, City of Antioch, 2001. *Personal communication with LSA Associates*. January.

2 Contra Costa Water District, 2000. *Water Contract Historical Use Calculation Tables.* December.

3 Joe Brandt, City Engineer, City of Antioch, 2001. *Personal communication with LSA Associates*. January.

Treatment Plant can be expanded to handle over 60 mgd, and additional capacity will be added as future demands dictate.[1]

Although CCWD does not impose daily entitlements for water on the City, there is a physical limitation on the amount of water that can be delivered through the Contra Costa Canal. Daily deliveries are based on the daily estimates provided by each raw water customer, and the Canal operates at close to peak capacity during peak hours and the summer.

In 2001, CCWD began construction of a new multi-purpose pipeline linking the Randall-Bold Treatment Plant in Oakley with the Central County Treated Water Service Area. The new pipeline will be used to transport either treated or raw water east or west, depending on conditions and needs, and will enable CCWD to meet projected demands for the CCWD service area through 2040.

Water that the City can pump from the San Joaquin River is not limited by an allotment or contract, but by the water quality of the River. Water quality in the San Joaquin River near Antioch varies within the course of a year. Generally, the water quality is best during the spring when winter snows have thawed and the salinity of the River is at a minimum.

Wastewater System. The City is responsible for collection of wastewater and maintenance of the sewer lines, which are generally located under roadways or other City-owned land. The City has over 190 miles of sewer lines ranging in size from 6 inches to 3 feet.

The Delta Diablo Sanitation District (DDSD) provides sewer treatment service to Antioch, Pittsburg, and Bay Point. The City is within DDSD service boundaries, which are conterminous with City limits. The DDSD is responsible for conveyance of wastewater from the point of discharge from City pipes to interceptor stations, which convey the sewage to the Bridgehead and Antioch pump stations, located in southeast Antioch and at Fulton Shipyard Road, respectively. The wastewater is treated at the DDSD wastewater treatment plant, located near the border of Antioch and Pittsburg.

DDSD uses standard multipliers for estimating residential and commercial wastewater demand. The standard multiplier for residential base wastewater flow is 220 gallons/per day and 1,000 gallons/per day/per acre for commercial users. Average dry weather flow (ADWF) to the treatment plant in 1999 was 13.4 mgd. The plant has a capacity of 16.5 mgd and is currently running at 81 percent capacity. Sewage flow to the plant does not fluctuate seasonally, as sewer and storm water systems are separate.

Expansion of the plant was finished in 1990, increasing capacity from 13.5 mgd to 16.5 mgd. The next planned expansion will increase the plant capacity from 16.5 mgd to 22.5 mgd; however, DDSD estimates that this additional capacity will not be needed until after 2008.[2] Funds for future plant expansion are collected by the City on behalf of DDSD from sewer connection fees. Any future expansions will need to be approved with the Cities of Pittsburg and Bay Point.

[1] Jon Billeci, Public Works Department, City of Antioch, 2001. *Personal communication with, LSA Associates.* January.

[2] Greg Baatrup, Delta Diablo Sanitation District, 2000. *Personal communication with LSA Associates*. December.

Stormwater System. Stormwater collection in the City is overseen by the Contra Costa County Flood Control and Water Conservation District (Flood Control District). The City has over 110 miles of trunk lines to collect stormwater. These trunk lines are independent from the wastewater collection system. The stormwater trunk lines discharge to channels owned and maintained by both the City of Antioch and the Flood Control District.

The Flood Control District releases stormwater from the channels to the San Joaquin River and is the holder of a National Pollution Discharge Elimination System (NPDES) permit. Contra Costa County Clean Water Program staff monitors the quality of the released water to comply with the specifications of the NPDES permit.

Maintenance fees for the system come from the City, which collects fees through the Contra Costa County Clean Water Program. Assessment fees in the City vary from $0.17 to $0.42/square foot in addition to the Standard Pool Fee, which varies from $145 to $370 depending on the Drainage Plan District. The Central Valley Regional Water Quality Control Board regulates stormwater discharged from the City.

Gas and Electric Services. Pacific Gas and Electric (PG&E) supplies electricity and natural gas service to the City. The City is located within PG&E's Delta Distribution Planning Area (DPA), which covers the eastern portion of Contra Costa County from Bay Point to Discovery Bay. Electricity distribution facilities are located throughout the DPA, with no one set of facilities dedicated to serving the City.

Two power plants are located near Antioch: the Contra Costa Power Plant (CCPP) located on Wilbur Avenue, one mile northeast of the City, and Calpine's Los Medanos Energy Center in Pittsburg. The CCPP plant is planning for expansion and the Los Medanos Energy Center is a new facility. In January 2000, the CCPP filed an Application for Certification for the Unit 8 Power Project, which will add a 530-megawatt natural gas-fired, combined cycle, combustion turbine power plant to the existing facilities. A PG&E switchyard is located on the CCPP site and it is not anticipated that additional electric transmission lines outside of the site will be needed to transmit the electricity to the regional transmission grid. The expansion is expected to be completed by late 2002 or early 2003. The Los Medanos Energy Center began operation on July 9, 2001. The Energy Center is fueled by natural gas and will produce up to 555 megawatts of electricity. Both power plants sell their energy through direct sales agreements and on the spot market via the California Power Exchange.[1,2]

Currently, electric demand within the DPA is approximately 370 megawatts. PG&E does not use standard multipliers to determine future demand for electricity; load projection analyses and review of service applications are used instead. Load projection analyses are updated on a yearly basis and new service applications are reviewed to determine if short-term improvements are needed to accommodate projects. Based on PG&E's load growth projection studies, the DPA is currently experiencing 21.2 megawatts of growth per year. Although the load growth study does not isolate specific numbers for the City, PG&E estimates that the City will experience 8.0 megawatts of load

1 California Energy Commission, 2001. *Contra Costa (Antioch) Power Plant Project.* August 13. Available at http://www.energy.ca.gov/sitingcases/contracosta/index.html.

2 East Bay Business Times, 2001. *Pittsburg power plant goes online.* July 9.

growth a year, mainly concentrated in southeastern Antioch and the western area of Brentwood.[1] Based on the current load growth projections for the City, distribution capacity will be exceeded by the summer of 2004. At that time, a new electric substation and interconnecting transmission line will be needed to serve the area.

In anticipation of growth in the City, PG&E purchased a site for a new electric substation in 1991. The site is located near the future intersection of Hillcrest Avenue and Sand Creek Road. PG&E will begin construction and operation of this facility as electrical needs develop.

Natural gas is supplied to the City via a number of gas transmission lines located in east Contra Costa County. As with electricity demand, PG&E does not use a standard multiplier for estimating the demand for natural gas, and instead calculates its estimates by reviewing new service applications. Based on current information, PG&E expects to have adequate gas supply for anticipated growth in the City. However, new regulator stations and additional or larger gas distribution mains would be required to serve previously undeveloped areas in the City.

Telecommunications. Pacific Bell is the provider of residential and commercial telephone service in the City. Pacific Bell also provides or hosts a variety of telecommunication services such as Digital Subscriber Lines (DSL), Internet Service Providers (ISP), web hosting, virtual private networking, and wireless/cellular and paging services.

Pacific Bell maintains a central office in the City at 100 W. Tenth Street. The California Public Utilities Commission (CPUC) requires that the company anticipate and serve new growth. To meet this requirement, Pacific Bell continually upgrades their facilities and infrastructure; adding new facilities and technology to remain in conformance with CPUC tariffs and to serve customer demand in the City.

Any additions to City infrastructure, zoning changes, or growth would cause a need for expansion or changes in Pacific Bell's infrastructure. Expansion of Pacific Bell's infrastructure involves finding suitable sites to place equipment. Suitable sites must meet requirements for the physical transmission of telecommunication services and conform to the City's guidelines. Pacific Bell also works with the City to ensure that construction of new facilities does not interfere with any new or newly paved streets.

Several private companies offer cable and other telecommunication services in the City. The City issues franchises to these companies, who install and maintain their own lines or fiber optic cables and equipment. The City has one cable television provider, AT&T, although it is currently negotiating with another company for additional service. AT&T is also an Internet Service Provider (ISP) in the City, along with Pacific Bell and Sprint. The City negotiates franchises with both ISP and cable television providers and requires that their coverage includes the entire City. Fiber optic networks in the City have been installed by Pacific Bell and AT&T. These networks are privately owned and maintained.

[1] Melody Kercheval, Senior Associate Planner, Building and Land Services, PG&E, 2001. *Personal communication with LSA Associates*. January.

Solid Waste. Pleasant Hill Bayshore Disposal provides solid waste collection, disposal, recycling, and yard waste services to the City. Solid waste and recyclables from the City are taken to the Contra Costa Transfer and Recovery Station located in Martinez. Recyclables are separated out and stored at the Transfer and Recovery Station before shipment to recycling markets. Solid waste is transferred from the Transfer and Recovery Station to the Keller Canyon Landfill in Pittsburg.

The Contra Costa Transfer Station is permitted to handle 19,000 tons of solid waste a day. The Transfer Station is currently handling 13,000 tons a day and operating at 68 percent capacity. The Keller Canyon Landfill site consists of 1,399 acres, 244 of which is the actual current disposal acreage. The landfill is permitted to accept 3,500 tons of waste per day and is currently receiving an average of 2,600 tons per day of refuse. The landfill has a permitted lifetime site capacity of 64 million cubic yards, although the actual site capacity is estimated at over 70.2 million cubic yards.[1]

The City generated 80,765 tons of solid waste in 1998. Households in the City generated over 32,000 tons, or 40 percent of the solid waste, while business accounted for over 48,000 tons of solid waste.[2] The City uses a standard multiplier of 8.2 pounds of solid waste per day for each resident.[3] The City does not have a standard multiplier for commercial waste, but the State uses a standard multiplier for business disposal rates in the City of 20 pounds per employee/per day. The largest business generators of solid waste in the City by business type are construction, restaurants, medical and health services, and retail facilities for building material and garden supplies.[4]

The operators of the landfill estimate its life span to be 68 additional years, even accounting for expected growth in Contra Costa County (based on calculations that are proprietary information). The landfill serves the entire Contra Costa County and the landfill operators do not anticipate that a greater rate of estimated growth in the City would shorten the life span of the landfill by more than a year.[5]

The landfill accepts all general refuse, construction debris (including concrete, soil, and roofing materials), appliances, and tires; but no hazardous, flammable, or special wastes. Six certified used oil centers collect used household oil for recycling in the City.

Existing Policies and Regulations

Water Supply Policies and Regulations

Water Conservation in Landscaping Act. To ensure adequate supplies are available for future uses, and to promote the conservation and efficient use of water, local agencies were required to adopt a water-efficient landscape ordinance. When such an ordinance had not been adopted, a finding

1 California Integrated Waste Management Board, 2001. *Jurisdiction Diversion and Disposal Profile: California Waste Stream Profiles*. Available online at http://www.ciwmb.ca.gov/Profiles/.

2 Ibid.

3 City of Antioch, 2001. *Personal communication with LSA Associates, Inc.*

4 California Integrated Waste Management Board, 2001. *Jurisdiction Diversion and Disposal Profile: California Waste Stream Profiles*. Available online at http://www.ciwmb.ca.gov/Profiles/.

5 Norm Christianson, Manager, Keller County Landfill, 2001. *Personal communication with LSA Associates*. January.

as to why (based on the climatic, geologic, or topographical conditions) such an ordinance is not necessary, must be adopted. In the absence of such an ordinance or findings, the policies and requirements contained in the "model" ordinance drafted by the State of California shall apply within the affected jurisdiction.

Water Recycling in Landscaping Act. This Act requires that a water producer capable of providing recycled water that meets all of the conditions of described in Section 13550 of the State Water Code, shall notify local agencies of the area(s) eligible to receive the recycled water, and the necessary infrastructure that the recycled water producer or retail water supplier will provide to support the delivery of recycled water. Within 180 days of receipt of such a notification from a recycled water producer, a local agency shall adopt and enforce a recycled water ordinance pursuant to this act.

Sections 13550-13556 of the State Water Code. These sections of the State Water Code set state that local, regional, or State agencies shall not use water from any source of quality for nonpotable uses if suitable recycled water is available as provided in Section 13550 of the Water Code.

Urban Water Management Planning Act. Since 1984, the Urban Water Management Planning Act, has required "urban water suppliers" to develop written "urban water management plans." While generally aimed at encouraging water suppliers to implement water conservation measures, it also created long-term planning obligations. In preparing urban water management plans, urban water suppliers must describe the following:

- Existing and planned water supply and demand;
- Water conservation measures and a schedule for implementing and evaluating such measures; and
- Water shortage contingency measures.

The Urban Water Management Planning Act requires urban water suppliers to use a 20-year planning horizon and to update the data in the urban water plans every 5 years. Urban Water Management Plans are exempt from CEQA, and thus do not generate any EIRs of use for future land use or water planning.

In preparing their 20-year management plans, water suppliers must directly address the subject of future population growth. The suppliers must also identify sources of supply to meet demand. The plan must "identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier." The suppliers need not conduct environmental review in identifying these future water sources.

Senate Bill 221. Signed into law on October 8, 2001, Senate Bill 221 established a process whereby sufficient water supply must be identified and demonstrated to be available before a final subdivision map may be approved for any residential development of 500 homes or more, or, in the case wherein a water supplier has fewer than 5,000 service connections or the proposed development would increase the number of connections by at least 10 percent.

Senate Bill 901. Signed into law on October 16, 1995, Senate Bill 901 required every urban water supplier to identify as part of its urban water management plan, the existing and planned sources of water available to the supplier over a prescribed 5-year period. SB 901 required additional information to be included as part of an urban water management plan if groundwater is identified as a source of water available to the supplier. Provisions of SB 901 would require an urban water supplier to include in the plan a description of all water supply projects and programs that may be undertaken to meet total project water use. A city or county, at the time it submits the Notice of Preparation (NOP) for an Environmental Impact Report (EIR) for a project, shall request each public water system serving a project to assess the projected water demand associated with said project and an assessment of whether the projected water demand associated with selected projects was included as part of the most recent Urban Water Management Plan. As part of this assessment, the public water system is required to indicate whether its total projected water supplies available during normal, single-dry, and multiple-dry water years will meet the project demand associated with the proposed project, in addition to the public water system's existing and planned uses. Compliance with the provisions of SB 901 was required if a project required the adoption of a specific plan; or the amendment to, or revision of the land use element of a general plan or specific plan, that would result in a net increase in the stated population density of building intensity. Pursuant to Section 10913 of the State Water code, a "project" was specifically defined as development meeting any of the following criteria:

- 500 or more dwelling units;
- Commercial center employing more than 1,000 persons or having more than 500,000 square feet;
- Office building employing more than 1,000 persons or having more than 250,000 square feet; or
- A hotel/motel with 500 or more rooms;
- An industrial, manufacturing, processing plant, or industrial park employing more than 1,000 persons or occupying more than 40 acres, or having more than 650,000 square feet of floor area;
- A mixed-use project that would demand an amount of water equivalent of equal to the amount of water required by a 500 dwelling unit project; or
- In areas where the public water system has fewer that 5,000 service connections, any development that would increase water demand by 10 percent or greater in the number of existing service connections, or in the case of a mixed-use development, an increase in water required by residential development representing a 10 percent or greater in the number of existing service connections.

After receiving such information, cities and counties may agree or disagree with the conclusions of the water purveyors, but cannot approve projects in the face of documented water shortfalls without first making certain findings.

Senate Bill 610. Signed into law October 9, 2001, Senate Bill 610 resulted in amendments to Section 21151.9 of the Public Resources Code. Additionally, Sections 10631, 10656, 10910, 10911, 10912, and 10915 of the Water Code were amended. Section 10913 of the Water Code was repealed, while portions of Section 10657 were added and/or repealed. Revising provisions established by Senate

Bill 901, SB 610 requires that any city or county having determined that a project is subject to the California Environmental Quality Act (CEQA) to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment. Such an assessment would include, among other information, the identification of existing water entitlements, water rights, or water service contracts relevant to the water supply identified for a proposed project, and the amount of water received pursuant to such entitlements, rights, or contracts. Senate Bill 610 requires the public water system, city, or county to submit plans for acquiring the required water supply for a proposed project if the water supply assessment concludes that water supplies are or will become insufficient. Any such water supply assessment and other information would be included in the environmental document prepared for the project pursuant to CEQA. Pursuant to Section 10912 of the State Water code as amended (Section 10913 was repealed and added to Section 10912), changes to the definition of a "project" were not made, except for the changes pertaining to the definition of a mixed-used project.

Gas, Electric and Telecommunication Services Policies and Regulations

Title 24, Part 6, *California's Energy Efficiency Standards for Residential and Nonresidential Buildings* was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. New standards were adopted by the Commission in 2001 as mandated by Assembly Bill 970 to reduce California's electricity demand. The new standards went into effect on June 1, 2001. The standards (along with standards for energy efficient appliances) have saved more than $20 billion in electricity and natural gas costs. It is estimated the standards will save $57 billion by 2011.

4.12.2 Utilities Thresholds of Significance

A potentially significant environmental impact related to utilities would result if implementation of the proposed General Plan would:

- (*All Services*) Require or result in the construction of new water, wastewater treatment, storm drainage or other facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- (*Water*) Increase water demand such that the available existing or planned supply is exceeded, or if development is proposed in areas outside the planned water service boundary;
- (*Wastewater*) Result in dry weather wastewater flows that exceed the existing or planned wastewater treatment, storage, and disposal capacity of the wastewater provider;
- (*Wastewater*) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- (*Solid Waste*) Breach published Federal, State or local standards relating to solid waste, litter control, or recycling (specifically, not conform with the California Integrated Waste Management Act of 1989 or the California Solid Waste Reuse and Recycling Access Act of 1991);

- (*Solid Waste*) Increase the generation of solid waste such that existing landfill space or the collection capacity of the existing service provider would be exceeded as part of project demolition/construction and/or project operations;
- (*Gas, Electric, and Telecommunications Service*) Substantially increase reliance on natural gas and oil, or substantially decrease reliance on renewable energy sources, thereby resulting in wasteful, inefficient, and unnecessary consumption of energy; and/or
- (*Gas, Electric, and Telecommunications Service*) Have an adverse effect on local and regional energy supplies and/or on requirements for additional capacity.

4.12.3 Utilities Impacts and Mitigation

Potentially Significant Impacts

Water Supply

Impact 4.12.1 *The population increases projected for the City of Antioch with implementation of the proposed General Plan will increase the demand for water beyond that which currently exists. A significant impact will occur when and where the demand for water exceeds supply.*

The population of Antioch is projected to total 115,900 persons in 2020. That is an increase of 25,368 people since 2000. Because residential users consume 86 percent of water within the City, this increase in population will increase the water demand. As stated previously, the water supply to the City of Antioch is constrained by current facilities and by the water quality of the San Joaquin River. Table 4.12.A below shows the projected water demand in 2020. This was determined by using the ABAG population projections and the historical increase in water demand per population increase.

Table 4.12.A - Historical and Projected Water Demand

Year	Population	Water Demand	Increase in Demand
1990	63,062	12,205 acre feet	
2000	90,532	18,700 acre feet	53.2%
2010	103,900	21,854 acre feet	16.9%
2020	115,900	24,686 acre feet	13.0%

Source: City of Antioch Public Works Department, ABAG 1999. *Projections 2000: Forecasts for the San Francisco Bay Area.*

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects on water supply. The proposed General Plan policies seek the consideration of water supply issues and encourage the use of water conservation measures. The implementation of these policies will reduce water supply impact to a less than significant level.

8.4.2 Water Facilities Policies

a. As part of the design of water systems, provide adequate pumping and storage capacity for both drought and emergency conditions, as well as the ability to provide fire flows required by the Contra Costa County Fire Protection District.

b. Ensure that adequate infrastructure is in place and operational prior to occupancy or new development, such that (1) new development will not negatively impact the performance of water facilities serving existing developed areas, and (2) the performance standards set forth in the Growth Management Element will continue to be met.

c. Maintain an up-to-date master plan of water facilities.

d. Maintain existing levels of water service by protecting and improving infrastructure, replacing water mains and pumping facilities as necessary, and improving the efficiency of water transmission facilities.

e. Permit the construction of interim facilities only when it is found that construction of such facilities will not impair the financing or timely construction of master planned facilities.

f. Periodically evaluate local water consumption patterns, the adequacy of existing facilities, and the need for new facilities, including this information in the comparison of proposed development projects to the performance standards of the Growth Management Element.

g. Incorporate expected reductions in the need for water facilities resulting from water conservation programs only after several years of experience with the implementation of such programs.

h. Provide the Contra Costa Water District with timely information on development proposals and projected levels of future growth so that it can maintain appropriate long-term master plans and refine the delivery of service and facilities to maintain the performance standards set forth in the Growth Management Element.

10.6.2 Water Resources Policies

Water Supply

a. As part of the implementing the City's residential growth management program and its development review process for non-residential development, ensure that adequate long-term water supplies are available to serve the development being granted new allocations, including consideration of peak drought and peak fire fighting needs.

b. Require new development to be equipped with drought tolerant landscaping and water conservation devices.

c. Work with Delta Diablo Sanitation District to make reclaimed wastewater available for irrigation use. Where reclaimed wastewater can be made available at a reasonable cost, require the installation of dual water systems in development projects and public facilities, using reclaimed wastewater for irrigation.

d. Protect, where possible, groundwater recharge areas, including protection of stream sides from urban encroachment.

e. Oppose proposals with the potential to increase the salinity of the Delta and/or endanger the City's rights to divert water from the San Joaquin River.

Water Quality

f. Participate in the Contra Costa Clean Water program to reduce stormwater pollution and protect the water quality of the City's waterways.

g. Require public and private development projects to be in compliance with applicable National Pollution Discharge Elimination System (NPDES) permit requirements, and require the implementation of best management practices to minimize erosion and sedimentation resulting from new development.

h. Participate in regional watershed planning efforts to enhance area water quality.

Effectiveness of Proposed General Plan Policies. The aforementioned policies reduce and minimize potential impacts implementation of the proposed General Plan may have on water supply.

These policies recommend the maintenance of adequate pumping and storage capacity for both drought and emergency conditions, adequate infrastructure prior to occupancy or development, and maintenance of existing levels of water service. In addition, these policies permit the construction of interim facilities only when it is found that construction of such facilities will not impair the financing or timely construction of master planned facilities. Additionally, they require a residential growth management program development review process for non-residential development to ensure that adequate long-term water supplies are available. In addition, this policy requires new development to be equipped with drought-tolerant landscaping and water conservation devices. Implementation of the proposed General Plan policies will reduce water supply impacts below a level of significance.

Mitigation Measures No additional mitigation is required.

Water Quality

Impact 4.12.2. *Implementation of the proposed General Plan will result in reliance on a higher percentage of lower quality water from the San Joaquin River and may increase the level of pollutants that occur in water reserves. Either of these conditions would result in the deterioration of the quality of drinking water in Antioch and would be a significant impact.*

As stated previously, the City of Antioch has rights to utilize water from the San Joaquin River. In the last several years, as water demands increased, the City has increased the amount of water pumped from the San Joaquin River to approximately the same amount the City purchases from CCWD. The proposed General Plan would accommodate a substantial increase in population, which would generate a greater water demand. To meet this increasing demand, the City may increasingly rely on water supplies from the San Joaquin River. The water quality from the San Joaquin River near Antioch varies within the course of a year. Generally, the water quality is best during the spring when winter snows have thawed. From month-to-month, the City cannot rely on the quality of this water supply.

Proposed General Plan Policies. The proposed General Plan includes policies to reduce or minimize water quality impacts. Implementation of **Policy 10.6.2** would require development projects to be in compliance with applicable NPDES permit requirements and the use of best management practices. The policy also requires City participation in regional watershed planning and the Contra Costa Clean Water Program.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan policies will ensure adequate water supply, quality and facilities as development occurs, thereby, reducing potential water quality impacts to a less than significant level.

Mitigation Measures No additional mitigation is required.

Wastewater

Impact 4.12.3. *Implementation of the proposed General Plan would generate increases in population and housing, in addition to increases of commercial, and industrial land uses. This growth would incrementally generate wastewater, which will necessitate increased wastewater treatment capacity. Due to the projected growth, this increase is considered substantial and may result in a significant impact on existing wastewater service and facilities.*

The proposed General Plan would accommodate a substantial increase in population, which would generate a greater water demand. The most recent expansion of the wastewater treatment plant, which was completed in 1990, increased the capacity to 16.5 mgd. The DDSD will continue to expand its treatment capacity consistent with growth projections and associated increased demand. The next planned increase up to 22.5 mgd is not expected to be needed until after 2008. Table 4.12.B estimates wastewater demand at build out of the study area.

Table 4.12.B - Wastewater Demand within the General Plan Study Area at Build Out

Land Use	Dwelling Units/Acres	Generation Rate	Wastewater Demand
Residential	53,280 dwelling units	220 gallons per day per residence	11.7 mgd[1]
Commercial	1,141.4 acres	1,000 gallons per day per acre	1.1 mgd
Total			**12.8 mgd**

[1] Million gallons per day.

Proposed General Plan Policies. The proposed General Plan includes the following policies to address the effects of future development on wastewater facilities. These policies ensure adequate wastewater facilities as development occurs. Implementation of the proposed General Plan policies related to wastewater services would reduce the effects of development to a less than significant level.

8.5.2 Wastewater Management Policies

a. As part of the design of sewer systems, provide adequate capacity for average and peak conditions.

b. Ensure that adequate infrastructure is in place and operational prior to occupancy of new development, such that new development will (1) not negatively impact the performance of sewer facilities serving existing developed areas, and (2) the performance standards set forth in the Growth Management Element will continue to be met.

c. Maintain an up-to-date master plan of sewer facilities.

d. Continue to encourage water conservation as a means of reducing sewage generation and the need for expanding sewage treatment capacity.

e. Work with Delta Diablo Sanitation District to explore and develop uses for treated wastewater. Where reclaimed wastewater can be economically delivered, require the installation of dual water systems permitting the use of reclaimed water supplies for irrigation purposes and industrial purposes.

f. Incorporate expected reductions in sewage flow projections and the need for sewage treatment capacity resulting from water conservation programs only after several years of experience with the implementation of such programs.

g. Permit the construction of interim facilities only when it is found that construction of such facilities will not impair the financing or timely construction of master planned facilities.

h. Periodically evaluate local sewage generation patterns, the adequacy of existing facilities, and the need for new facilities, including this information in the comparison of proposed development projects to the performance standards of the Growth Management Element.

i. Provide the Delta Diablo Sanitary District with timely information on development proposals and projected levels of future growth so that it can maintain appropriate long-term master plans and refine the delivery of service and facilities to maintain the performance standards set forth in the Growth Management Element.

j. Work cooperatively with affected agencies to ensure that capacity allocations are adjusted among the agencies swerved by Delta Diablo Sanitation District to optimize plant utilization, avoid unnecessary expansions, and facilitate needed expansions.

3.5.5.1 Performance Objective

A wastewater collection, treatment, and disposal system that is capable of meeting the daily and peak demands of Antioch residents and businesses.

3.5.5.2 Performance Standards

a. Sanitary sewers (except for force mains) will exhibit unrestricted flow in normal and peak flows.

b. Prior to approval of discretionary development projects, require written verification from the Delta Diablo Sanitation District that the proposed project will not cause the rated capacity of treatment facilities to be exceeded during normal or peak flows.

Effectiveness of Proposed General Plan Policies. Implementation of the proposed General Plan policies related to wastewater would ensure adequate wastewater facilities as development occurs, thereby, reducing the effects of future development to less than significant.

Mitigation Measures No additional mitigation is required.

Gas Services

Impact 4.12.4. *Build out of the City will result in a substantial increase in population and residential and non-residential structures, potentially increasing the use of and need for natural gas. Due to the growth involved in the proposed General Plan, this increase may potentially impact existing natural gas facilities.*

As stated previously, natural gas is supplied to the City via gas transmission lines in east Contra Costa County. Based in current information, PG&E expects to have adequate gas supply for anticipated growth in the City. However, new regulator stations and additional or larger gas distribution mains would be required to serve previously undeveloped areas in the City.

Proposed General Plan Policies. The proposed General Plan includes the following policy to reduce or minimize the effects of additional demand and consumption of energy resources (natural gas) associated with prospective growth within the City. To guarantee that significant adverse impacts to energy resources is minimized to a less than significant level, mitigation is provided below.

9.4.1 Energy Conservation Policy

Provide incentives for energy conservation measures in new housing by providing information on programs available through PG&E.

Effectiveness of Proposed General Plan Policies. Implementation of the preceding proposed General Plan policy would help to reduce the effects of growth on energy resources. However, the proposed General Plan policy does not provide concrete means of implementation and enforcement. Therefore, additional mitigation measures would be required. Impacts to energy resources can be further minimized through implementation of the following mitigation measures.

Mitigation Measures

4.12.4A. The City shall modify the proposed General Plan to include a policy with the following provision: The City shall review all development proposals prior to the approval of development plans to guarantee that sufficient energy resources and facilities are available to supply adequate energy to the proposed project and associated uses.

4.12.4B. The City shall modify the proposed General Plan to include a policy with the following provision: The City shall review all development plans prior to approval to guarantee that energy conservation and efficiency standards of Title 24 are met and are incorporated into the design of the future proposed project.

Electric Services

Impact 4.12.5. *Build out of the City will result in a substantial increase in population and residential and non-residential structures, potentially increasing the use of and need for electricity. Due to the*

growth involved in the proposed General Plan, this increase may potentially result in an impact on existing electrical generating facilities.

California has recently endured a disruption of electricity supply as a result of the restructuring of the State's utility industry. This electricity supply and demand disruption has resulted in escalating electricity rates, rolling blackouts, the threat of investor-owned utility bankruptcies, and efforts on the part of the State of California to subsidize, at least temporarily, wholesale purchases of electricity for the State's consumers.

Presently and for the foreseeable future, the national and regional supply of electrical energy is not in jeopardy. The acceleration of the approval and licensing process of additional State power plants will ensure an adequate supply of electricity for State consumers. Recently (May 10, 2001), the California Energy Commission granted a license to AES Corporation, owner of the electrical power plant in Huntington Beach, to operate two additional generators. These generators, producing 450 megawatts, provide enough additional electricity for 337,500 to 450,000 homes. These two power plants will provide California with electrical energy supply capacity and the ability to meet peak load demand in excess of forecasts of regional energy supplies.

Therefore, past shortages of electricity were solved by the additional power plants being brought "on-line" in California. The matter of electrical generation capacity is not one of physical shortages due to power plant limitations; rather, it is a function of market forces and the wholesale cost of electricity. This cost and supply adjustment was evident when energy producers withheld electricity from the market and were unwilling to sell electricity at market prices. This enabled energy suppliers to create a false electricity shortage that artificially inflated prices to a desired point. Suppliers sold electricity at this inflated price. As a result of mandated price caps, California's investor-owned utilities have been required to purchase electricity for their customers on the open market at inflated prices well above their costs.

Loretta Lynch, President of the California Public Utilities Commission (PUC), provided the following explanation of California's electrical demand issue, in public remarks given on April 22, 2001: "The supply of electricity available for California at any given time during the past few years has been approximately 41 megawatts. Over the years, the 'on-line' production plants have supplied an average capacity to produce 35 megawatts, while plants capable of 6 megawatts of production have been off-line at any given time for repair, maintenance, and upgrading. The State of California is aggressively pursuing solutions to this short-term situation through Congressional action, applications for rulings to the Federal Energy Regulatory Commission, and gathering evidence for potential legal action against the wholesale providers for unfair business practices under the California Business and Professions Code."

Proposed General Plan Policies. The proposed General Plan includes a policy to reduce or minimize the effects of additional demand and consumption of energy resources (electricity) associated with prospective growth within the City. To guarantee that significant adverse impacts to energy resources are minimized to a less than significant level, mitigation is provided below.

Potential energy resource impacts can be reduced through implementation of policy 9.4.1, listed previously, provides incentives for energy conservation measures in new housing by providing information on programs available through PG&E.

Effectiveness of Proposed General Plan Policies. Implementation of the preceding proposed General Plan policy would help to reduce the effects of growth and development on energy resources. However, the proposed General Plan policy does not provide concrete means of implementation and enforcement. Therefore, additional mitigation measures would be required. Impacts to energy resources within the City can be further minimized through implementation of the following mitigation measures.

Mitigation Measures. Impacts to energy resources due to the additional demand and consumption of energy resources (electricity) associated with the prospective growth within the City can be further minimized through implementation of mitigation measures **4.12.4A** and **4.12.4B**.

Solid Waste Services

Impact 4.12.6. *Increases in population and employment with the proposed General Plan could result in the incremental increase of solid waste throughout Antioch. This could increase the need for solid waste disposal, requiring additional landfill capacity and related support facilities. This increase is considered substantial and could result in a significant impact on existing solid waste facilities.*

Using the City's standard multiplier of 8.2 pounds of solid waste per day for each resident and the State's multiplier for business disposal rate of 20 pounds per employee per day, Table 4.12.C shows the amount of solid waste that would be generated each day within the planning area at build out. AB 939 mandates the reduction of solid waste disposal in landfills. The Bill mandated a minimum 50 percent diversion goal by the year 2000. Implementation of AB, as stated above, the estimated life span of the landfill is 68 additional years, even accounting for expected growth in Contra Costa County. The Landfill operators do not anticipate that a greater rate of estimated growth in the City would shorten the life span of the Landfill by more than a year.

Table 4.12.C - Solid Waste Generation per day at Build Out of the Planning Area

	Quantity	Generation Rate	Solid Waste Generated	Solid Waste after Diversion
Population	154,512[1]	8.2 pounds per day per resident	633.5 tons per day	316.8 tons per day
Total Jobs	75,255	20 pounds per day per employee	752.6 tons per day	376.3 tons per day
Total Solid Waste			**1,386.1 tons per day**	**693.1 tons per day**

[1] Population estimate derived from the ABAG 1999 projected persons per household of 2.90 and the total dwelling units at build out of the planning area, shown in Table 4.D of the proposed General Plan.

Source: ABAG 1999. *Projections 2000: Forecasts for the San Francisco Bay Area*, and Table 4.D of the proposed General Plan.

Proposed General Plan Policies. The proposed General Plan includes the following policies to address the effects of future development on solid waste facilities. The effectiveness of the policies at reducing such impacts are analyzed below and additional mitigation measures are provided to ensure that development in the City would not have significant adverse impacts on solid waste management.

8.6.2 Solid Waste Management Policies

a. Continue contracting for garbage and recycling collection services.

b. Require provision of attractive, convenient recycling bins and trash enclosures in new residential and non-residential development.

c. Provide and promote opportunities to reduce solid waste generation at home and in businesses and public facilities, making possible the safe disposal of hazardous materials.

d. Require builders to incorporate interior and exterior storage areas for recyclables into new commercial, industrial, and public buildings.

e. Consider the use of co-generation at appropriate facilities.

f. Support the identification and selection of new landfill sites in remote locations of the County outside of and not requiring access through the Antioch Planning Area, where such sites would not impact existing or proposed parks or water storage facilities.

g. Limit the location of solid waste transfer stations to areas where heavy industrial uses would be appropriate, avoiding traffic, odor, and other environmental impacts on the community.

Effectiveness of Proposed General Plan Policies. Implementation of the preceding proposed General Plan policies would help to reduce the effects of growth and development on solid waste facilities. To ensure that impacts related to solid waste facilities remain less than significant the following mitigation measures are identified. In conjunction with the proposed General Plan policies, the following mitigation measures will be implemented.

Mitigation Measures

4.12.6A. The City shall modify the proposed General Plan to include a policy with the following provision: The City of Antioch shall follow State regulations in implementing the goals, policies, and programs in order to achieve and maintain a 50 percent reduction in solid waste disposal through source reduction, reuse, recycling, and composting.

4.12.6.B. The City shall modify the proposed General Plan to include a policy with the following provision: In accordance with State regulations, Antioch shall prepare an annual progress report to determine the City's progress toward meeting its diversion goals and objectives.

4.12.6C. The City shall modify the proposed General Plan to include a policy with the following provision: The City shall require all development projects to coordinate with appropriate departments and/or agencies to ensure that there is adequate waste disposal capacity to meet the waste disposal

requirements of the project, and the City shall recommend that all development projects incorporate measures to promote waste reduction, reuse, recycling, and composting.

4.12.4 Utilities Level of Significance after Mitigation

Implementation of the proposed General Plan policies, proposed mitigation measures and all applicable regulations related to water supply and quality, wastewater services, gas and electric services, and solid waste services will result in a less than significant impact.

4.13 TRAFFIC AND CIRCULATION

A traffic analysis evaluating the traffic impacts of the proposed Antioch General Plan was undertaken by the firm of Fehr & Peers. This section contains a summary of existing conditions, and sets forth the findings and conclusions of the Fehr & Peers analysis.

4.13.1 Traffic and Circulation Existing Setting

Roadway Network. State Route (SR) 4 and SR 160 provide direct access to Antioch. SR 4 runs east-west, connecting Antioch with Oakley, Brentwood, Pittsburg, I-680, Martinez, Pinole, and I-80. SR 4 is a divided freeway from I-680 east through Concord, Pittsburg, and Antioch, and is currently a two-lane roadway through Oakley and Brentwood. SR 4 has been one of the more congested freeways in Contra Costa, in particular, the segments between Lone Tree Way and Railroad Avenue in the morning and Bailey Road to Lone Tree Way in the afternoon, and is in the process of being widened. On- and off-ramps between SR 4 and Antioch's local street network occur at East Eighteenth Street, Hillcrest Avenue, "A" Street/Lone Tree Way, "G" Street, "L" Street/Contra Loma Boulevard, and Somersville Road.

SR 160 begins at the East Eighteenth Street/SR 4 junction, and continues north over the San Joaquin River via the Antioch Bridge to Rio Vista and Sacramento. Access to and from SR 160 and Antioch's local street network occurs at Wilbur Avenue south of the Antioch Bridge.

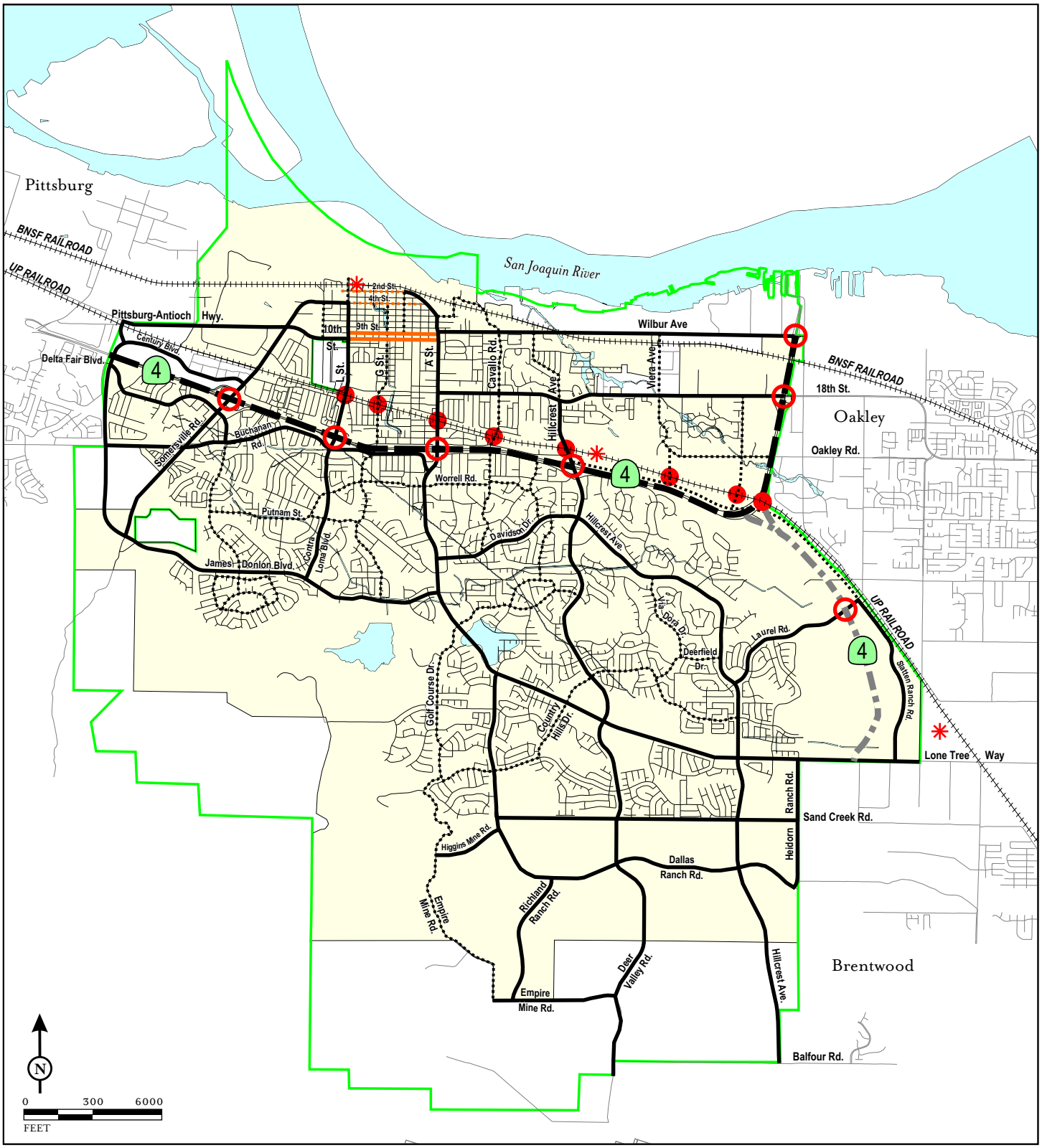
Primary arterials provide access to Pittsburg to the west, Oakley and Brentwood to the east, and rural Contra Costa County to the south. The major thoroughfares in Antioch are identified in Table 4.13.A. Each major arterial is briefly described below.

Table 4.13.A - Primary Arterials in the City of Antioch

Arterial	Activity Centers Served
North/South Direction	
"A" Street/Lone Tree Way	Antioch City Park, SR 4, Sutter Delta Medical Center, Prewett Park
Deer Valley Road	Prewett Family Park
Hillcrest Avenue	Hillcrest Park & Ride lot, SR 4
"L" Street/Contra Loma Boulevard	Contra Costa County Fairgrounds
Somersville Road	County East Mall, Black Diamond Mines Regional Preserve
East/West Direction	
Eighteenth Street	Employment Development Department, County Library, Oak View Memorial Park, SR 4
James Donlon Boulevard	Antioch Community Park
West 4th Street/West 6th Street	Downtown
West 10th Street	Downtown
Wilbur Avenue	SR 160

Source: Dowling & Associates, 2001.

"A" Street/Lone Tree Way. "A" Street runs between downtown Antioch and SR 4 providing direct access to the Rivertown District. South of SR 4, "A" Street becomes Lone Tree Way, and continues southeast into Brentwood.



LSA

CITY OF ANTIOCH

PLANNING AREA BOUNDARY

FREEWAYS

ARTERIALS

ARTERIAL (COUPLET)

MAJOR COLLECTOR

MAJOR COLLECTOR (COUPLET)

RAIL

PROPOSED FREEWAY

RAILROAD GRADE SEPARATION

RAIL TRANSIT STATION

FREEWAY INTERCHANGE

FIGURE 4.13.1

City of Antioch
General Plan Update EIR
Circulation

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Deer Valley Road. Deer Valley Road runs north-south beginning in the north at the Hillcrest Avenue/Davison Drive junction and ending in the south at Marsh Creek Road, south of the City's boundary in Contra Costa County.

Hillcrest Avenue. Hillcrest Avenue is located in eastern Antioch on both sides of SR 4 linking the area north of East Eighteenth Street to Prewett Ranch Road.

"L" Street/Contra Loma Boulevard. "L" Street runs north-south in northern Antioch between SR 4 and West Tenth Street. Contra Loma Boulevard runs north-south in southern Antioch between SR 4 and James Donlon Boulevard.

Somersville Road. Somersville Road runs north-south in western Antioch on both sides of SR 4 providing access to the Pittsburg-Antioch Highway and Buchanan Road.

Eighteenth Street. Eighteenth Street is located north of SR 4 and runs parallel to SR 4. Eighteenth Street acts as a major arterial between "A" Street and the SR 4/SR 160 junction.

James Donlon Boulevard. James Donlon Boulevard connects Lone Tree Way and Somersville Road, and provides east-west access through the southwest quadrant of Antioch.

West Fourth Street/"A" Street Extension. West Fourth Street, West Sixth Street and the "A" Street Extension provide east-west access in Downtown Antioch. West Fourth Street is the main arterial between Somersville Road and "G" Street. The "A" Street extension is the main connector between the eastern portion of the downtown area and the SR 4 freeway.

West Tenth Street. West Tenth Street provides east-west access in downtown Antioch between Somersville Road and "A" Street. West of Somersville Road, West Tenth Street becomes the Pittsburg/Antioch Highway, serving industrial uses and providing a regional roadway connection to the west of Antioch.

Wilbur Avenue. Wilbur Avenue provides east-west access in northeastern Antioch, and becomes a major arterial between "A" Street and SR 160.

Dallas Ranch Road. Dallas Ranch Road provides north-south access between Lone Tree Way and the Sand Creek Specific Plan Focus Area. Dallas Ranch Road will serve as one of the primary routes into the Sand Creek Focus Area.

Buchanan Road. Buchanan Road runs east-west between Contra Loma Boulevard and the westerly City limit. Buchanan Road serves as one of the primary routes to the west of Antioch.

Davison Drive. Davison Drive is located south of SR 4 and serves as an east-west connection between Lone Tree Way and Hillcrest Avenue.

Railroad Facilities. Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) both have rail lines running through Antioch. The BNSF tracks run along the southern bank of the San Joaquin

River, and the UP tracks run adjacent to SR 4. Grade-separated railroad intersections exist at McElheny Road, Wilbur Avenue and SR 4 for the BNSF line. Grade-separated intersections exist at G and L Streets, Cavallo Road and SR 4 for the UP line. The number of trains using the UP tracks is minimal, and UP is considering sale of the right-of-way.

Amtrak offers passenger rail service to Antioch on the BNSF, which services the Oakland-Bakersfield corridor. The train station is located at the foot of "I" Street, and is also served by Tri-Delta Transit. Four round-trip San Joaquin route passenger trains run on BNSF's tracks seven days a week.

Between 1995 and 2000, ridership increased by approximately 24 percent, nearly 5 percent annually. Antioch-Pittsburg riders comprise less than 2 percent of all passengers on the San Joaquin route. Freight activity, when it occurs on the UP tracks, creates significant disturbances to roadway traffic at the existing "A" Street and Somersville Road at-grade crossings.

Transit Service. Tri Delta Transit provides transit service to Antioch as well as to Shore Acres, Bay Point, Pittsburg, Oakley, and Brentwood. Tri-Delta Transit also provides connections to and from the Bay Point/Pittsburg BART station, Martinez, and the Bishop Ranch. Transfers to County Connection's Route 930C, which services Pittsburg, Concord, Walnut Creek and the Walnut Creek BART station are possible at the Hillcrest Park & Ride lot.

About nine westbound or eastbound Tri Delta Transit buses serve the Hillcrest Park & Ride lot and the Pittsburg/Bay Point BART station during the a.m. and p.m. peak hours. Between six and seven buses serve the Sutter Delta Medical Center in Antioch during the a.m. and p.m. peak hours.

Bicycle and Pedestrian Facilities. Existing and proposed bikeway facilities in Antioch are distributed throughout Antioch, and are listed in Table 4.13.B. Class I facilities are bike paths that exclude motor vehicle access. Class II facilities are designated bike lanes that provide a space in the road for bicycle travel. Class III facilities are bicycle routes that provide signage to alert bicyclists and motorists that a bicycle route exists.

Pedestrian access is available throughout the developed areas of Antioch, including sidewalks, wheelchair ramps, and crosswalks. Many outlying areas are still rural in character, and do not have sidewalks, including Wilbur Avenue between Viera Avenue and SR 160, and Lone Tree Way east of Heidorn Ranch Road.

Table 4.13.B – Existing and Proposed Bicycle Facilities

Existing Class I Trails	
Delta De Anza Trail (Contra Costa Canal Trail)	From Pittsburg City Limit to Hillcrest Avenue
Mokelumne Trail (EBMUD right-of-way)	From Buchanan Road to Hillcrest Avenue

Table 4.13.B – Existing and Proposed Bicycle Facilities

Existing Class II Lanes	
Buchanan Road	From Contra Loma Boulevard to Somersville Road
Canada Valley Road	From Laurel Road to Vista Grande
Contra Loma Boulevard	From James Donlon Boulevard to SR 4
Country Hills Drive	From Hillcrest Avenue to 2 miles east of Vista Grande; Lone Tree Way to Deer Valley Road
Dallas Ranch Road	From Lone Tree Way to Mokelumne Drive
Davison Drive	From Lone Tree Way to Hillcrest Avenue/ Deer Valley Road
Deer Valley Road	From Hillcrest Avenue to 800 feet South of Prewett Ranch Road
Frederickson Lane	From Hanson Drive to Golf Course Road
Golf Course Road	From Lone Tree Way to Mt. Hamilton Road
Hillcrest Avenue	From Lone Tree Way to Prewett Ranch Road
James Donlon Boulevard	From Lone Tree Way to Somersville Road
Laurel Road	From Hillcrest Avenue to Canada Valley Road
Lone Tree Way	From James Donlon Boulevard to SR 4
Mokelumne Drive	From Lone Tree Way to Prewett Ranch Road
Mt. Hamilton Drive	From Dallas Ranch Road to Golf Course Road
Muirwood Drive	From Bamboo Way to Mt. Hamilton Drive
Pittsburg-Antioch Highway	From "L" Street to western city limits
Prewett Ranch Road	From Dallas Ranch Road to Hillcrest Avenue
Sycamore Drive	From Somersville Road to "L" Street
Via Dora Drive	From Deerfield Drive to Hillcrest Avenue
Wilbur Avenue	"A" Street to SR 160
Wild Horse Road	From Hillcrest Avenue to Meadow Lake
Existing Class III Shared Routes	
Bluerock Drive	From Lone Tree Way to Deer Valley Road
Country Hills Drive	From Deer Valley Road to Hillcrest Avenue
Eighteenth Street	From "L" Street to "D" Street
Canada Valley Road	From Vista Grande to Lone Tree Way
Country Hills Drive	From 2 miles east of Vista Grande to Future SR 4 Bypass
Hillcrest Avenue	From SR 4to Lone Tree Way
Laurel Road	From Canada Valley Road to Laurel Road in Oakley
Proposed Facilities (Class II, unless otherwise noted)	
Mokelumne (EBMUD right-of-way)	Extend from Hillcrest Avenue to Brentwood, crossing SR4 Bypass (Class I)
Country Hills Drive	Extend to the SR 4 Bypass
Dallas Ranch Road	Extend trail south
James Donlon Boulevard	Extend from Somersville Road to Pittsburg
Wild Horse Road	Will be extended east to the SP rail line
Eighteenth Street	Safe routes to school project.
Canada Valley Road	Extend from vista Grande to Lone Tree Way
Country Hills Drive	Extend to the SR 4 Bypass
Delta DeAnza Trail	Extend to Neroly Road
Hillcrest Avenue	Extend to SR 4
Laurel Road	Connect to Laurel Road In Oakley

Table 4.13.B – Existing and Proposed Bicycle Facilities

Somersville Road	Construct bicycle lanes or route to connect between Delta-De Anza and Mokelumne trails
Rivertown-Southeast Antioch	Construct bicycle lanes connecting Rivertown to Southeast Antioch

Note: Class indicates the type of bicycle facility (bikeway). Class I represents separate, multi-use trails or paths. Class II represents striped, bicycle lanes on roadways. Class III represents signed bicycle routes sharing the roadway.

Parking. The parking requirements and standards for development in the City of Antioch are included in the City's existing zoning ordinance. Parking has not been identified as an issue within the City, and adequate parking appears to be available in the Downtown and other commercial areas. The ordinance requires provision of off-street parking concurrent with new development.

Planned Transportation Improvements. Several planned and programmed transportation improvements have been programmed for completion in the seven-year Capital Improvement Program (CIP) contained in the Contra Costa Transportation Authority's *2001 Update to the Contra Costa Countywide Congestion Management Program* (CMP). The County CMP provides the overall direction and approach for the regional transportation system, and includes specific projects that may affect the future regional transportation system. The projects included in the CIP are those that:

- The County Transportation Authority proposes for programming through the State and Federal funding cycles;
- Are already programmed;
- Are proposed for funding through the Metropolitan Transportation Commission's Regional Transportation Improvement Program (RTIP) and Federal processes;
- Encompass Transportation for Clean Air bicycle projects; and
- Are developer-funded projects where funding through fee programs is imminent.

The following regional roadway and transit improvements within the City of Antioch are identified in the *2001 Update*:

Planned SR 4 Improvements

- Widen from four to six mixed-flow lanes from Loveridge to SR 160 (Phase 1);
- Widen from six to eight lanes (six mixed-flow lanes and two HOV lanes, with a median to accommodate future BART extension) for its ultimate configuration;
- Construct a new interchange at Contra Loma Boulevard; and
- Improve the Hillcrest interchange, including signalization, frontage road, and park-and-ride lot in the northeast quadrant.

SR 4 By-Pass

- Phase 1
  - Construct a four-lane expressway from SR 4 to Lone Tree Way with partial interchanges at SR 4 and Lone Tree Way, and an intersection at Laurel Road; and
  - Construct roadway mile of Sand Creek Road east to Fairview.
- Phase 2
  - Widen to four lanes from Lone Tree Way to Balfour Road;
  - Construct a freeway-to-freeway interchange with connectors at SR 160;
  - Construct full interchanges at Laurel Road and Lone Tree Way; and
  - Upgrade the entire length of the Bypass to four-lane freeway status, with full interchanges constructed at Balfour, Sand Creek, and Marsh Creek.

Arterials and Roadways

- Buchanan Road: widen to four lanes between Somersville Road and the Antioch City limits.
- Deer Valley Road: widen from Prewett Ranch to south of Balfour.
- East Eighteenth Street: widen to four lanes from Hillcrest to Cavallo.
- East Eighteenth Street: widen to four lanes with a median from SR 160 to Viera.
- Hillcrest Avenue: widen from Prewett Ranch to south of Balfour.
- James Donlon Boulevard: extend from Somersville Road to Standard Oil Road.
- Lone Tree Way and Hillcrest Avenue: widen to six lanes, plus turn lanes.
- Lone Tree Way: widen at James Donlon to six lanes and add two left turn lanes.
- Lone Tree Way: widen to six lanes, construct a median, turn lanes and a bike path on the north side from Heidorn to SR 4 Bypass.
- Pittsburg-Antioch Highway: widen to four lanes from Somersville Road to the Antioch City limits.
- Somersville Road: widen to four lanes from Buchanan Road to James Donlon Boulevard and reconstruct the bridge over the Contra Costa Canal.
- Standard Oil Road: construct a new two-lane arterial.
- Wilbur Avenue: widen to four lanes from the BNSF railroad to SR 160.

Transit

- Extend rail service connected to BART easterly to a station at or near Hillcrest Avenue, and into Brentwood along the SR 4 Bypass.

- Establish Tri Delta Transit express bus commuter service between Antioch, Oakley, and Brentwood to Concord and to Lawrence Livermore Laboratory in Livermore.
- Construct park and ride lots at the Somersville Road/SR 4 and future SR 4 Bypass/Lone Tree Way intersections.
- Develop a park-and-ride lot at Leland-Delta Fair.

Systems Management

- Lone Tree Way: interconnect signals from Davison to Empire.
- SR 4 Corridor Signal Interconnect: interconnect 50 signals on Leland, Delta Fair, and Somersville, as well as at freeway interchanges on SR 4; install traffic responsive coordination plans.

The East Contra Costa Fee and Financing Authority imposes a fee to fund the widening of SR 4, the SR 4 Bypass and other East County projects.

Level of Service. Level of service (LOS) is a qualitative assessment of the perceptions of traffic conditions by motorists and passengers. LOS generally reflects driving conditions such as travel time and speed, freedom to maneuver, and traffic interruptions. LOS uses quantifiable traffic measures such as average speed, intersection delays, and volume-to-capacity ratios to determine driver satisfaction.

LOS measures differ by roadway type because a driver's perceptions and expectations also vary by roadway type. Individual LOS are designated by letters "A" for most favorable to "F" for the least favorable. Each letter designation represents a range of conditions. LOS A represents free flow conditions, while LOS F indicates excessive delays and jammed conditions (see Table 4.13.C).

Table 4.13.C - Uninterrupted Traffic Flow (Roadway Links) Level of Service

Level of Service	Definition
A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.
B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.
D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.

Table 4.13.C - Uninterrupted Traffic Flow (Roadway Links) Level of Service

Level of Service	Definition
F	Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.

Roadway levels of service are used to determine the future roadway configuration of the Circulation Element. Table 4.13.C details the daily traffic volumes and resultant levels of service along the roadway facilities for which data are available. Levels of service are based on criteria in the Highway Capacity Manual and other sources used by the transportation planning profession.

Existing Deficiencies. Some existing roadways in Antioch appear to be operating at unacceptable levels of service, including East Eighteenth Street generally between "A" Street and Hillcrest Avenue, and Buchanan Road at the western City limits.

Individual intersections along many of the major roadways within the City operate at LOS D or worse conditions during the a.m. and p.m. peak hours. However, as noted above, this General Plan update is focused on roadway requirements rather than individual intersection effects. At freeway intersections and other major local intersections along the major arterial streets serving either the freeway system or local employment centers, peak hour congestion generally occurs during the morning and afternoon.

If SR 4 is congested near a freeway interchange, the intersections within the interchange and adjacent to the interchange may experience congestion and sub-standard levels of service. Ramp metering is intended to meter the amount of traffic that enters the freeway system. The objective is to maintain even vehicle flows along the freeways. Ramp metering has the potential secondary affect of causing congestion within the interchanges and nearby intersections that access the freeway system.

4.13.2 Traffic and Circulation Thresholds of Significance

Potential impacts related to traffic and circulation are considered to be significant if implementation of the proposed General Plan results in any of the following conditions.

- For "routes of regional significance," the project would fail to comply with adopted Action Plans for roadway improvements.
- For "basic routes," the project would cause a roadway volume to capacity ratio to exceed:
  - LOS "Low E" (corresponding to a volume to capacity ratio [v/c] of 0.90-0.94]) within regional commercial areas or within 1,000 feet of a freeway interchange;
  - LOS "High D" (v/c of 0.85-0.89) within the Rivertown Focus Area and at freeway interchanges; or

- LOS "Mid-Range D" (v/c of 0.83-0.87) within residential areas, and on arterial roadways in non-regional commercial areas.

4.13.3 Traffic and Circulation Impacts and Mitigation

Potentially Significant Impacts

Potential to Degrade Roadway Levels of Service

Impact 4.16.1. *Future growth occurring as the result of implementing the proposed Antioch General Plan will increase area-wide traffic volumes with the potential to degrade roadway performance below applicable performance standards.*

Methodology. Future growth associated with the implementation of the proposed General Plan will result in a substantial increase in the traffic that is generated throughout the Antioch General Plan study area. This traffic will affect not only Antioch, but also surrounding cities and unincorporated areas. Future traffic conditions at the anticipated maximum build out of the City of Antioch, including a cumulative analysis of build out of surrounding cities were analyzed by the firm Fehr & Peers. Three analysis scenarios were evaluated existing conditions, no project, and the proposed General Plan. Existing traffic conditions reflect 2000 conditions based on actual traffic counts taken by the City.

No Project represents future traffic conditions without the proposed General Plan, and also provides a baseline for analysis. Within the Antioch General Plan study area, the No Project analysis assumes Year 2000 land use and roadway improvements along with three roadway improvements that were either constructed subsequent to 2000 or have assured funding and will be constructed by 2005. These improvements include widening of Lone Tree Way between Heidorn Ranch Road and the State Route 4 Bypass from two to six lanes, widening of Somersville Road between the Contra Costa Canal and James Donlon Boulevard from two to four lanes, and widening of Eighteenth Street between Cavallo Road and Vierra Avenue from two to four lanes.

Outside of the City General Plan study area, the No Project analysis evaluated build out of the General Plans for the cities of Pittsburg, Brentwood, and Oakley, year 2020 land use projections from the Contra Costa Transportation Authority's Land Use Inventory System (LUIS), based on ABAG *Projections 2000* for the balance of Contra Costa County, year 2025 land use projections based on ABAG *Projections 2000* for lands outside of Contra Costa County, and two development projects that were not included in ABAG projections (Discovery Bay West and Byron 78).

The roadway network outside of Antioch for the No Project scenario included build out of all adopted policy documents in the surrounding jurisdictions and East Contra Costa County including:

- All roadways improvements shown on the General Plan circulation map for the cities of Pittsburg, Brentwood, and Oakley;
- All roadway infrastructure included in the City of Pittsburg *1997 Traffic Mitigation Fee Study Update;*

- All projects in the East County Regional Fee and Finance Authority and East County Transportation Improvement Authority 2002 Strategic Plan; and
- All roadway projects in the *Contra Costa Countywide Comprehensive Transportation Plan, 2000 Update*. Since build out of the SR 4 Bypass was included, the Laurel Road extension within Antioch was also assumed to be in place.

The "With Project" analysis evaluates the impacts of the proposed Antioch General Plan. Land use within Antioch for the With Project scenario included build out of Antioch consistent with the proposed General Plan Land Use Element. The roadway network within Antioch that was used for the traffic analysis encompasses build out of the City's planned roadway network as shown in the proposed General Plan Circulation Map. The roadway network included a variety of roadway infrastructure improvements in the City to enable the network to accommodate travel demand produced by the City's land use plans. Land uses and the roadway network outside of Antioch for the With Project scenario were identical to the No Project scenario described above.

Roadway segment daily traffic volumes for existing conditions were based on year 2000 traffic counts. Where available, daily traffic counts were used directly and were augmented with available peak period intersection counts by factoring up the peak hour intersection approach volumes[1].

Roadway segment daily traffic volumes for the No Project and With Project scenarios were developed using the modified version of the East County Travel Demand Model prepared by Dowling Associates. Daily traffic volume projections were generally taken directly from the model; however, manual adjustments were made in two locations where the model predicted travel patterns that were not likely to occur, as described below:

1. The model predicted over-utilization of the Laurel Road and Hillcrest Avenue corridors to access Future Urban Area 1 (FUA 1) and under-utilization of the Sand Creek Road interchange from the SR 4 Bypass. A portion of traffic was manually reassigned to reflect likely utilization of the two corridors for traffic generated by FUA 1.

2. The model predicted over-utilization of Standard Oil Avenue and Contra Loma Boulevard and under-utilization of Somersville Road. A portion of traffic was manually reassigned to reflect likely utilization of these roadways based on the origin-destination information projected by the model.

The v/c ratios and LOS for each study roadway segment were identified using the methodologies described in the most recent update of the Transportation Research Board's *Highway Capacity Manual* (2000HCM).

Table 4.13.D summarizes the LOS thresholds used for the transportation assessment. Freeway mainline service volumes were based on Exhibit 13-6 and freeway ramp capacities were based on Exhibit 25-3 of the 2000 HCM. All other service volumes for study facilities were based on Exhibit 10-7 of the 2000 HCM. A service volume of LOS E was considered as the capacity for each facility

[1] Based on review of traffic count information at locations for which both daily traffic and peak period intersection counts were available, approximately 10 percent of daily traffic occurs during the peak hour. Therefore, the peak hour intersection approach volume was multiplied by 10 to estimate the daily roadway segment volume.

type. To convert peak hour service volumes to daily, a factor of 10 was applied. To convert directional capacities for surface streets to bi-directional capacities, a factor of 2 was applied. Based on the roadway segment daily traffic volume and LOS thresholds shown on Table 4.13.D, the service level for each study roadway segment was determined.

TABLE 4.13.D - Antioch General Plan – Level of Service Thresholds

	LOS C	LOS D	LOS E
Class I – Expressway			
1	18,600	20,400	22,800
2	37,200	40,600	45,600
3	55,600	61,000	68,600
4	74,200	81,200	91,400
Class III – Major Arterial			
1	9,600	15,600	17,000
2	20,600	32,000	33,800
3	31,200	48,200	50,800
4	42,800	64,400	67,800
Class IV – Minor Arterial			
1	10,800	16,500	16,000
2	24,000	31,400	32,400
3	38,000	47,400	48,600
4	52,200	63,200	65,000
Collector			
1	9,400	11,900	12,500
2	19,000	24,000	25,400
Freeway			
1	14,650	19,200	22,800
2	29,300	38.400	45,600
3	45,000	58,500	69,300
3.5	53,200	68,900	81,500
4	61,300	79,300	93,600
Ramp			
1	10,300	16,000	19,000
2	19,200	29,500	35,000

Findings. Results of the technical traffic assessment are summarized in Table 4.13.D, including roadway segment daily traffic volumes, volume to capacity ratio, and level of service for each analysis scenario (existing conditions, no project, and with project).

As shown in Table 4.13.D, roadways and highways in Antioch will operate at acceptable levels of service at General Plan build out with few exceptions. As shown in Table 4.13.D, State Route 4 will operate at LOS E from west of Contra Loma to west of Lone Tree Way. At build out of the General Plan, the highway segment west of Lone Tree Way will operate at essentially the same level of service as it does at present, while traffic conditions will improve along other segments of State Route 4 that are currently at or over capacity.

In addition to roadways and highways within Antioch, the traffic analysis evaluated impacts of the proposed Antioch General Plan on adjacent communities. The With Project traffic analysis indicates that Lone Tree Way east of the SR 4 Bypass will operate at LOS F with average daily traffic of 51,100 total daily trips at the freeway to 63,400 total daily trips east of Fairview Avenue. Even without any future development within Antioch (No Project), Lone Tree Way east of the SR 4 Bypass will operate at LOS F at build out of the Oakley, Brentwood, and Pittsburg General Plans. Future development within Antioch will add an additional 24.4 percent to traffic volumes along Lone Tree Way at the SR 4 Bypass and an additional 10.9 percent to traffic volumes along Lone Tree Way east of Fairview Avenue. Main Street in Oakley is also anticipated to operate at LOS F in both the No Project (no future development in Antioch) and With Project (build out of the Antioch General Plan) conditions. The proposed General Plan will result in the addition of 400 daily trips to that roadway link, adding to projected traffic congestion in that area.

Table 4.13.E - Comparison Average Daily Traffic (ADT) and Level of Service (LOS) for Antioch Under Existing, 2020 Without Project, and 2020 With Project Conditions

Street Name	Location from Cross-Street	Existing			No Project			With Project		
		ADT	v/c	LOS	ADT	v/c	LOS	ADT	v/c	LOS
10th Street	West of L St	16130	0.48	C	12700	0.38	C	15100	0.45	C
10th Street	East of L St	11150	0.70	D	10000	0.63	C	4000	0.25	C
10th Street	West of G St	12810	0.80	D	8500	0.53	C	2500	0.15	C
10th Street	West of D St	12770	0.80	D	8500	0.53	C	2400	0.15	C
18th Street	East of L St	9610	0.60	C	3900	0.24	C	4400	0.28	C
18th Street	West of Hillcrest	13200	0.78	D	12400	0.37	C	12900	0.38	C
18th Street	West of Viera	13410	0.79	D	11300	0.33	C	9200	0.27	C
18th Street	East of Viera	11070	0.65	D	6000	0.35	C	6900	0.20	C
4th Street	West of O St	4880	0.14	C	8500	0.25	C	6300	0.19	C
A Street	South of 10th St	12290	0.36	C	6300	0.19	C	5100	0.15	C
A Street	South of 18th St	14300	0.42	C	13900	0.41	C	11600	0.34	C
A Street	South of Wilbur	9920	0.29	C	11100	0.33	C	6700	0.20	C
A Street	South of Madill St	27760	0.82	D	17800	0.53	C	15800	0.47	C
Asilomar Drive	East of Whitefall Drive	1210	0.10	C	800	0.06	C	1300	0.10	C
Buchanan Road	West of Contra Loma	8820	0.26	C	16800	0.50	C	13400	0.40	C
Buchanan Road	East of Somersville	13240	0.39	C	1600	0.05	C	700	0.02	C
Buchanan Road	West of Somersville	20300	1.19	F	9200	0.27	C	11600	0.34	C
Cavallo Rd	South of 18th St	5260	0.42	C	4900	0.39	C	8800	0.55	C
Contra Loma Blvd.	South of Fitzhurem	13490	0.53	C	19000	0.75	C	21500	0.64	D
Country Hills Drive	West of Deer Valley	2980	0.19	C	2900	0.18	C	8500	0.50	C
Dallas Ranch Road	South of Hamilton	4190	0.12	C	5400	0.16	C	22700	0.67	D
Dallas Ranch Road	South of Lone Tree Way	4110	0.12	C	10500	0.31	C	21900	0.65	D
Davison Drive	West of Deer Valley	9910	0.29	C	6700	0.20	C	4700	0.14	C
Deer Valley Road	North of Wildflower	14190	0.42	C	17800	0.53	C	25000	0.74	D
Deer Valley Road	South of Davison	23600	0.70	D	22000	0.65	D	27300	0.81	D
Deer Valley Road	South of Country Hills	10490	0.31	C	11100	0.33	C	13400	0.40	C
Deer Valley Road	South of Larkspur	40450	0.80	D	34600	0.68	D	41300	0.81	D
Delta Fair Blvd	West of Somersville	17100	0.51	C	19400	0.57	C	14800	0.44	C

Table 4.13.E - Comparison Average Daily Traffic (ADT) and Level of Service (LOS) for Antioch Under Existing, 2020 Without Project, and 2020 With Project Conditions

Street Name	Location from Cross-Street	Existing			No Project			With Project		
		ADT	v/c	LOS	ADT	v/c	LOS	ADT	v/c	LOS
Delta Fair Blvd	East of Somersville	15890	0.47	C	21900	0.65	D	20100	0.59	C
E. Tregallas Road	West of Garrow	5120	0.30	C	13200	0.78	D	13100	0.77	D
Eagleridge Drive	North of Lone Tree Way	1410	0.11	C	1800	0.14	C	2200	0.18	C
Empire Ave	North of Lone Tree Way	6740	0.40	C	23500	0.70	D	19400	0.57	C
Fitzuren Road	East of Contra Loma	11310	0.71	D	20200	0.62	C	17800	0.55	C
G Street	South of 6th St	4400	0.35	C	200	0.02	C	400	0.03	C
G Street	South of 10th St	5140	0.41	C	300	0.02	C	500	0.04	C
G Street	South of 18th St	6380	0.51	C	5100	0.41	C	5000	0.40	C
Garrow Drive	North of Shaddick	3820	0.31	C	3600	0.29	C	4200	0.26	C
Garrow Drive	South of Davison	1660	0.13	C	5600	0.45	C	4800	0.38	C
Gentrytown	South of James Donlan	2240	0.18	C	7700	0.62	C	9100	0.73	C
Gentrytown	South of Putnam	7450	0.60	C	7000	0.56	C	8100	0.51	C
Golf Course	South of Lone Tree Way	3500	0.22	C	2000	0.13	C	5700	0.36	C
Heidorn Ranch Road	South of Lone Tree Way	680	0.05	C	2300	0.18	C	8200	0.24	C
Hillcrest Ave	North of Davison	33330	0.66	D	35300	0.69	D	40700	0.80	D
Hillcrest Ave	North of Country Hills	12110	0.36	C	16400	0.49	C	28600	0.85	D
Hillcrest Ave	South of Country Hills	11190	0.33	C	12400	0.37	C	25600	0.76	D
Hillcrest Ave	North of Lone Tree Way	13870	0.41	C	10600	0.31	C	21800	0.64	D
Hillcrest Ave	South of Lone Tree Way	1360	0.04	C	5300	0.16	C	29900	0.88	D
Hillcrest Ave	North of Larkspur	36480	0.72	D	39500	0.78	D	42800	0.84	D
Hillcrest Ave	South of Larkspur	40450	0.80	D	34600	0.68	D	41300	0.81	D
Hillcrest Ave	South of Wild Horse	22790	0.67	D	7400	0.22	C	10800	0.32	C
Hillcrest Ave	Above Highway 4	21680	0.43	C	34500	1.06	F	29500	0.87	D
Hillcrest Ave	North of Sunset	12700	0.75	D	18100	1.06	F	20700	0.61	D
Hillcrest Ave	South of 18th St	12270	0.72	D	15100	0.89	D	15600	0.46	C
James Donlon Blvd.	East of Contra Loma	18460	0.55	C	14000	0.41	C	17000	0.50	C
James Donlon Blvd.	West of Contra Loma	15500	0.46	C	15300	0.45	C	19800	0.59	C
James Donlon Blvd.	West of G St	17670	0.52	C	14000	0.41	C	17200	0.51	C
L Street	North of 10th St	3560	0.22	C	3100	0.19	C	7100	0.22	C

Table 4.13.E - Comparison Average Daily Traffic (ADT) and Level of Service (LOS) for Antioch Under Existing, 2020 Without Project, and 2020 With Project Conditions

Street Name	Location from Cross-Street	Existing			No Project			With Project		
		ADT	v/c	LOS	ADT	v/c	LOS	ADT	v/c	LOS
L Street	South of 10th St	8480	0.53	C	8100	0.51	C	10000	0.31	C
L Street	North of 18th St	8930	0.56	C	9300	0.58	C	11100	0.34	C
Larkspur Drive	East of Wildflower	2090	0.13	C	8800	0.55	C	7700	0.48	C
Lone Tree Way	East of Dallas Ranch	22030	0.65	D	14600	0.43	C	16700	0.33	C
Lone Tree Way	West of Dallas Ranch	22750	0.67	D	20600	0.61	C	33800	0.67	D
Lone Tree Way	East of Hillcrest	19440	0.58	C	22100	0.65	D	35500	0.70	D
Lone Tree Way	West of Hillcrest	13130	0.39	C	20400	0.60	C	24200	0.72	D
Lone Tree Way	North of Worrell	21670	0.64	D	17700	0.52	C	25200	0.50	C
Lone Tree Way	North of Tegallas	19100	0.57	C	31400	0.93	D	36400	0.72	D
Lone Tree Way	South of Tegallas	21670	0.64	D	17700	0.52	C	25200	0.50	C
Lone Tree Way	Under Highway 4	17690	0.52	C	18900	0.37	C	20400	0.40	C
Lone Tree Way	West of Deer Valley	18350	0.54	C	15900	0.47	C	20900	0.62	D
Lone Tree Way	South of James Donlan	27760	0.82	D	26600	0.79	D	42700	0.84	D
Longview Road	East of Contra Loma	5930	0.47	C	6700	0.54	C	7000	0.56	C
Mahogany Blvd.	East of Somersville	5260	0.33	C	11100	0.69	D	10600	0.66	C
Mahogany Blvd.	West of Somersville	9640	0.29	C	22100	0.68	C	20900	0.65	C
Minaker Drive	South of Wilbur	2920	0.23	C	500	0.04	C	600	0.05	C
Minaker Drive	West of Hillcrest	2200	0.18	C	500	0.04	C	600	0.05	C
Mission Drive	East of Contra Loma	2670	0.21	C	4100	0.33	C	2100	0.17	C
Oakley Road	Southeast of Vierra	2580	0.21	C	5700	0.46	C	1200	0.10	C
P.A. Highway	Between Sommerville and Loveridge	15390	0.91	D	5700	0.34	C	13400	0.29	C
P.A. Highway	East of Somersville	16390	0.48	C	11500	0.34	C	13000	0.38	C
P.A. Highway	West of Somersville	16130	0.48	C	5400	0.32	C	11900	0.26	C
Putnam Street	East of G St	7510	0.60	C	9600	0.77	D	8700	0.54	C
Putnam Street	West of G St	6980	0.56	C	1900	0.15	C	1200	0.08	C
Putnam Street	North of Longview	1270	0.10	C	200	0.02	C	600	0.04	C
Putnam Street	East of Gentrytown	3150	0.25	C	1600	0.13	C	1800	0.11	C
Putnam Street	West of Contra Loma	5220	0.42	C	1400	0.11	C	1600	0.10	C
Ridgerock Drive	East of Boulder Drive	3320	0.27	C	100	0.01	C	#N/A	#N/A	#N/A

Table 4.13.E - Comparison Average Daily Traffic (ADT) and Level of Service (LOS) for Antioch Under Existing, 2020 Without Project, and 2020 With Project Conditions

Street Name	Location from Cross-Street	Existing			No Project			With Project		
		ADT	v/c	LOS	ADT	v/c	LOS	ADT	v/c	LOS
San Jose Drive	East of Gentrytown	4020	0.32	C	7700	0.62	C	6200	0.50	C
Shaddick Drive	East of Harbour	530	0.04	C	100	0.01	C	400	0.03	C
Somersville Road	South of Buchanan	8420	0.50	C	19400	1.14	F	18200	0.54	C
Somersville Road	North of Buchanan	14260	0.42	C	21000	0.62	D	21200	0.42	C
Somersville Road	North of Fairview Drive	11250	0.33	C	21000	0.62	D	21200	0.42	C
Somersville Road	North of Sycamore	20060	0.59	C	19400	0.57	C	17900	0.53	C
Somersville Road	North of James Donlan	8830	0.55	C	15500	0.46	C	21700	0.64	D
Somersville Road	North of Delta Fair Blvd	29760	0.59	C	59300	1.17	F	45000	0.89	D
Somersville Road	South of Delta Fair Blvd	13300	0.39	C	60000	1.78	F	39900	0.79	D
Somersville Road	Under Highway 4	24730	0.73	D	46200	0.91	D	37300	0.73	D
Somersville Road	South of Mahogany	23830	0.47	C	42300	0.83	D	36200	0.71	D
Somersville Road	North of Mahogany	17980	0.35	C	24400	0.48	C	20100	0.40	C
Somersville Road	North of P.A. Highway	5460	0.16	C	11000	0.33	C	10300	0.30	C
Sunset Drive	West of Hillcrest	4060	0.25	C	6300	0.39	C	5800	0.36	C
Sycamore Drive	East of Somersville	8960	0.56	C	6600	0.41	C	6800	0.43	C
Via Dora	Southeast of Asilomar	2510	0.20	C	6800	0.54	C	6800	0.43	C
Viera Ave.	South of 18th St	1940	0.16	C	5100	0.41	C	5700	0.34	C
W. Tregallas Road	West of Lone Tree Way	7050	0.44	C	5500	0.34	C	4700	0.29	C
W. Tregallas Road	East of G St	10350	0.65	C	6700	0.42	C	4900	0.31	C
Wilbur Ave.	East of A St	11130	0.33	C	12200	0.36	C	12100	0.36	C
Wilbur Ave.	West of Minaker	10400	0.31	C	15100	0.45	C	16300	0.48	C
Wilbur Ave.	East of Minaker	6950	0.41	C	14400	0.85	D	15300	0.45	C
Wilbur Ave.	West of Highway 160	6400	0.38	C	17500	1.03	F	18200	0.54	C
Wildflower Drive	West of Hillcrest	3310	0.26	C	600	0.05	C	1000	0.08	C
Worrel Road	West of Garrow	1220	0.10	C	1500	0.12	C	1300	0.10	C
State Route 4	West of State Route 160	37500	0.41	C	134400	0.82	D	125000	0.77	D
State Route 4	West of Hillcrest	71000	0.78	D	134900	0.83	D	136600	0.84	D
State Route 4	West of Lone Tree Way	86000	0.94	E	154600	0.95	E	158700	0.97	E
State Route 4	West of Contra Loma	101000	1.11	F	153100	0.94	E	150400	0.92	E

Table 4.13.E - Comparison Average Daily Traffic (ADT) and Level of Service (LOS) for Antioch Under Existing, 2020 Without Project, and 2020 With Project Conditions

Street Name	Location from Cross-Street	Existing			No Project			With Project		
		ADT	v/c	LOS	ADT	v/c	LOS	ADT	v/c	LOS
State Route 4	West of Somersville	95000	1.04	F	144700	0.89	E	136100	0.83	D
State Route 4	West of Loveridge	91000	1.00	E	144700	0.89	E	136100	0.83	D
SR 4 Bypass (NB)	South of Lone Tree Way				31600	0.69	D	28200	0.62	C
SR 4 Bypass (SB)	South of Lone Tree Way				29900	0.66	D	28000	0.61	C
SR 4 Bypass (NB)	North of Lone Tree Way				42200	0.93	E	41600	0.91	E
SR 4 Bypass (SB)	North of Lone Tree Way				35100	0.77	D	34400	0.75	D
SR 4 Bypass (NB)	North of Laurel				53600	0.77	D	50200	0.72	D
SR 4 Bypass (SB)	North of Laurel				54200	0.78	D	54200	0.78	D
Highway 160 (NB)	North of SR 4				32500	0.71	D	33400	0.73	D
Highway 160 (SB)	North of SR 4				32800	0.72	D	33500	0.73	D
Highway 160 (NB)	South of Wilbur				10700	0.23	C	12800	0.28	C
Highway 160 (SB)	South of Wilbur				13300	0.29	C	15000	0.33	C

Proposed General Plan Policies. The proposed General Plan includes the following policies to reduce or minimize the effects of prospective growth on transportation and circulation within and surrounding the City. Implementation of the proposed General Plan policies related to transportation and circulation would help reduce the effects of growth and development.

3.4.4 Transportation Facilities (Growth Management) Policies

a. Place ultimate responsibility for mitigating the impacts of future growth and development, including construction of new and widened roadways with individual development projects. The City's Capital Improvements Program will be used primarily to address the impacts of existing development, and to facilitate adopted economic development programs.

b. Continue to develop and implement action plans for routes of regional significance (see Circulation Element requirements).

c. Ensure that development projects pay applicable regional traffic mitigation fees and provide appropriate participation in relation to improvements for routes of regional significance (see also Circulation Element Policy 5.3.1f).

d. Consider level of service standards along basic routes to be met if 20-year projections based on the City's accepted traffic model indicate that conditions at the intersections that will be impacted by the project will be equivalent to or better than those specified in the standard, or that the proposed project has been required to pay its fair share of the improvement costs needed to bring operations at impacted intersections into conformance with the applicable performance standard, or Findings of Special Circumstances have been requested from CCTA for intersections that will not meet the standard.

e. Because the policy set forth in Paragraph d, above, is based on *projected, with project* traffic conditions, it is a more stringent standard than that required by Measure C, which is based on existing conditions. It is therefore possible for Measure C requirements to be met (existing operations meet the established performance standard), even though the Antioch General Plan standard set forth in paragraph d, above, which is based on projected, cumulative traffic conditions, would not be met. In cases where the Measure C standard for Basic Routes is met for existing conditions (see Section 3.3.2.1), but the standard set forth in paragraph d, above, is not met in the *no project* condition (i.e., projected traffic will not meet the applicable standard, even if the proposed project is not built), General Plan traffic standards for Basic Routes will be considered to be met if (1) the proposed project has been required to pay its fair share of the improvement costs needed to bring operations at impacted intersections into conformance with the applicable performance standard and actual physical improvements will be provided by the project so as to not result in a further degradation of projected level of service at affected intersections, *or* (2) Findings of Special Circumstances have been requested from CCTA for intersections that will not meet the standard.

f. For projects that will generate more than 100 peak hour trips, approve only those for which "Findings of Consistency" with Measure C can be made (see Section 3.2.3.1) and which are consistent with the applicable provisions of the Antioch General Plan, including its transportation facilities performance standards and policies.

3.4.5 Transportation Systems Management Policies

a. Continue to implement the City's TSM program to reduce trip generation and maximize the carrying capacity of the area's roadway system.

b. Work to establish rail transit service within Antioch.

c. Work with Tri-Delta Transit and other service providers to promote regional transit service. Refer proposed development projects to Tri-Delta Transit, and require the provision of bus turnouts and bus stops in locations requested by the agency, where appropriate.

d. Synchronize traffic signals where feasible to improve the flow of through traffic.

7.3.2 Vehicular Circulation Policies

a. Facilitate meeting the roadway performance standards set forth in the Growth Management Element and improving traffic flow on arterial roadways.

   - Work with the SP and BNSF railroads to construct grade separations along the tracks at Somersville Road, Hillcrest Avenue, "A" Street, the proposed Viera Road extension, and to the SR 4/SR 160 Frontage Focus Area.
   - Promote the design of roadways to optimize safe traffic flow within established roadway configurations by minimizing driveways and intersections, uncontrolled access to adjacent parcels, on-street parking, and frequent stops to the extent consistent with the character of adjacent land uses.
   - Provide adequate capacity at intersections to accommodate future traffic volumes by installing intersection traffic improvements and traffic control devices, as needed, as development occurs.
   - Facilitate the synchronization of traffic signals.
   - Where needed, provide acceleration and deceleration lanes for commercial access drives.
   - Provide for reciprocal access and parking agreements between adjacent land uses, thereby facilitating off-street vehicular movement between adjacent commercial and other non-residential uses.
   - Encourage regional goods movement to remain on area freeways and other appropriate routes.

b. Design and reconfigure collector and local roadways to improve circulation within and connections to residential and commercial areas.

   - Implement appropriate measures to mitigate speeding and other traffic impacts in residential areas.
   - Implement roadway patterns that limit through traffic on local residential streets.

c. Require the design of new developments to focus through traffic onto arterial streets.

d. Where feasible, design arterial roadways, including routes of regional significance, to provide better service than the minimum standards set forth in Measure C and the Growth Management Element. Thus, where feasible, the City will strive to maintain a "High D" level of service (v/c –

0.85-0.89) within regional commercial areas and at intersections within 1,000 feet of a freeway interchange. The City will also strive where feasible to maintain Low-range "D" (v/c = 0.80-0.84) in all other areas of the City, including freeway interchanges.

e. Establish Assessment Districts in areas that will require major roadway infrastructure improvements that will benefit only that area of the City, and thereby facilitate the up-front construction of needed roadways.

f. Design street intersections to ensure the safe passage of through traffic and accommodate anticipated turning movements. Implement intersection improvements consistent with the following lane geometrics, unless traffic analyses indicate the need for additional turn lanes.

g. Where uses such as commercial centers that generate heavy traffic volumes are located along arterial roadways, provide acceleration and deceleration lanes as needed to maintain the carrying capacity of through traffic lanes.

h. Require traffic impact studies for all new developments that propose to increase the approved density or intensity of development or are projected to generate 50 peak hour trips or more at any intersection of Circulation Element roadways. The purpose of these studies is to demonstrate that:

- The existing roadway system, along with roads to be improved by the proposed project, can meet the performance standards set forth in Sections 3.4.1 and 3.4.2 of the Growth Management Element, and
- Required findings of consistency with the provisions of the Growth Management Element can be made.

i. Require that existing driveways that are unnecessary or substandard be removed or upgraded, wherever feasible, in conjunction with any on-site development or any adjacent street construction.

j. Where single family residences have no feasible alternative but to front on collector or arterial roadways, require, wherever possible, that circular driveways or on-site turnarounds be provided to eliminate the need for residents to back onto the street.

k. Use raised medians as a method for achieving one or more of the following objectives: access control, separation of opposing traffic flows, left turn storage, aesthetic improvement, and/or pedestrian refuge.

k. Where a series of traffic signals are provided along a route, facilitate the coordination of traffic signals to optimize traffic progression on a given route. Traffic signalization should emphasize facilitating access from neighborhood areas onto the City's primary roadway network, and should work to discourage through traffic from using local streets.

l. Demand-actuated traffic signals should include push buttons to signal the need for pedestrians to cross. Demand-actuated traffic signals corresponding with bicycle routes should include bicycle sensitive loop detectors or push buttons adjacent to the curb.

m. Expand intersections to include additional turning and through lanes at intersections where needed to relieve congestion and improve intersection operation, so long as the intersection can continue to accommodate pedestrians and bicyclists. Avoid traffic system improvements that facilitate vehicular turning and bus movements, but that also discourage pedestrian or bicycle

movements. This can be accomplished on wide streets by providing safe stopping places for pedestrian crossing the street.

n. Private streets, where permitted, shall provide for adequate circulation and emergency vehicle access. Private streets that will accommodate more than 50 vehicles per hour in the peak hour or that are designed for on-street parking shall be designed to public street standards. The design of other private streets shall be subject to the review and approval of the City Engineer. Private streets shall be improved to public street standards prior to acceptance of dedications to the City.

o. Require new development to construct all on-site roadways, including Circulation Element routes, and provide a fair share contribution for needed offsite improvements needed to maintain the roadway performance standards set forth in the Growth Management Element. Contributions for offsite improvements may be in the form of fees and/or physical improvements, as determined by the City Engineer. Costs associated with mitigating off-site traffic impacts should be allocated on the basis of trip generation, and should have provisions for lower rates for income-restricted lower income housing projects needed to meet the quantified objectives of the General Plan Housing Element.

Effectiveness of Proposed General Plan Policies. The Circulation Element policies provide a framework for development and implementation of the proposed multi-modal transportation system envisioned by the proposed General Plan. The policies also provide a clear mechanism whereby traffic impacts from individual development projects will be reviewed and mitigated in relation to roadway capacity and level of service standards. As indicated in Table 4.13.E, implementation of the proposed General Plan, including traffic and transportation policies, will result in a very small number of roadway and highway links not operating at acceptable levels of service. Each of these roadway and highway links either currently operate at unacceptable levels of service, or will operate at an unacceptable level of service regardless of whether any future development occurs within Antioch. Because the significant impacts that have been identified will occur on roadways that not under the City's jurisdiction, even in the absence of future growth in Antioch, General Plan policies cannot eliminate of mitigate traffic impacts.

Mitigation Measures. Because the significant impacts that have been identified will occur on roadways not under the City's jurisdiction, and will occur even in the absence of future growth in Antioch, there are no feasible mitigation measures that the City could adopt to reduce traffic impacts to a less than significant level.

4.13.4 Traffic and Circulation Level of Significance After Mitigation

Traffic and circulation impacts will remain significant, even after the implementation of all feasible mitigation by the City of Antioch. Even though local traffic impacts will be mitigated through implementation of the above policies, growth within adjacent jurisdictions would cause the region to experience significant traffic and circulation impacts. These impacts would occur even if the proposed General Plan was not adopted or if no additional growth were to occur within the City.

5.0 ADDITIONAL TOPICS REQUIRED BY CEQA

As required by CEQA, this chapter discusses: growth-inducing impacts; significant irreversible changes; cumulative impacts; effects found not to be significant; unavoidable significant effects; and the relationship between short-term and long-term uses of the environment.

5.1 GROWTH-INDUCING IMPACTS

CEQA requires a discussion of the ways in which the proposed General Plan could be growth inducing. The *CEQA Guidelines*, Section 15126.2(d), identifies a project as "growth inducing" if it fosters economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. New employees from commercial and industrial development and new population from residential development represent direct forms of growth. A project could also indirectly induce growth by removing barriers to growth, by creating a condition that attracts additional population or new economic activity, or by providing a catalyst for future unrelated growth in the area. While a project may have a potential to induce growth, it does not automatically result in growth. Growth can only happen through capital investment in new economic opportunities by the public or private sectors.

Development pressures are a result of economic investment in a particular locality. These pressures help to structure the local politics of growth and the local jurisdiction's policies related to growth management and land use. The land use policies established by the City of Antioch will regulate growth in the County.

CEQA does not consider growth inducement to be necessarily detrimental, beneficial, or of significance to the environment. Typically, the growth inducing potential of a project is considered significant if it fosters growth or a concentration of population in excess of what is assumed in pertinent master plans, land use plans, or in projections made by regional planning agencies. Significant growth impacts could also be manifested through the provision of infrastructure or service capacity to accommodate growth beyond the levels currently permitted by local or regional plans and policies. In general, growth induced by a project is considered a significant impact if it directly or indirectly affects the ability of agencies to provide needed public services, or if it can be demonstrated that the potential growth significantly affects the environment in some other way.

Implementation of the proposed Antioch General Plan would directly affect population and employment growth in the City by designating land within the City for development that is more intense than current land uses. Implementation of the proposed Antioch General Plan would result in the development of 58,195 additional jobs and 23,013 additional housing units. Due to growth associated with the proposed General Plan, Antioch would have a total of 75,255 jobs, 53,280 housing units, and 146,785 residents and 82,200 employed residents. As discussed in Section 4.1, Land Use, the Antioch General Plan proposes significantly more employment-generating development than ABAG has projected for the City and its sphere of influence. Whereas ABAG projects that in 2025, Antioch will have 0.48 jobs for each employed resident, the proposed General Plan proposes that the

City achieve a ratio of 0.92 jobs per employed resident. Thus, the Antioch General Plan would have a significant growth inducing impact in that its projected build out would result in significantly more employment than is accounted for in ABAG projections. The environmental effects of this induced growth are addressed throughout Chapter 4 of this EIR. As noted in Section 4.10, the implementation of the proposed General Plan would not the ability of agencies to provide needed public services.

Population and employment growth would be constrained by development restrictions on lands outside of the County's Urban Limit Line. However, the General Plan recognizes and plans for future expansion outside of the current existing Urban Limit Line (see discussion of the relationship between the Antioch General Plan and the Urban Limit Line in Section 4.1, Land Use). This development would occur after the Urban Limit Line is moved outside of these areas or after it expires. Because the commercial and employment-generating growth that would occur under the proposed General Plan would significantly improve Antioch's jobs-housing balance, anticipated growth would have several beneficial effects. First, such growth, where it would occur within transit-oriented developments, would support regional transit systems by increasing ridership and access to transit systems, and would benefit bike and pedestrian access. Strengthening the transit system and improving bike and pedestrian circulation could reduce traffic and associated environmental effects, such as air pollution and noise. Second, the proposed General Plan would assist in reducing commute lengths by providing a greater range of employment opportunities for local residents than would be afforded if the City were to follow ABAG projections. The proposed General Plan would increase the construction of housing in Antioch, allowing the City to address its fair-share housing allocation requirements. An increased overall housing supply would allow the City to better address affordable housing needs.

Because outward expansion of Antioch is constrained by the presence of the Urban Limit Line, growth associated with the proposed project would not induce unanticipated population growth inconsistent with policies establishing the County's Urban Limit Line. Implementation of the General Plan will result in build out of lands within the existing Urban Limit Line. Such build out is anticipated to result in a review of the location of the Urban Limit Line according to criteria set forth in the Contra Costa County 65/35 Land Preservation Plan. The location of the Urban Limit Line is not permanently fixed; it can be reviewed and moved by the County every five years and has an expiration date.

The proposed Antioch General Plan will result in growth. Based on the CEQA definition of growth inducement, a General Plan is inherently growth inducing. The growth permitted by the proposed General Plan leads to certain significant unavoidable adverse impacts described in this EIR. The proposed General Plan is a master plan providing the framework by which public officials will be guided on making decisions relative to development within Riverside County. However, it is the implementation of land use policies that will incrementally increase demands for public services, utilities, and infrastructure, and the need for medical, educational, and recreation facilities.

5.2 SIGNIFICANT IRREVERSIBLE CHANGES

CEQA requires that EIRs identify any significant irreversible environmental changes that could result from the implementation of a proposed project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. CEQA dictates that irretrievable commitments of resources should be evaluated to

assure that such current consumption is justified. The *CEQA Guidelines* describe three distinct categories of significant irreversible changes: 1) changes in land use which would commit future generations; 2) irreversible changes from environmental actions; and 3) consumption of non-renewable resources.

5.2.1 Changes in Land Use Which Would Commit Future Generations

Although much of the General Plan Study Area is developed, implementation of the Draft General Plan would result in the introduction of residential, commercial, industrial, and institutional uses to lands that are currently undeveloped. Substantial development would occur within each of the General Plan focused policy areas, including the Rivertown Area, Somersville Road and "A" Street corridors, and lands within the northeastern and southern portions of the General Plan Study Area. These areas are currently characterized by low-density development and open space. The development of these areas would commit the City to sustaining relatively higher intensity uses within existing developed areas, providing new affordable housing, creation of transit-oriented development, and upgrading and revitalization of underutilized commercial areas. The General Plan would result in the infill of commercial and employment-generating uses, primarily within the northeastern portion of Antioch's General Plan study area. General Plan implementation would also result in irreversible commitment of land to development within the SR-4 Freeway Frontage, East Lone Tree, and Sand Creek focused policy areas. Should the County's existing Urban Limit Line be expanded to encompass the Roddy and Ginochio focused policy areas, the proposed General Plan would also result in an irreversible commitment of substantial portions of those areas to development. Development of these currently largely vacant areas would provide significant employment opportunities, assisting the City to improve its jobs/housing balance, provide for transit-oriented development in the vicinity of proposed rail transit stations, and assist in providing upper-end housing opportunities that are not now available within Antioch.

5.2.2 Irreversible Changes from Environmental Actions

Implementation of the proposed project would result in the development of existing undeveloped lands. Irreversible environmental changes that would result from such development would include potential degradation of existing biological and cultural resources, loss of aesthetic resources, and the installation of utility and roadway infrastructure. Although it is unlikely that a major hazardous waste release would occur in Antioch as a result of implementation of the proposed General Plan, such a release would also constitute a significant irreversible change from an environmental action. The mitigation measures outlined in Chapter 4 address these impacts and would reduce such irreversible or nearly irreversible effects to less than significant levels.

5.2.3 Consumption of Nonrenewable Resources

Consumption of nonrenewable resources includes nonrenewable energy use. The implementation of Draft General Plan policies contained in the Resource Management Element would promote development proposals designed to reduce energy consumption. Achieving a balance between local housing and employment opportunities, along with development of transit-oriented development would result in the conservation of fossil fuels. Therefore, the proposed project would result in the efficient use of nonrenewable energy sources.

5.3 CUMULATIVE IMPACTS

CEQA defines cumulative impacts as "two or more individual effects, which, when considered together, are considerable, or which can compound or increase other environmental impacts." Section 15130 of the *CEQA Guidelines* requires that an EIR evaluate potential environmental impacts that are individually limited but cumulatively significant. These impacts can result from the proposed project alone, or together with other projects. The *CEQA Guidelines* state: "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.[1]

The determination of a project's cumulative effects involves the identification of the following:

- Direct and indirect effects of the proposed action;
- Which resources, ecosystems, and human communities are affected; and
- Whether these effects are cumulatively important.

In a general sense, all impacts on affected resources are cumulative; however, it is the goal of this analysis to narrow the important issues to those of national, regional, or local significance.

An assessment of the cumulative impacts is done qualitatively since it is difficult to predict timing and density of future projects. Many future projects will be the subject of separate environmental studies.

Due to the broad project objectives associated with the implementation of the proposed General Plan, the cumulative analysis presented in this Program EIR does not evaluate the site-specific impacts of individual projects. Project-level analysis will be prepared on a project-by-project basis. The proposed General Plan addresses cumulative growth anticipated to occur in Antioch and its General Plan study area resulting from build out of the proposed General Plan in combination with growth throughout Contra Costa County.

The cumulative impact analysis is based on the anticipated population growth within Contra Costa County. Population growth is a major factor contributing to direct impacts on habitat, housing, job markets, transportation, and development. Additionally, these direct impacts can cause secondary impacts to biological resources, air quality, density, and the overall quality of life within Antioch. For this reason, using population growth as a measure to determine cumulative impacts is applicable when examining a large-scale policy action such as a General Plan.

Population, employment, and number of households forecast for the Contra Costa County are presented in Table 5.A. This Table shows that Contra Costa County will grow by 28 percent in 25 years, with similar growth in households and a 58 percent increase in jobs. According to ABAG, in 2025 the jobs-to-housing imbalance is anticipated to continue throughout the region, resulting in an increasing need to import labor from outside of the San Francisco Bay Area. Along with the

[1] *CEQA Guidelines*, 2000. Section 15355.

projected regional surplus of jobs as compared to workers in the region, ABAG projects that Contra Costa County, and in particular, eastern Contra Costa County (where Antioch is located) will have a significant shortage of employment opportunities compared to the local population. Continued local and regional jobs/housing imbalances will likely contribute to further traffic and air quality impacts.

Table 5.A – Contra Costa County Projections

	Population	Employed Residents	Households	Jobs	Jobs/Housing Balance
2000	948,816	483,898	344,129	314,550	0.65
2025	1,209,900	677,500	443,510	495,460	0.73
Increase	261,084	193,602	99,381	180,910	
% Increase	0.28%	0.40%	0.29%	0.58%	

Source: ABAG, *Projections 2002.*

5.3.1 Cumulative Effects of the Proposed General Plan

Land Use. Implementation of General Plans throughout Contra Costa County, in combination with the proposed project, would result in extensive land use changes on the regional level. The projects would result in the development of thousand of acres of undeveloped land into residential, commercial, industrial, and institutional uses. Urban growth that would occur throughout the County would be within the Urban Limit Line, as it may be modified in the future. As the proposed General Plan areas as well as surrounding cities and unincorporated areas develop, a greater intensification may result in cumulative land use compatibility impacts. Because the proposed General Plan would result in less than significant impacts on existing land use designations and patterns, the proposed General Plan would not result in a cumulative impact to existing land use patterns within the vicinity of the City of Antioch. The proposed General Plan update will result in the conversion of existing agricultural land and open lands to a variety of urban uses. The implementation of proposed General Plan policies and mitigation measures help reduce the impacts resulting from conversion of open lands to urban uses, but the potential loss of such lands remains a significant unavoidable cumulative impact.

Population, Employment and Housing. The proposed project would increase the total year population of Antioch by approximately 56,253. Contra Costa County will have approximately 261,084 new residents residing in approximately 99,381 new households. While future increases in population and housing will occur within Contra Costa County, the rate of growth is consistent with overall ABAG rates of growth. Development on a scale and intensity permitted under the proposed General Plan would result in cumulatively significant population increases within the County. Although this growth would allow for the provision of housing, including affordable housing, associated population increases could result in environmental impacts associated with urban growth, such as traffic and air pollution. However, because the population growth that would occur as part of the proposed project is anticipated by ABAG and would be confined within the County's Urban Limit Line as it may be modified in the future, the proposed project would not cumulatively result in substantial, unanticipated population growth. The proposed project would result in a jobs/housing balance of 0.92, substantially reducing a high rate of out-commuting. According to ABAG, jobs and housing will be generally unbalanced in Contra Costa County in 2025 (the ratio of jobs to employed

residents would be approximately 0.73). The current jobs/housing balance within Contra Costa County is 0.65. Therefore, the proposed project and other anticipated development within the County will contribute to future improvement of the current jobs/housing imbalance. Other cumulative impacts of the proposed project related to population, employment, and housing would be less than significant.

Traffic and Circulation. The traffic analysis undertaken for the proposed Antioch General Plan (Section 4.13) provides an analysis of cumulative traffic impacts that would result with build out of the Antioch, Oakely, Brentwood, and Pittsburg General Plans, along with projected growth throughout the Bay Area through 2025.

Utilities, Infrastructure, and Energy. Implementation of the proposed Antioch General Plan and cumulative development within the County will substantially increase the demand for water, wastewater treatment, and energy utility services. Utility improvements funded by subsequent development projects, routine expansions of water and wastewater treatment plants and infrastructure, and energy conservation measures would ensure that the proposed project would have less than significant cumulative impacts on wastewater treatment and energy. Although the imposition of water conservation measures on new development would result in a less substantial increase in water demand than would occur without such measures, cumulative water consumption impacts are considered to be significant in terms of the finite supply of water that is available in northern California and throughout the State. Implementation of the proposed Antioch General Plan project and cumulative development throughout the County will require substantial amounts of water to serve household uses, such as lawn irrigation, pools, showers, and bathrooms, as well as commercial/industrial uses. Increases in demand for water resulting from implementation of the proposed General Plan will be accommodated primarily through increased diversion of water from the San Joaquin River and other surface sources, and the reallocation of water from other land uses that require water, such as agriculture and fisheries. The reallocation of water from such uses to development in the greater Bay Area would result in indirect environmental effects and would be considered significant.

Public Services. Similar to other large development projects, the Antioch General Plan and cumulative development throughout the County will increase demand for public services, including police, fire, and emergency service, and schools and parks. New facilities will be required in order to maintain adequate service ratios. These facilities will be funded through developer fees, bond monies, and taxes on new development. It is anticipated that municipal agencies and service providers throughout Contra Costa County will regularly review growth trends and conduct long-range planning to adequately provide public services for future growth. The County and each city within Contra Costa County is required to adopt a Growth Management Element as part of its General Plan, and to adopt and enforce public service performance standards. The adoption and enforcement of such standards provides assurance that cumulative impacts on public services will be less than significant.

Cultural Resources. Construction activities associated with the proposed Antioch General Plan and cumulative development throughout the County could result in significant impacts to identified and presently unidentified historical, archaeological and paleontological resources, as well as to unique geologic features. However, like the Antioch General Plan, each city's and the County's General Plan include provisions to mitigate such impacts. In addition, individual development projects will be subject to extensive mitigation measures designed to protect cultural resources. Such mitigation would include the monitoring of construction areas around known archaeological sites, reporting the recovery of any unidentified human remains to the appropriate authorities, and the preservation of protected cultural resources. Therefore, the proposed General Plan would not result in substantial adverse cumulative impacts on cultural resources.

Air Quality. The cumulative air quality effects of construction activities and vehicle trips that would occur as a result of implementation of the proposed project and the cumulative projects would be significant. Contra Costa County currently experiences air pollution as a result of vehicle trips locally and in the western portions of the Bay Area, construction activities, industrial and agricultural activity, and the geophysical characteristics of the air basin. Even with the implementation of mitigation measures, improved local jobs/housing balance, transit-oriented development and low-emission technologies, it is anticipated that air quality impacts in the region will continue to be significant due to increased development in the County.

Noise. The proposed Antioch General Plan would result in significant unavoidable increases in noise on area roadways, and would cumulatively contribute to substantial noise level increases along regional roadways. The noise analysis undertaken in Section 4.9 is based on a cumulative traffic analysis, and therefore represents a cumulative analysis of future noise impacts. Construction-related activities would be subject to standard noise-reduction measures and would not adversely impact sensitive receptors.

Biological Resources. Implementation of the proposed project and cumulative projects would result in development within and adjacent to large areas of undeveloped land that currently contain sensitive biological resources. Implementation of Draft General Plan policies will reduce potential impacts of the proposed project on biological resources to less than significant levels. In addition, it is anticipated that the plans for the cumulative development within the County will preserve sensitive biological resources, where possible, pursuant to General Plan policies adopted by the County and cities within the County. Impacts to sensitive resources and species would also be mitigated according to agreements between project applicants and Federal and State regulatory agencies. However, the proposed project and anticipated future development would cumulatively result in the loss of biological resources and wildlife habitat. Although mitigation for the loss of habitat will be provided, most mitigation programs do not fully replicate the complex ecological relationships that existed in the natural habitat areas that were developed. Therefore, even though local impacts will be mitigated to a less than significant level, implementation of the proposed project would result in a substantial regional cumulative impact on biological resources.

Geology, Soils, and Seismicity. Because geologic conditions are highly localized, implementation of the proposed General Plan would not result in cumulative geologic impacts. The increase in population that would result from implementation of the proposed Antioch General Plan and cumulative development throughout the County will increase the number of residents and employees that will exposed to the region's known seismic hazards. However, conformance with the Uniform Building Code and other measures that would preserve building integrity during a seismic event would reduce this cumulative impact to a less than significant level.

Hydrology and Water Quality. Compliance with the NPDES Nonpoint Source Program and other RWQCB regulations will ensure that the proposed General Plan and cumulative development throughout the County will result in less than significant impacts associated with stormwater contamination during project construction and operational periods. The proposed General Plan will not expose persons or structures to substantial adverse flooding hazards, and will not substantially alter waterways. Because the County and cities within the County maintain General Plan policies that provide similar protection from flood hazards, the proposed General Plan, in combination with cumulative development throughout the County, would not create region-wide flooding hazards. The proposed General Plan and cumulative development within the County will result in a substantial increase in impervious surface coverage within the Planning Area. The implementation of General Plan Resource Management policies will ensure that implementation of the proposed General Plan will not deplete the groundwater supply or substantially reduce groundwater quality.

Hazards. The increase in population resulting from implementation of the proposed General Plan and cumulative development within the County will increase the use and storage of hazardous household, commercial, and industrial materials. New development would thus increase the risk that persons could be exposed to accidental upsets of hazardous materials. However, the use, storage, and disposal of hazardous materials is highly regulated by local, State, and Federal laws. The handling of hazardous materials in accordance with these regulations would reduce cumulative hazardous materials risks to a less than significant level. Implementation of the proposed General Plan would provide for the safe closure of abandoned mines within the City.

Visual Resources. Development associated with the proposed General Plan and cumulative development throughout the County will result in a substantial change to the visual character of much of Contra Costa County. Implementation of Antioch's proposed General Plan, the County General Plan, and General Plans of other cities in the County will transform large areas of undeveloped land into suburban uses. Much of this existing undeveloped land is scenic and consists of rolling hillsides and wide expanses of open space and agricultural land. However, General Plan policies would ensure the preservation of viewsheds, the preservation of hillsides and other landmarks, and the protection of visual character in Antioch. Implementation of these policies would ensure that the proposed project would not substantially contribute to the degradation of regional visual quality in the cumulative condition.

5.4 EFFECTS FOUND NOT TO BE SIGNIFICANT

The Initial Study/NOP prepared for the Antioch General Plan (refer to Appendix A) identified environmental effects of the proposed General Plan found to be no impact, a less than significant impact, or less than significant impact with mitigation. There are no changed circumstances that would necessitate a change in the analysis provided in the Initial Study. Analysis of the following issues determined in the Initial Study to be no impact or a less than significant impact is not provided in the EIR. Those topics are as follows:

Mineral Resources. None of the areas identified in the General Plan as available for new development contain known mineral resources that would be of value to the region and residents of the state. Therefore, implementation of the proposed General Plan will not significantly affect mineral resources.

Airports. None of the lands suitable for development identified in the proposed General Plan are located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, implementation of the proposed General Plan will not result in a safety hazard for people residing or working in the City.

5.5 UNAVOIDABLE SIGNIFICANT EFFECTS

Implementation of the proposed project could result in significant unavoidable impacts related to air quality and traffic and circulation. As discussed in Section 4.2, implementation of the proposed General Plan would increase regional emissions associated with vehicular trips, which would generate NOx emissions that would exceed the project level operations threshold established by the BAAQMD. Additionally, the rate of increase in VMT and annual growth percentages resulting from the implementation of the proposed General Plan would result in significant impacts. Implementation of the proposed General Plan policies would reduce impacts associated with the proposed General Plan; however, significant unavoidable impacts would remain.

As discussed in section 4.13, future growth occurring as the result of implementing the proposed General Plan will increase area-wide traffic volumes with the potential to degrade roadway performance below applicable performance standards. Because the significant impacts that have been identified in Section 4.13 will occur on roadways that not under the City's jurisdiction, and will occur even in the absence of future growth in Antioch, there are no feasible mitigation measures that the City could adopt to reduce traffic impacts to a less than significant level. Thus, significant unavoidable impacts related to traffic and circulation would occur.

5.6 RELATIONSHIP BETWEEN SHORT-TERM AND LONG-TERM USES OF THE ENVIRONMENT

As outlined in Chapter 4.0 of this EIR, implementation of the proposed General Plan would result in significant impacts related to the following areas:

- Traffic and Circulation
- Air Quality

Most of these environmental impacts can be mitigated with the measures outlined in this EIR. The purpose of the Draft General Plan is to guide the development of Antioch in a way that provides for the needs of existing and future residents while preserving and enhancing environmental quality. The Draft General Plan contains goals, objectives, policies, and actions that seek to enable Antioch to grow while preserving the resources that benefit quality of life in the City.

6.0 ALTERNATIVES

CEQA requires that an EIR include a discussion of reasonable project alternatives that are "capable of avoiding or substantially lessening any significant effects of the proposed project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Section 15126.6).

The primary goal of the proposed General Plan is to provide residents of the City with a "blueprint" for future public and private development and for management of the community's natural environment. The proposed General Plan will act as the foundation upon which City leaders will make growth and land use-related decisions. The proposed General Plan expresses the community's goals with respect to human-made and natural environments and sets forth the policies and implementation measures to achieve them. The objective of the proposed General Plan is to achieve the vision of the City residents in conformance with State planning law. Antioch's vision is detailed in Chapter 2.0 of the proposed General Plan.

The analysis provided in Chapter 4.0 of the EIR determined that air quality and traffic/circulation impacts would remain significant after mitigation. The alternatives analysis discusses how each alternative would avoid, reduce, or exacerbate the environmental effects of the proposed General Plan. It also discusses other, less than significant, impacts.

CEQA also requires that the EIR identify the environmentally superior alternative to the proposed project (CEQA Section 15126.6). If the environmentally superior alternative is determined to be the No Build Alternative, the EIR must also identify an environmentally superior alternative among the other alternatives, if the analysis indicates that significant impacts can be avoided by one or more alternatives. The Rural Alternative has been determined to be the environmentally superior alternative as evidenced by the analysis provided in Section 6.1. Following is a discussion on alternatives to the proposed Antioch General Plan.

6.1 ALTERNATIVES UNDER CONSIDERATION

6.1.1 No Project, No Build Alternative

With this alternative, the proposed General Plan would not be adopted, and no further building would occur within the City of Antioch. This prohibition would compel any subsequent development to occur in the unincorporated areas of the County or in adjacent cities, resulting in any incremental growth in population, housing, or employment opportunities to occur in these areas. The No Build alternative represents a baseline against which the impacts of the proposed General Plan can be measured.

The following sections discuss the impacts of the No Build Alternative with respect to each resource area discussed in this Program EIR.

Land Use. The No Build Alternative would prohibit any future development within the City of Antioch. By prohibiting development within the City, any growth in population, housing or employment opportunities would occur within the jurisdictional boundaries of adjacent cities, subject to each city's General Plan or within the unincorporated areas of the County, subject to the County's General Plan.

Under the No Build Alternative, there would be no increase in the population in the City, which would be created by new development of structures and facilities anticipated with the proposed General Plan. Because no new development would occur under this Alternative, local dwelling units and employment would remain the same as what currently exists in the City. Under this alternative, the City would not be able to meet the existing and future housing needs of its residents as determined by ABAG in the Regional Housing Needs Determination of June 2001, nor would the City be able to meet future obligations to provide a fair share of housing for all economic segments of the community.

Aesthetics. Under this Alternative, viewsheds would not be impacted by grading or by the placement of new structures on previously undeveloped land since no new development would occur. Additionally, hillside development proposed by the proposed General Plan would not occur; therefore, ridgelines would not be altered and cut and fill grading would not be necessary. The No Project, No Build Alternative is considered environmentally superior to the proposed General Plan with respect to potential aesthetic impacts. However, with the implementation of the proposed General Plan, aesthetic impacts to scenic vistas, scenic resources, and visual quality impacts are considered less than significant.

Air Quality. Development of the residential, commercial, and industrial designated areas anticipated with the proposed General Plan would not occur with the No Project, No Build Alternative. As a result, none of the short-term construction-related emissions resulting from the anticipated development would occur with this Alternative. Additionally, the stationary and mobile emissions would not occur since new uses would not be constructed and traffic volumes would not increase. Overall, none of the long-term air quality impacts anticipated with the proposed General Plan would occur with this Alternative including impacts to the ozone, PM_{10} levels, CO hot spots, toxic air emissions and odors. The proposed General Plan would result in a significant and unavoidable impact with regard to air quality. This Alternative would avoid the significant and unavoidable air quality impact of the proposed General Plan. In this regard, the No Project, No Build Alternative is considered environmentally superior to the proposed General Plan.

Biological Resources. The loss of natural lands occurring as a result of the projected growth would not occur with this Alternative since no new development would take place. Additionally, locations where sensitive plant and animal species are known and/or expected to occur would not be impacted by new development. Thus, habitats and individuals of species classified as Threatened or Endangered would not be lost. The No Project, No Build Alternative is considered environmentally superior to the proposed General Plan with respect to biological resources.

Cultural Resources. The potential degradation or loss of historic, archaeological, and paleontological resources would not occur with this Alternative since new development would not occur, and the urban area would not be expanded. The No Project, No Build Alternative is considered environmentally superior to the proposed General Plan with respect to cultural resources. However, development under the proposed General Plan is anticipated to result in a less than significant impact to cultural resources.

Geologic and Seismic Hazards. As no development would occur under this Alternative, impacts such as an increase in the number structures/people potentially exposed to substantial adverse effects associated with the rupture of a known earthquake fault or severe ground shaking would not occur. Build out of the proposed General Plan would result in an increase in both population and new development. Therefore, the No Project, No Build Alternative is considered environmentally superior to the proposed General Plan. However, after compliance with regulations, policies and associated implementation programs, all geologic and seismic impacts associated with the proposed General Plan are considered less than significant.

Hazards and Hazardous Materials. New non-residential development within Antioch may result in an increase in commercial and industrial land uses involving the use of hazardous materials or in generation of hazardous waste. The types and quantities of hazardous materials utilized by the various types of businesses that could locate in Antioch would vary and, as a result, the nature of potential hazards would also be varied. Under the No Project, No Build Alternative no development would occur; therefore, there would be no increase in the use, transportation, and disposal of hazardous materials and the potential risk of exposure to these hazards would not increase. In this regard, the No Project, No Build Alternative is considered environmentally superior to the proposed General Plan. However, existing abandoned mines would be left in their current condition, and safe closure of these mines would not occur. After implementation of the proposed General Plan policies in conjunction with compliance with local, State, and Federal regulations hazardous materials impacts associated with the proposed General Plan are considered less than significant.

Hydrology. Implementation of this alternative would result in no new development that could cause hydrology or flooding hazards. Potential water quality degradation from surface runoff or erosion associated with the proposed General Plan's forecasted growth would not occur with this Alternative. Build out pursuant to the proposed General Plan would result in grading and development of future projects, the addition of impervious surfaces, and the increase in landscaping irrigation associated with future development and growth. These potential hydrology, flooding and water quality impacts would not occur with this Alternative since the projected development and growth would not occur. In this regard, the No Project, No Build Alternative is considered environmentally superior to the proposed General Plan. However, all hydrology, flooding and water quality impacts associated with the proposed General Plan would be less than significant after implementation of all regulations, policies, and mitigation measures.

Noise. *Short-term Construction Noise Impacts:* With the No Project, No Build Alternative there would be no short-term construction noise impacts, because there would be no additional construction allowed within the City.

Long-term Vehicular Traffic Noise Impacts: Because there would be no new development within the City, there would be no new traffic. Therefore, noise related to traffic would not increase above existing conditions. Implementation of the No Project, No Build Alternative would result in less traffic noise than the proposed General Plan.

Long-term Stationary Source Noise Impacts: Because there would be no new development within the City, stationary noise sources would not increase. The stationary noise sources that currently exist would not change under this Alternative. Therefore, implementation of the No Project, No Build Alternative would result in fewer stationary noise sources than the proposed General Plan.

Long-term Railroad Noise Impacts: The existing sensitive land uses in close proximity to the railroad tracks would continue to be exposed to railroad noise. However, railroad traffic would not increase under this Alternative. Implementation of the No Project, No Build Alternative would not increase railroad-generated noise exposure to sensitive land uses.

In regard to potential noise impacts, the No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan because there would be no increase in noise.

Population and Housing. Under this Alternative, development of new residential units within the City of Antioch would not occur. Population growth within Contra Costa County would occur in the other Cities or the unincorporated areas of the County. Because the development of housing, employment opportunities, or a corresponding population increase would not occur, conditions within the City would be similar to that which currently exists. However, under this alternative, the City would not be able to meet the existing and future housing needs of its residents as determined by ABAG nor would the City be able to meet future housing obligations to provide a fair share of housing for all economic segments of the community. This Alternative is considered environmentally inferior to the proposed General Plan with regard to population and housing.

Public Services and Utilities. Under the No Project, No Build Alternative, expansion of or improvement to the existing public services and utilities would not occur. Existing public services and utilities within the City are adequate in providing for the community. Increased demands upon existing public services and utilities would not occur with this Alternative since future development in the Planning Area would not occur. Therefore, implementation of this Alternative with respect to public services and utilities is considered neither environmentally superior nor inferior to the proposed General Plan.

Traffic and Circulation. The No Build Alternative would eliminate future growth within the City of Antioch. As a result, growth in population, housing or employment opportunities would occur within the jurisdictional boundaries of adjacent cities or in unincorporated areas. Therefore, there would be no increase in locally generated traffic. However, even without any future development within

Antioch, Lone Tree Way east of the SR 4 Bypass will operate at LOS F at build out of the Oakley, Brentwood, and Pittsburg General Plans. Additionally, Main Street in Oakley is also anticipated to operate at LOS F. Even without any additional development within the City of Antioch, the region would experience significant traffic and circulation impacts. In regard to potential traffic and circulation impacts, the No Project, No Build Alternative is considered neither environmentally superior nor inferior to the proposed General Plan.

Summary/Conclusion of the No Project, No Build Alternative. Because the No Project, No Build Alternative would prohibit the construction or expansion of structures and facilities within the City, alterations to the topography, natural habitats or the existing visual characteristic of the City would not occur. The extent and distribution of land uses would remain as they currently exist; therefore, this alternative would prevent future development in potential hazard areas (e.g., geologic and flood hazard areas) and would exclude any additional siting of uses utilizing hazardous materials within the City. A prohibition on future development would eliminate increases in future air pollutant emissions and noise-generating sources. Impacts associated with these issues would be less than that which would occur with implementation of the proposed General Plan.

Since new development would not occur in the City, residents and workers may be forced to travel further for employment and commercial services. Improvements in the City's jobs-to-housing balance that would occur with the proposed General Plan would not occur if the No Project, No Build Alternative was implemented. Under this Alternative, the City would not be able to meet ABAG housing requirements or provide a fair share of housing for all economic segments of the community. Additionally, no improvements to City, public, or private facilities, including roadways, flood control features, public safety and service facilities, or utility systems would be permitted.

The No Project, No Build Alternative would not accomplish the objectives of the City, which include providing a fair share of housing for all economic segments of the community, promoting economic vitality, providing local employment and entrepreneurial opportunities, and providing diverse shopping and commercial services. Although the No Project, No Build Alternative fails to accomplish these objectives, it would lessen the significant unavoidable impacts of the proposed General Plan with respect to Air Quality. The No Project, No Build Alternative, due to these reasons is considered environmentally superior to the proposed General Plan.

6.1.2 No Project, Existing General Plan Alternative

As required by Section 15126.6(e) of the CEQA Guidelines, Existing General Plan Alternative describes build out of Antioch in accordance with existing zoning and General Plan land use designations under the policies and implementing strategies of the current General Plan.

Implementation of this Alternative assumes that ultimate build out of the existing General Plan would occur. Under the No Project, Existing General Plan Alternative, the City's population and jobs would increase consistent with development allowed under the existing General Plan and would be consistent with ABAG projections. Implementation of the No Project, Existing General Plan Alternative would result in an increase of 12,790 jobs, and 11,214 households by 2025 (compared to an increase of 58,195 jobs and 23,013 housing units as a result of the proposed General Plan implementation). This difference is due to the increased density in Rivertown, the inclusion of Roddy

Ranch, Sand Creek, and the Ginochio Focus areas, and the larger employment base under the proposed General Plan. The jobs-to-employed residents ratio would be 0.48 in 2025, representing a substantial imbalance between jobs and housing. Because of the long-term anticipated growth in population and jobs, and the jobs/housing imbalance, it is anticipated that regional and local traffic congestion and associated noise and air pollution would continue to increase.

These anticipated future conditions resulting from the No Project, Existing General Plan Alternative are different from the analysis contained throughout Section 4.0 of the EIR, which compares the proposed project to existing conditions as they were at the time the Notice of Preparation for the EIR was posted. Here, the No Project, Existing General Plan Alternative examines a future condition that is trended forward from today, on the basis of the earlier (but still operative) General Plan.

The following sections discuss the impacts of the No Project, Existing General Plan Alternative with respect to each resource area discussed in this EIR.

Land Use. Under the No Project, Existing General Plan Alternative, land uses in Antioch would change consistent with the City's existing General Plan. The existing General Plan does not provide detailed policy direction for the Focus Areas, and does not set forth maximum development intensity for non-residential uses. Additionally, the existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development of both residential and employment generating land uses would exist in the southern end of the City at build out. In regard to potential land use impacts, the No Project, Existing General Plan Alternative is considered neither environmentally superior nor inferior to the proposed General Plan.

Aesthetics. Under this Alternative the pattern of land use will be the same as within the proposed General Plan. New development would occur throughout the City as permitted by the existing General Plan and subject to existing applicable design regulations, including regulations regarding light and glare impacts. The existing General Plan provides less direction for new development and the policies contained within are much less clear than the policies in the proposed General Plan. Therefore, impacts to view corridors would be greater under this Alternative because the plan does not provide as much protection or direction as the proposed General Plan. The No Project, Existing General Plan Alternative is environmentally inferior to the proposed General Plan with regard to potential impacts related aesthetics.

Air Quality. Development of the residential designated areas as anticipated with the proposed General Plan would also occur with the No Project, Existing General Plan Alternative; however, employment-related land uses would be less under this Alternative. This would result in a greater jobs/housing imbalance, which would cause a longer commute to work for Antioch residents and greater traffic congestion compared to implementation the proposed General Plan. Greater traffic congestion would degrade air quality within the region. Associated stationary and mobile emissions would occur since development would be constructed under this Alternative and traffic volumes would increase accordingly. The long-term air quality impacts anticipated with the proposed General Plan would also occur with this Alternative including impacts to ozone, PM_{10} levels, toxic air emissions, and odors. The proposed General Plan would result in significant unavoidable impacts

related to regional emissions associated with vehicular trips. This Alternative would not avoid these significant and unavoidable air quality impacts of the proposed General Plan. However, because the proposed General Plan would result in an improved jobs/housing balance, and would therefore reduce traffic congestion, and hence air quality impacts, the No Project, Existing General Plan Alternative is considered environmentally inferior to the proposed General Plan.

Biological Resources. As with the proposed General Plan, the loss of natural lands due to projected growth would occur with this Alternative and locations where sensitive plant and animal species are known and/or expected to occur would be impacted by new development. However, the existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development would exist in the southern end of the City at build out. Because this area of the City would not have urban development planned, the loss of sensitive habitats would be less than what would result from implementation of the proposed General Plan. The No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan.

Cultural Resources. The potential degradation or loss of historic, archaeological, and paleontological resources would occur with this Alternative since the urban area would be expanded. However, the existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development would exist in the southern end of the City at build out. Because this area of the City would not have urban development planned, the loss of cultural resources would be less than what would result from implementation of the proposed General Plan. The No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan with respect to cultural resources. Development under both this Alternative and the proposed General Plan would result in a less than significant impact to cultural resources.

Geologic and Seismic Hazards. The proposed General Plan provides updated information regarding geologic and seismic hazards within the Planning Area. However, due to the nature of geologic conditions, and the time scale at which they are measured, this information is largely unchanged from the existing General Plan. The existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development would exist in the southern end of the City at build out. Because this area of the City would not have urban development planned, this Alternative's impacts relative to the exposure of structures/people to substantial adverse effects associated with faulting, severe ground shaking, liquefaction, landsliding, slope instability, erosion, or expansive soils, would be less than what would result from implementation of the proposed General Plan. Therefore, the No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan in this regard.

Hazards and Hazardous Materials. The existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development would exist within the City at build out. The reduction of residential and employment-generating development would incrementally reduce the use, generation, and transport of Hazardous Materials.

Without the urban development of Roddy Ranch and the Ginochio property the risk of wildland fire hazards will also be less than the risks associated with the proposed General Plan. However, existing abandoned mines would be left in their current condition, and safe closure of these mines would not occur. The No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan in regard to hazards and hazardous materials.

Hydrology. As with the proposed General Plan, implementation of this Alternative would generate new development that may result in hydrology and drainage hazards. Potential water quality degradation from surface runoff/erosion associated with growth would occur with this Alternative. Grading and development of future projects, the addition of impervious surfaces, and landscaping irrigation associated with future development would also occur. Additionally, future increases in municipal water consumption associated with project growth would occur. However, the existing General Plan does not include planned urban development of Roddy Ranch or the Ginochio Property Focus Areas. Therefore, less development would exist in the southern end of the City at build out. Because this area of the City would not have urban development planned, the impacts to hydrology, water quality, water supply, and flooding hazards would be less than the proposed General Plan. In this regard, the No Project, Existing General Plan Alternative is considered environmentally superior to the proposed General Plan.

Noise. *Short-term Construction Noise Impacts:* With the No Project, Existing General Plan Alternative there would be similar short-term construction noise impacts to the proposed General Plan, because there would be additional construction allowed within the City. The construction contractor for each individual project site would have to comply with the City's noise control ordinance requirements. The No Project, Existing General Plan Alternative would not result in significant construction noise impacts.

Long-term Vehicular Traffic Noise Impacts: Without the urban development of Roddy Ranch and the Ginochio property less residential and employment-generating development would exist within the City at build out. Hence, this Alternative would result in less local traffic than the proposed General Plan, so noise related to traffic would also be less.

Long-term Stationary Source Noise Impacts: Antioch's noise-control ordinance requirements would need to be complied with for proposed industrial and commercial uses in the City with implementation of the No Project, Existing General Plan Alternative. Therefore, implementation of the No Project, Existing General Plan Alternative would not result in any significant long-term stationary sources noise impacts. The effects of this Alternative on the impacts of long-term stationary noise sources would be similar to the proposed General Plan.

Long-term Railroad Noise Impacts. Sensitive land uses that are located near railroad tracks with the No Project, Existing General Plan Alternative (Existing General Plan) would continue to be exposed to railroad noise. There is the potential that railroad traffic may increase in the future, which would continue to expose sensitive land uses to increases in railroad-generated noise. Antioch's noise standards in its existing General Plan would need to be complied with by all new noise-sensitive uses adjacent to railroad tracks. The No Project, Existing General Plan Alternative would not result in any

long-term railroad noise impacts. The effects of this Alternative on the impacts of long-term stationary noise sources would be similar to the proposed General Plan.

Population and Housing. The No Project, Existing General Plan Alternative would result in approximately 40,870 households by 2025, substantially fewer than what would be developed as part of the proposed project. Population growth that would occur as part of the No Project, Existing General Plan Alternative would be consistent with existing population patterns in the City, and would not qualify as unanticipated population growth. Although development that would occur as part of the No Project, Existing General Plan Alternative could enable the City to meet its "fair share" housing allocation in the near term, the long-term construction of sufficient housing would be less likely under the No Project, Existing General Plan Alternative due to the lower number of housing units constructed at build out (compared to the proposed General Plan). In addition, build out of the No Project, Existing General Plan Alternative would ultimately result in a jobs/housing ratio of approximately 0.48. The physical manifestations of such a jobs/housing imbalance could include a high rate of commuting, and air quality and regional noise impacts associated with increased traffic.

Public Services and Utilities. With the No Project, Existing General Plan Alternative, development would occur throughout the City as permitted by the existing General Plan. The existing General Plan contains performance standards that would ensure adequate services and facilities for City residences and businesses. Future development of public services and utilities within Antioch would accommodate population growth that would occur as a result of build out of this Alternative. With this Alternative, potential impacts to public services would be similar to those associated with the proposed General Plan.

Traffic and Circulation. Development under the No Project, Existing General Plan Alternative would result in less local traffic because urban development of Roddy Ranch or the Ginochio Property Focus Areas would not occur. However, even with this reduction in future development within Antioch, Lone Tree Way east of the SR 4 Bypass will operate at LOS F at build out of the Oakley, Brentwood, and Pittsburg General Plans. Also, Main Street in Oakley is also anticipated to operate at LOS F. Even though implementation of this Alternative would generate less local traffic, the region would still experience significant traffic and circulation impacts. The No Project, Existing General Plan Alternative is considered neither environmentally superior not inferior to the proposed General Plan in regard to traffic and circulation impacts.

Summary/Conclusion of the No Project, Existing General Plan Alternative. The No Project, Existing General Plan Alternative assumes that development would occur as established in the City's existing General Plan. Housing, population, and job increases would occur as planned in the existing General Plan, in proportions which, unlike the proposed General Plan, would have the potential to exacerbate the jobs to housing imbalance in eastern Contra Costa County. Potential impacts related to aesthetics would be greater than those associated with the proposed General Plan because the existing General Plan provides less direction for new development and the policies contained within are much less clear than the policies in the proposed General Plan.

Since development under the No Project, Existing General Plan Alternative would continue as outlined in the existing General Plan, there would be no planned urban development for the Roddy Ranch and Ginochio properties. This would reduce impacts to biological resources, cultural resources, hydrology, flooding hazards, geology and seismic hazards, and hazardous materials compared to the proposed General Plan. Long-term vehicular traffic noise impacts would be less under the No Project, Existing General Plan Alternative because there would be less local traffic. Less local traffic, compared to the proposed General Plan, would result in fewer air quality impacts from vehicular emissions.

The No Project, Existing General Plan Alternative would result in build out of Antioch pursuant to the existing City General Plan, impacts to public services and utilities would be identical to those under the existing General Plan because the existing General Plan contains performance standards for adequate services. Impacts to surface water and groundwater resources as well as hydrologic features and water quality under the No Project Alternative would also be identical to those under the existing General Plan.

6.1.3 Rural Alternative

Under the Rural Alternative, the City would adopt the proposed General Plan with the exception that future urban development outside of the City's existing sphere of influence and the County's Urban Limit Line would be eliminated and the Sand Creek Focus Area Option B would be implemented. Thus, with the Rural Alternative, urban development within the Roddy Ranch and Ginochio Property Focus Areas would not occur and the Sand Creek Focus Area would build out at a lower residential density and with less commercial and industrial development.

Land Use. The proposed General Plan contains two development options for the Sand Creek Focus Area. Option A would allow up to 280 acres of employment-generating land uses to be developed, which would result in the creation of up to 8,600 jobs at build out. Also, Option A would allow a maximum of 5,000 dwelling units to be developed. Option B does not allow as much development as Option A. Option B would only provide 6,500 jobs and 4,000 dwelling units at build out. Implementation of the Rural Alternative will result in the same land use build out as the proposed General Plan with the exception that urban development within Roddy Ranch and the Ginochio Property Focus Areas would not occur and that the Sand Creek Focus Area would be developed pursuant to Option B. In regard to potential land use impacts, the Rural Alternative is considered neither environmentally superior nor inferior to the proposed General Plan.

Aesthetics. The aesthetic impacts of this Alternative would be similar throughout most of the City to the proposed General Plan since the pattern of land use under the proposed General Plan will remain the same. However, scenic vistas to the south will be enhanced, as compared to the proposed General Plan, due to the lack of urban development within the Roddy Ranch and Ginochio property, in addition to the reduction of development within the western portion of the Sand Creek Focus Area. With the Rural Alternative, development would occur throughout the City as permitted by the proposed General Plan and subject to applicable design regulations. With this Alternative, there would be a reduction in light and glare impacts in the southern portion of the City, compared to the

proposed General Plan, due to the reduction in development. In regard to potential aesthetic impacts, the Rural Alternative is considered environmentally superior to the proposed General Plan.

Air Quality. Development of residential and employment designated areas as anticipated with the proposed General Plan would also occur with the Rural Alternative, with the exception that planned urban development within the areas of the Roddy Ranch and the Ginochio property would not occur; and that Sand Creek would be developed pursuant to Option B in the General Plan. This would result in the reduction of development of dwelling units and employment-generating land uses within the City. This would reduce the number of residents within the City and the number of vehicle trips being generated. Associated stationary and mobile emissions and traffic volumes would be reduced accordingly. The long-term air quality impacts anticipated with the proposed General Plan would be lessened as a result of this reduction. The proposed General Plan would result in significant unavoidable impacts related to air quality. This Alternative would lessen these significant and unavoidable air quality impacts of the proposed General Plan. In this regard, the Rural Alternative is environmentally superior to the proposed General Plan.

Biological Resources. The loss of natural lands due to projected growth would occur with this Alternative; however, the loss would be reduced since urban development would not occur within the Roddy Ranch or the Ginochio property and the Sand Creek Focus Area would be developed at a reduced intensity with increased open space preservation. Locations where sensitive plant and animal species are known and/or expected to occur would be impacted less by new development under this Alternative than would occur under the proposed General Plan. The Rural Alternative is considered environmentally superior to the proposed General Plan.

Cultural Resources. Implementation of the Rural Alternative would allow only rural development within the Roddy Ranch or Ginochio properties, and the intensity of development within Sand Creek would be lessened with the implementation of Option B. The potential degradation or loss of historic, archaeological, and paleontological resources would be less under this Alternative since the urban area would not be expanded as much as would occur under the proposed General Plan. The Rural Alternative is considered environmentally superior to the proposed General Plan with respect to cultural resources. Development under both this Alternative and the proposed General Plan would result in a less than significant impact to cultural resources.

Geologic and Seismic Hazards. When compared to the proposed General Plan, fewer employment-generating land uses and fewer dwelling units would be developed under this Alternative. Thus, this Alternative's impacts relative to the exposure of structures/people to substantial adverse effects associated with faulting, severe ground shaking, liquefaction, landsliding, slope instability, erosion, or expansive soils, would be less than the proposed General Plan. Therefore, the Rural Alternative is considered environmentally superior to the proposed General Plan in this regard.

Hazards and Hazardous Materials. When compared to the proposed General Plan, fewer employment-generating land uses and dwelling units would be developed under this Alternative.

Thus, this Alternative's impacts relative to hazards and hazardous materials would be proportionally less also. The reduction of residential and employment-generating land uses would incrementally reduce the use, generation, and transport of hazardous materials.

Additionally, without the urban development of Roddy Ranch and the Ginochio property and the reduction of the development within Sand Creek, the risk of wildland fire hazards will also be less than the risks associated with the proposed General Plan. Implementation of the Rural Alternative would provide for the safe closure of abandoned mines. Therefore, the Rural Alternative is considered environmentally superior to the proposed General Plan in regard to hazards and hazardous materials.

Hydrology. Implementation of this Alternative would result in new development that may cause hydrology and drainage hazards within the City. However, because less development would occur within the Roddy Ranch, Ginochio and Sand Creek Focus Areas under this Alternative, impacts would be less than the proposed General Plan. Grading and development of future projects, the addition of impervious surfaces, landscaping irrigation, and water degradation resulting from runoff/erosion associated with future development occur less than what would occur with implementation of the proposed General Plan. In this regard, the Rural Alternative is considered environmentally superior to the proposed General Plan.

Noise. *Short-term Construction Noise Impacts:* With the Rural Alternative there would be fewer short-term construction noise impacts because there would be no urban development within Roddy Ranch and the Ginochio property and a reduction of development intensity within the Sand Creek Focus Area.

Long-term Vehicular Traffic Noise Impacts: Because build out of this Alternative would result in fewer dwelling units and employment-generating land uses being developed, there would be fewer vehicles on the road locally, as compared to implementation of the proposed General Plan. Therefore, the Rural Alternative, which generates less local traffic than the proposed General Plan would result in less traffic noise levels along the roads.

Long-term Stationary Source Noise Impacts: Antioch's noise-control ordinance requirements would need to be complied with for proposed industrial and commercial uses in the City with implementation of the Rural Alternative. Because build out of this Alternative would result in fewer dwelling units and fewer employment-generating land uses being developed there would be fewer long-term stationary source noise impacts compared to the proposed General Plan. In regard to potential noise impacts, the Rural Alternative is considered environmentally superior to the proposed General Plan.

Population and Housing. The Rural Alternative would result in substantially fewer dwelling units at build out than what would be developed as part of the proposed project. Population growth that would occur as part of the Rural Alternative would then also be less. Although development that would occur as part of the Rural Alternative could enable the City to meet its "fair share" housing allocation in the near-term, the long-term provision of sufficient housing would be less likely due to

the lower number of housing units constructed at build out (compared to the proposed General Plan). In regard to population and housing impacts, the Rural Alternative is considered environmentally inferior to the proposed General Plan.

Public Services and Utilities. With the Rural Alternative, fewer employment-generating land uses and fewer dwelling units would be developed. Implementation of this Alternative will include performance standards that would ensure adequate services and facilities for City residences and businesses. Future development of public services and utilities within Antioch would accommodate population growth that would occur as a result of build out of this Alternative. With this Alternative, potential impacts to public services would be similar to those associated with the existing General Plan.

Traffic and Circulation. Development under the Rural Alternative would result in the generation of less local traffic due to the reduction of development. However, even with this reduction in future development within Antioch, Lone Tree Way east of the SR 4 Bypass will operate at LOS F at build out of the Oakley, Brentwood, and Pittsburg General Plans. Also, Main Street in Oakley is also anticipated to operate at LOS F. Even though implementation of this Alternative would generate less local traffic, the region would still experience significant traffic and circulation impacts. The Rural Alternative is considered environmentally superior to the proposed General Plan in regard to traffic and circulation impacts.

Summary/Conclusion of the Rural Alternative. The Rural Alternative would be implemented by the City adopting the proposed General Plan with the exception that future urban development outside of the City's existing sphere of influence and the County's Urban Limit Line would be eliminated and the Sand Creek Focus Area Option B would be implemented. Potential impacts to aesthetics would be less under this Alternative than under the proposed General Plan because scenic vistas to the south will be enhanced due to the lack of urban development within the Roddy Ranch and Ginochio property. Also, there would be a reduction in light and glare impacts in the southern portion of the City due to the lack of urban development and reduced development within the Sand Creek Focus Area.

Along with the reduction of development in the southern portion of the City, impacts that are associated with growth and development would also be reduced. These impact areas include: geologic and seismic hazards, hazards and hazardous materials, hydrology and flooding, noise, air quality, and traffic and circulation. Because areas not being developed are in one large area of the City, biological resource impacts would also be less. However, the impacts associated with population and housing would be greater under this Alternative than what would occur under the proposed General Plan. The long-term construction of sufficient housing would be less likely due to the lower number of housing units constructed at build out (compared to the proposed General Plan).

6.1.4 Reduced Density Alternative

With the Reduced Density Alternative**,** the City would adopt an updated General Plan, but with lower development intensities than those that are currently proposed. For example, the mixed-use,

pedestrian-oriented uses that are described in the proposed General Plan would be developed with either moderate density conventional residential uses or with lower intensity business park uses. Residential densities for future development would be reduced as compared to the proposed General Plan as follows:

- The density of conventional single-family subdivisions would be reduced by 0.5 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- Medium-density development would be reduced by 1.0 dwelling unit per acre (du/ac) as compared to the proposed General Plan.
- High-density development would be reduced by 2.0 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- Floor Area Ratios for new non-residential development would be reduced by 0.5.

Land Use. Implementation of the Reduced Density Alternative will result in the same land use pattern as the proposed General Plan but with lower development intensities than those that are outlined under the proposed General Plan. In regard to potential land use impacts, the Reduced Density Alternative is considered neither environmentally superior nor inferior to the proposed General Plan in relation to land use.

Aesthetics. The aesthetic impacts of this Alternative would be similar to the proposed General Plan since the pattern of land use under the proposed General Plan will remain the same. With the Reduced Density Alternative, development would occur throughout the City, subject to applicable design regulations. The only difference would be that the development would be at a reduced intensity. With this Alternative, there would be a reduction in light and glare impacts, because the number of dwelling units and building area of non-residential uses developed at build out would be fewer. Also, scenic vistas would be impacted less due to the reduction of development, compared to the proposed General Plan. The Reduced Density Alternative is considered environmentally superior to the proposed General Plan in regard to aesthetic impacts.

Air Quality. Development of the areas anticipated with the proposed General Plan would also occur with the Reduced Density Alternative; however, the density of development would be less under this Alternative. This would result in reduction of development of both dwelling units and building area of non-residential uses. This would reduce the number of residents within the City and the number of vehicle trips being generated. Therefore, associated air quality impacts would also be reduced. The proposed General Plan would result in significant unavoidable air quality impacts. This Alternative would lessen these significant and unavoidable air quality impacts of the proposed General Plan. In this regard, the Reduced Density Alternative is environmentally superior to the proposed General Plan.

Biological Resources. As with the proposed General Plan, the loss of natural lands due to projected growth would occur with this Alternative since development would occur, but at a reduced density. This Alternative would not result in more areas of habitat preservation or open space than the

proposed General Plan. The development that would occur would be spread out over the same geographical area, unless development would be clustered. Additionally, locations where sensitive plant and animal species are known and/or expected to occur would be impacted by new development, as would occur under the proposed General Plan. Thus, habitats and individuals of sensitive species could potentially be lost. Since the same protection for biological resources would be provided impacts would be similar to the proposed General Plan. The Reduced Density Alternative is considered neither environmentally superior nor inferior to the proposed General Plan.

Cultural Resources. The potential degradation or loss of historic, archaeological, and paleontological resources would occur with this Alternative since the urban area would be expanded in the same geographical area as the proposed General Plan, unless development would be clustered. Since the protection of cultural resources would be provided, impacts would be similar to the proposed General Plan. The Reduced Density Alternative is considered neither environmentally superior nor inferior to the proposed General Plan with respect to cultural resources. Development under both this Alternative and the proposed General Plan would result in a less than significant impact to cultural resources.

Geologic and Seismic Hazards. When compared to the proposed General Plan, a reduction of non-residential building area and dwelling units would be developed under this Alternative because the intensity of development would be less. Thus, this Alternative's impacts relative to the exposure of structures/people to substantial adverse effects associated with faulting, severe ground shaking, liquefaction, landsliding, slope instability, erosion, or expansive soils, would be less than the proposed General Plan. Therefore, the Reduced Density Alternative is considered environmentally superior to the proposed General Plan in this regard.

Hazards and Hazardous Materials. Compared to the proposed General Plan, a reduction of non-residential building area and dwelling units would be developed under this Alternative because the intensity of development would be reduced. Thus, with this Alternative's impacts relative to hazards and hazardous materials would be proportionally less also. The reduction in development of dwelling units and employment-generating square footage would incrementally reduce the use, generation, and transport of Hazardous Materials.

Additionally, the reduction of dwelling units and intensity of development would cause the risk of wildland fire hazards to be less than the risks associated with the proposed General Plan. Therefore, the Reduced Density Alternative is considered environmentally superior to the proposed General Plan in regard to hazards and hazardous materials.

Hydrology. Implementation of this Alternative would result in new development that may cause hydrology and drainage hazards within the City. However, this development would be less than what would occur under the proposed General Plan. Grading and development of future projects, the addition of impervious surfaces, landscaping irrigation, and water degradation resulting from runoff/erosion associated with future development occur less than what would occur with

implementation of the proposed General Plan. In this regard, the Reduced Density Alternative is considered environmentally superior to the proposed General Plan.

Noise. *Short-term Construction Noise Impacts.* With the Reduced Density Alternative there would be fewer short-term construction noise impacts because there would be a reduction of development within the Planning Area.

Long-term Vehicular Traffic Noise Impacts: Because build out of this Alternative would result in fewer dwelling units and less building area of non-residential uses being developed, there would be fewer vehicles on the road locally, as compared to implementation of the proposed General Plan. Therefore, the Reduced Density Alternative, which generates less local traffic than the proposed General Plan would result in less traffic noise levels along the roads.

Long-term Stationary Source Noise Impacts: The City's noise-control ordinance requirements would need to be complied with for all existing industrial and commercial uses within the City. Because build out of this Alternative would result in fewer dwelling units and less building area of non-residential uses being developed, there would be fewer or less intense sources of long-term stationary noise impacts, compared to the proposed General Plan. In regard to potential noise impacts, the Reduced Density Alternative is considered environmentally superior to the proposed General Plan.

Population and Housing. The Reduced Density Alternative would result in fewer dwelling units at build out compared to the proposed General Plan. The reduction in development that would occur as part of the Reduced Development Alternative would make affordable housing more difficult to produce and may make it difficult for the City to meet its "fair share" housing allocation in the future. In regard to population and housing impacts, the Reduced Density Alternative is considered environmentally inferior to the proposed General Plan.

Public Services and Utilities. With the Reduced Density Alternative, less building area of non-residential uses and fewer dwelling units would be developed. Because public services and facilities are developed along with the development of structures and facilities and are based on the need within the community, public services and utilities would not be affected by this reduction of development. The development of public services and facilities will incrementally increase along with development. Thus, future development of public services and utilities within Antioch would accommodate population growth that would occur as a result of build out of this Alternative. With this Alternative, potential impacts to public services would be similar to those associated with the proposed General Plan.

Traffic and Circulation. Development under the Reduced Density Alternative would result in the generation of less local traffic due to the reduction of development. However, even with this reduction in future development within Antioch, Lone Tree Way east of the SR 4 Bypass will operate at LOS F at build out of the Oakley, Brentwood, and Pittsburg General Plans. Also, Main Street in Oakley is also anticipated to operate at LOS F. Even though implementation of this Alternative would generate less local traffic, the region would still experience significant traffic and circulation

impacts. The Reduced Density Alternative is considered environmentally superior to the proposed General Plan in regard to traffic and circulation impacts.

Summary/Conclusion of the Reduced Density Alternative. The Reduced Density Alternative would be implemented by the City adopting an updated General Plan, but with lower development intensities than those that are included in the proposed General Plan. The reduction of development that would result from the implementation of this Alternative would reduce the number of dwelling units within the City and the number of vehicle trips being generated; therefore, air quality, traffic and noise impacts would be less than the proposed General Plan. Likewise, the reduction in dwelling units and non-residential building area would reduce the risk of geologic, seismic, wildland fire, flooding, and hazardous materials hazards. In regard to impacts associated with population and housing this reduction would make affordable housing more difficult to produce and may make it difficult for the City to meet its "fair share" housing allocation in the future.

6.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 6.A compares the potential impacts of the proposed General Plan with each of the Alternatives evaluated in Section 6.1 of this EIR. The proposed General Plan had significant unavoidable adverse impacts on air quality and traffic and circulation. A side-by-side comparison of the issues as evaluated in the EIR is provided in Table 6.A for each of the following General Plan alternatives. For example, for the No Project, No Build Alternative, the impacts of land use are *less* than the impacts of the proposed General Plan on land use.

Table 6.A - Comparison of Impacts of the Alternatives to the Proposed General Plan

Environmental Issue	No Project, No Build Alternative	No Project, Existing General Plan Alternative	Rural Alternative	Reduced Density Alternative
Land Use	Greater	Same	Same	Same
Aesthetics	Less	Greater	Less	Less
Air Quality	Less	Greater	Less	Less
Biological Resources	Less	Less	Less	Same
Cultural Resources	Less	Less	Less	Same
Geologic/Seismic Hazards	Less	Less	Less	Less
Hazards/Hazardous Materials	Less	Less	Less	Less
Hydrology	Less	Less	Less	Less
Noise	Less	Less	Less	Less
Population/Housing	Greater	Greater	Greater	Greater
Public Services/ Utilities	Same	Same	Same	Same
Traffic/Circulation	Same	Less	Less	Less

The Alternative with the least environmental impact is the Rural Alternative. As shown in Table 6.A, the Rural Alternative has fewer or reduced environmental impacts compared to the other Alternatives, and thus is the Environmentally Superior Alternative. This is related to the reduced development that

would occur under the Rural Alternative compared to the other Alternatives. Under the Rural Alternative, the City would adopt the proposed General Plan with the exception that future urban development outside of the City's existing sphere of influence and the County's Urban Limit Line would be eliminated and the Sand Creek Focus Area Option B would be implemented. Thus, with the Rural Alternative, urban development within the Roddy Ranch and Ginochio Property Focus Areas would not occur and the Sand Creek Focus Area would build out with fewer dwelling units and with less commercial and industrial development.

The reduced development under the Rural Alternative would generate fewer trips than the other Alternatives. Due to the lower trip generation, fewer air quality and noise impacts would occur. A proportional reduction in hydrology, hazards, hazardous materials, and geologic and seismic impacts would also occur with this Alternative, as compared to the other Alternatives. Because this Alternative would not allow urban development on large areas of land located in the southern portion of the City, impacts associated with aesthetics, biological resources, and cultural resources would be lower than the other Alternatives.

The Rural Alternative would not meet the project's objectives, however. The objectives of the proposed General Plan include a broad range of housing that will enable the City to meet it "fair share" of the housing need as determined by ABAG. Implementation of the Rural Alternative would result in substantially fewer dwelling units at build out than what would be developed as part of the proposed project. Although development that would occur as part of the Rural Alternative could enable the City to meet its "fair share" housing allocation in the near-term, the long-term provision of sufficient housing would be less likely due to the lower number of housing units constructed at build out. Another objective of the City is to promote economic vitality, provide local employment and entrepreneurial opportunities, and diverse shopping and commercial services. With the reduction of development of employment-generating land uses, the City would not be able to meet these objectives. Additionally, with the reduction in development of employment-generating land uses, the City would not meet the goals of an expanded employment base.

The development allowed under the Rural Alternative will not allow the City to achieve the objective of a better balance between jobs and housing. Without a better balance between jobs and housing long, congested commutes will continue to become worse and degrade air quality and constrain the quality of life for Antioch residents.

7.0 ORGANIZATIONS AND PERSONS CONSULTED

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APPENDIX A

NOTICE OF PREPARATION AND INITIAL STUDY, MAILING LIST, RESPONSES TO NOTICE OF PREPARATION

NOTICE OF PREPARATION
GENERAL PLAN
ENVIRONMENTAL IMPACT REPORT

INTRODUCTION

The City of Antioch (City) intends to prepare an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) for the proposed Antioch General Plan. The EIR for the City's General Plan will assist the City during its decision making process by enabling it to analyze the environmental consequences of the proposed General Plan and an array of alternatives identified during preparation of the General Plan.

Because CEQA requires that "all phases of project planning, implementation, and operation must be considered," and because it is clear that future development that will be facilitated by the proposed Antioch General Plan could have a significant effect on the environment, an EIR is required. The EIR will be prepared in conformance with the CEQA, as amended (Public Resources Code, Section 21000, *et seq.*), and State CEQA Guidelines. The EIR will also comply with the procedures of the City of Antioch for implementing CEQA.

Pursuant to the provisions of CEQA and the State and local guidelines, the City is the Lead Agency, and is charged with the responsibility of deciding whether or not to approve the proposed General Plan. The discretionary action anticipated to be taken by the City is the adoption of the 2003 update to the City of Antioch General Plan.

PURPOSE

The Notice of Preparation (NOP) is a brief notice sent by a Lead Agency to notify responsible agencies, trustee agencies, and involved Federal agencies that the lead agency plans to prepare an Environmental Impact Report (EIR). The purpose of the NOP is to solicit guidance from those agencies as to the scope and content of the environmental information to be included in the EIR.

This NOP is the first step in completing the EIR document. Antioch invites interested individuals, organizations, federal, state, and local agencies to provide comments regarding the alternatives to be evaluated in the EIR and any significant environmental issues related to the implementation of the proposed General Plan that need to be addressed in the EIR.

Comments should focus on identifying specific environmental concerns and suggesting alternatives that may be less environmentally damaging while meeting the identified objectives and vision of the City. Public comments that are received will become part of the public record. All comments will be considered in the environmental documents, and will not receive individual responses.

CONTACT PERSON

Written comments on the scope of alternatives and impacts to be considered in the EIR document should be submitted by April 27, 2003. Written comments, as well as questions about the preparation of this Initial Study and Notice of Preparation, its assumptions, or its conclusions should be sent to:

Ms. Nina Oshinsky
City of Antioch
Community Development Department
Third & "H" Streets
Antioch, CA 94509
Tel: (925) 779-7035
Fax: (925) 779-7034

PROJECT LOCATION

The City of Antioch is located in eastern Contra Costa County, approximately 40 miles northeast of Oakland. Adjacent cities include Pittsburg to the west and Oakley and Brentwood to the east and southeast, respectively. The City and its General Plan study area are bordered by the San Joaquin River to the north and unincorporated Contra Costa County to the south.

PROJECT DESCRIPTION

Antioch's updated General Plan will be a blueprint for the City's future. It describes the projected growth and development within the City over the long-term, and acts as a "constitution" for public and private development, the foundation on which City authorities will make development and other land use-related decisions. The General Plan is meant to express the City's goals with respect to both the man-made and natural environments, and sets forth the policies and implementation measures to achieve them for the welfare of those who live, work, and do business in the City.

State law requires each city and county to adopt a General Plan that contains, at a minimum, seven elements. State law permits cities and counties to organize the information, goals, policies, and programs included in their General Plans in the manner best suited to the needs of the city or county. Thus, the seven mandatory elements of a jurisdiction's General Plan need not be specific chapters or sections, provided that all the subjects required by State law, are in fact, addressed. The seven mandatory elements are as follows:

- The **LAND USE ELEMENT** designates the general distribution and intensity of uses of the land for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses.
- The **CIRCULATION ELEMENT** is correlated with the land use element, and identifies the general locations and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities.
- The **HOUSING ELEMENT** provides comprehensive assessment of current and projected housing needs for all economic segments of the community, as well as groups having special

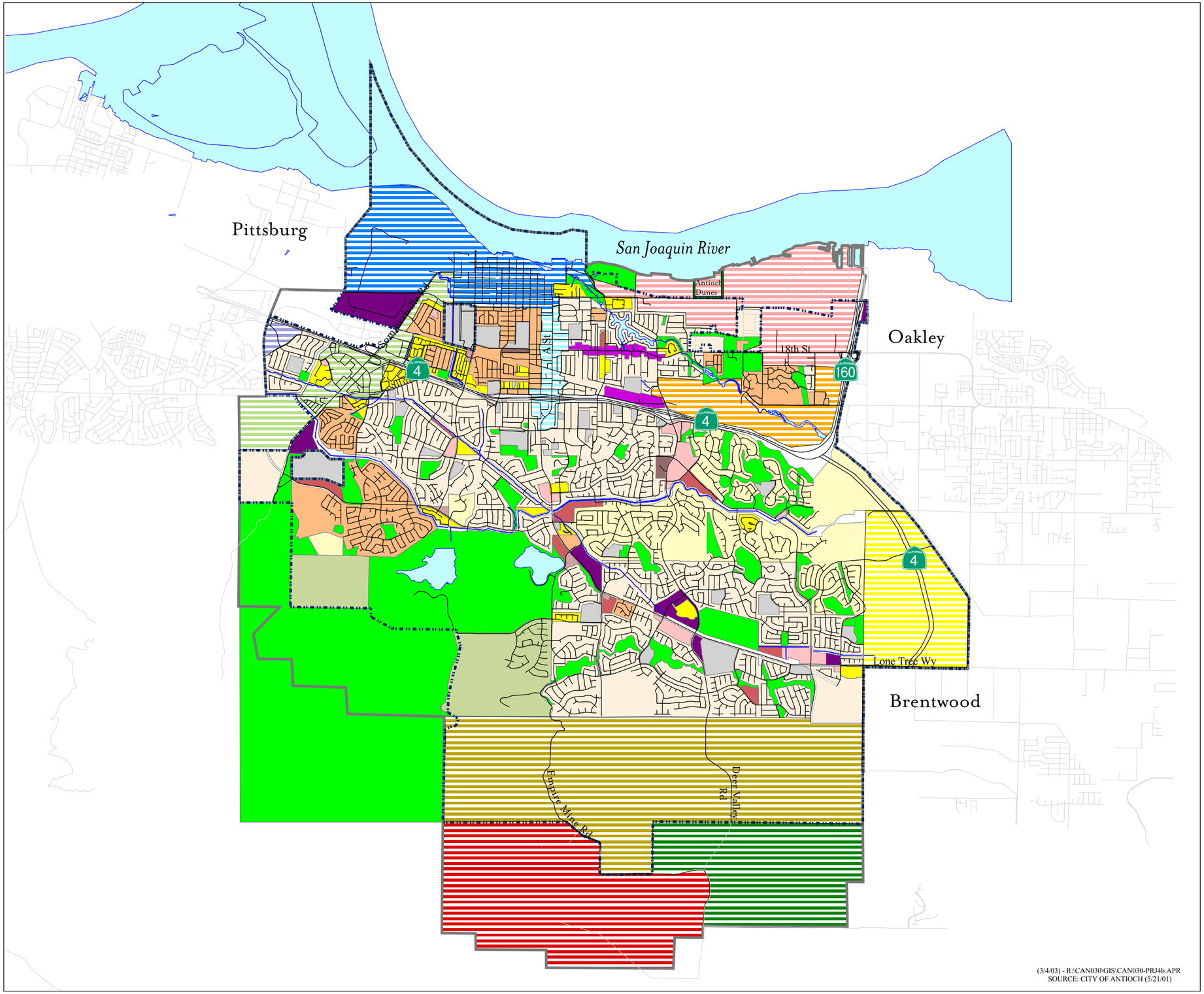
housing needs (e.g., homeless, elderly, handicapped). In addition, it embodies policy for providing adequate housing and includes action programs for this purpose.

- The **CONSERVATION ELEMENT** addresses the conservation, development, and use of natural resources, including water, soils, rivers, and mineral deposits.
- The **OPEN SPACE ELEMENT** details plans and measures for preserving open space for natural resources, the managed production of resources, outdoor recreation, public health and safety, and the identification of agricultural lands.
- The **NOISE ELEMENT** identifies and appraises noise problems within the community and forms the basis for land use distribution.
- The **SAFETY ELEMENT** establishes policies and programs to protect the community from risks with regard to seismic, geologic, flood, and fire hazards.

State law permits cities and counties to adopt other elements in a General Plan to address issues in addition to those included in the seven mandated elements. The Antioch General Plan includes three "optional" General Plan elements. Although State law does not mandate these elements, once adopted, they have the same force and effect as policies related to the General Plan elements required by the State. These "optional" issues are as follows:

- The **GROWTH MANAGEMENT ELEMENT** delineates performance standards for public services and facilities, defining the responsibility of new development to "pay its own way" and provide a net benefit to the community. This Element also sets forth a program to manage the rate of residential growth within the City.
- The **PUBLIC SERVICES AND FACILITIES ELEMENT** includes policies and programs to define the manner in which established minimum level of service standards for circulation, drainage, water and sewer facilities, parks and recreation facilities, police and fire services and other services and facilities will be met. The General Plan also identifies responsibilities to be placed on new development, and indicates what the consequences will be if such minimum standards are not achieved.
- The **ECONOMIC DEVELOPMENT ELEMENT** includes strategies devoted to the promotion of a healthy economic base within the City of Antioch, expansion of retail sales tax generation within the City, and expansion of Antioch's local employment base.

The proposed General Plan is intended to promote a focused and balanced pattern of growth that accommodates the demand for housing, employment opportunities, and public services/facilities, while minimizing the impacts of increasing urban development. The proposed land uses for the City are illustrated in Figure 1 and shown below in Tables A-C. Figure 2 is the proposed circulation map.



Estate Residential (1 du/ac)
Low Density Residential (4 du/ac)
Medium Low Density Residential (6 du/ac)
Medium Density Residential (10 du/ac)
High Density Residential (25-40 du/ac)
Convenience Commercial
Neighborhood Commercial
Service Commercial
Mixed Use
Office
Business Park
Heavy Industrial
Public/Institutional
Open Space

Focus Areas
- A St Interchange
- East Lone Tree Specific Plan
- Eastern Employment Areas
- Ginochio
- Rivertown/Urban Waterfront
- Roddy Ranch
- SR 4 Industrial Frontage
- Sand Creek Specific Plan
- Somersville Rd Corridor
- Western Gateway

Jurisdictional and Infrastructure
- City Boundary
- Roads
- Plan Area
- Water Bodies
- Water Way / Edge of Water

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FIGURE 1

City of Antioch
General Plan Update
Notice of Preparation

General Plan Land Use

Table A – Anticipated General Plan Build Out in the City of Antioch

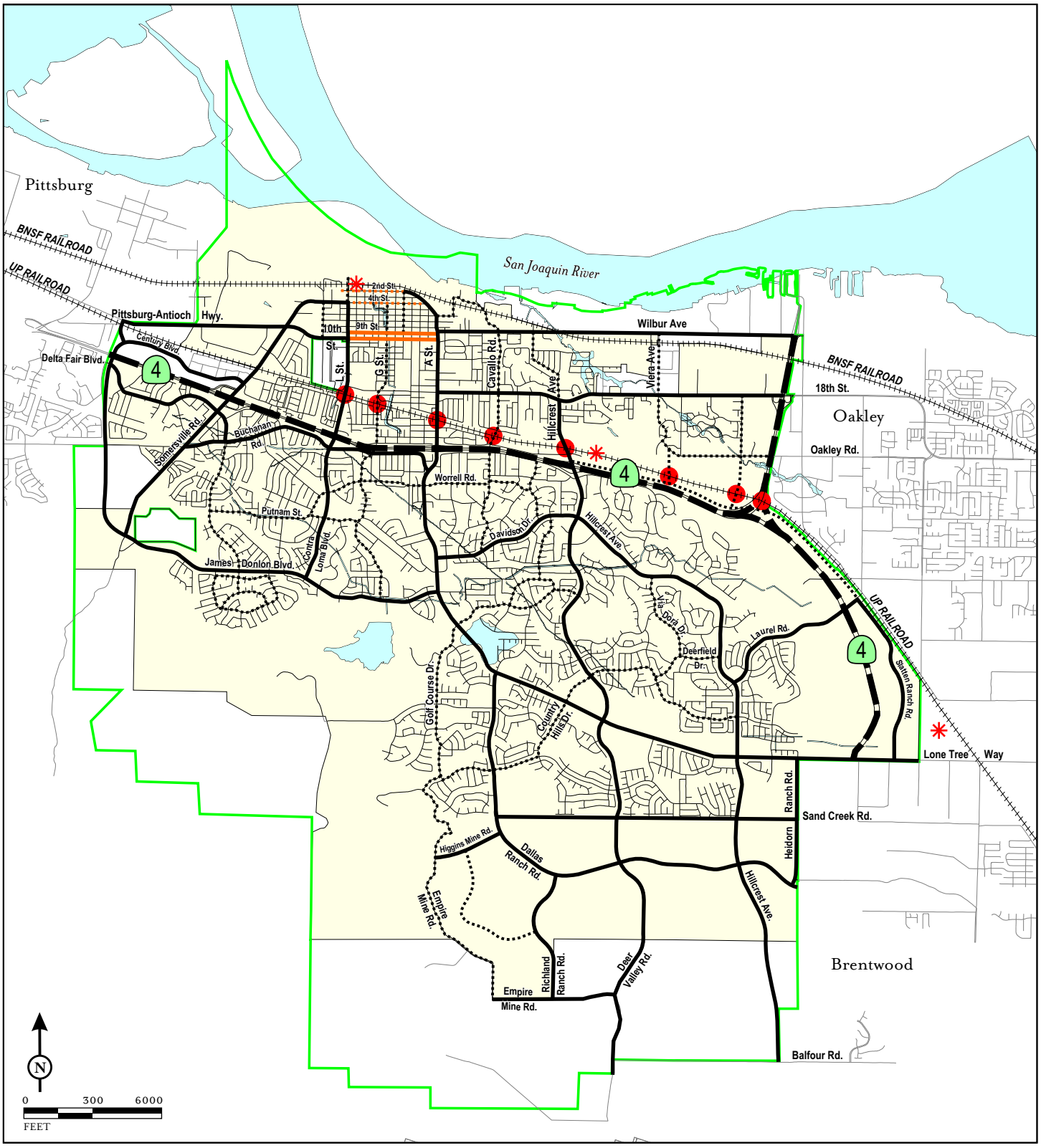
Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq. ft.)	Business Park/Industrial sq. ft.)
RESIDENTIAL				
Estate Residential	905	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	14,775	--	--	--
Medium Density Residential	6,490	4,330	--	--
High Density Residential		5,310	--	--
SUBTOTAL	***26,270***	***9,640***		
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
SUBTOTAL	***--***	***325***	***--***	***6,293,300***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	5,926,125
Ginochio Property	--	--	--	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch	--	--	--	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek Specific Plan	4,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	360	2,045,530	--
Western Gateway	--	340	560,350	--
SUBTOTAL	***7,524***	***3,956***	***6,929,165***	***20,046,425***
TOTAL	**33,794**	**13,921**	**11,097,495**	**29,842,935**
Population	**131,450**			
Employed Population	**73,805**			
Total Jobs	**67,100**			
Retail Jobs	**14,850**			
Non-Retail Jobs	**52,250**			
Jobs/Population Ratio	**0.91**			

Table B – Anticipated General Plan Build Out in the Unincorporated Area

Land Uses	Single-Family (Dwelling Unit)	Multi-Family (Dwelling Unit)	Commercial/ Office (sq. ft.)	Business Park/ Industrial (sq. ft.)
RESIDENTIAL				
Estate Residential	15	--	--	--
Low Density Residential	--	--	--	--
Medium Low Density Residential	250	--	--	--
Medium Density Residential	30	--	--	--
High Density Residential	--	--	--	--
SUBTOTAL	***295***	***--***	***--***	***--***
COMMERCIAL				
Convenience Commercial	--	--	--	--
Neighborhood Commercial	--	--	--	--
Service Commercial	--	--	--	--
Commercial Office	--	--	--	--
SUBTOTAL	***--***	***--***	***--***	***--***
INDUSTRIAL				
Business Park	--	--	--	--
SPECIAL				
Mixed-Use	--	--	--	--
Public Institutional	--	--	--	--
Open Space	--	--	--	--
SUBTOTAL	***--***	***--***	***--***	***--***
FOCUS AREAS				
"A" Street Interchange	--	--	--	--
East Lone Tree Specific Plan	--	--	--	--
Eastern Employment Areas	--	--	--	7,137,875
Ginochio Property	1,215	135	175,000	
Rivertown/Urban Waterfront	--	--	--	--
Roddy Ranch	2,350	275	425,000	--
SR-4 Frontage	--	--	--	--
Sand Creek Specific Plan	--	--	--	--
Somersville Road Corridor	--	240	--	1,581,690
Western Gateway	--	--	--	--
SUBTOTAL	***3,565***	***650***	***600,000***	***8,719,565***
TOTAL	**3,860**	**650**	**600,000**	***8,719,565***
Population	**12,425**			
Employed Population	**6,960**			
Total Jobs	**8,155**			
Retail Jobs	**310**			
Non-Retail Jobs	**7,845**			
Jobs/Population Ratio	**1.17**			

Table C– Anticipated General Plan Build Out in the General Plan Study Area

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq.ft.)	Business Park/ Industrial (sq.ft.)
RESIDENTIAL				
Estate Residential	1,830	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	15,025	--	--	--
Medium Density Residential	6,520	4,330	--	--
High Density Residential	--	5,310	--	--
SUBTOTAL	***27,475***	***9,640***	***-***	***--***
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
SUBTOTAL	***--***	***325***	***--***	***9,796,510***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	13,064,000
Ginochio Property	1,215	135	175,000	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch	2,350	275	425,000	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek Specific Plan	4,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	--	--	--
Western Gateway	--	340	--	560,350
SUBTOTAL	***11,947***	***4,803***	***7,529,165***	***28,765,990***
TOTAL	**38,512**	**14,768**	**11,157,495**	**38,562,500**
Population	**143,875**			
Employed Population	**80,765**			
Total Jobs	**75,255**			
Retail Jobs	**15,160**			
Non-Retail Jobs	**60,095**			
Jobs/Population Ratio	**0.93**			



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CITY OF ANTIOCH

PLANNING AREA BOUNDARY

FREEWAYS

ARTERIALS

ARTERIAL (COUPLET)

MAJOR COLLECTOR

MAJOR COLLECTOR (COUPLET)

RAIL

RAILROAD GRADE SEPARATION

RAIL TRANSIT STATION

FIGURE 2

City of Antioch
General Plan Update
Notice of Preparation

Circulation

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PRELIMINARY ALTERNATIVES

CEQA requires that an EIR include a discussion of reasonable project alternatives that are "capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Section 15126.6).

To achieve the goals identified by the City, the EIR will consider a range of alternatives to the proposed Plan. Summaries of proposed alternatives to the General Plan follow.

Under the **NO PROJECT, NO BUILD ALTERNATIVE**, the proposed General Plan would not be adopted by the City, and no future development would occur within Antioch. Thus, existing conditions would remain. This Alternative provides a baseline against which the impacts of the proposed General Plan and General Plan alternatives can be measured.

With the **NO PROJECT, EXISTING GENERAL PLAN ALTERNATIVE**, the proposed General Plan would not be adopted by the City, and the existing General Plan would remain in place. It is assumed for this alternative that there would be build out of the existing General Plan land use and circulation maps.

Under the **RURAL ALTERNATIVE,** the City would adopt the proposed General Plan with the exception that future urban development outside of the City's existing sphere of influence and the County's Urban Limit Line would be eliminated. Thus, with the Rural Alternative, urban development within the Roddy Ranch and Ginochio Property Focus Areas would not occur.

With the **REDUCED DENSITY ALTERNATIVE,** the City would adopt an updated General Plan, but with lower development intensities than those that are currently proposed. For example, the mixed use, pedestrian-oriented uses that are described in the proposed General Plan would be developed with either moderate density conventional residential uses or with lower intensity business park uses. Residential densities for future development would be reduced as compared to the proposed General Plan as follows:

- The density of conventional single-family subdivisions would be reduced by 0.5 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- Medium density development would be reduced by 1.0 dwelling units per acre (du/ac) as compared to the proposed General Plan.
- High-density development would be reduced by 2.0 dwelling units per acre (du/ac) as compared to the proposed General Plan.

POTENTIAL ENVIRONMENTAL EFFECTS

An Initial Study has been prepared to identify potential environmental impacts that may occur upon implementation of the proposed General Plan. The Initial Study was prepared in conformance with the California Environmental Quality Act of 1970 (CEQA), as amended, and State CEQA Guidelines. This document also complies with the procedures of the City of Antioch for implementing CEQA.

One of the primary purposes of an Initial Study is to determine whether a proposed project may have a significant effect on the environment, and whether preparation of an EIR is required.

The City of Antioch has determined that implementation of the proposed Antioch General Plan may have a significant effect on the environment and that an EIR will be prepared. Issues to be addressed in the EIR include:

Aesthetics. The potential for significant impacts to vistas and scenic resources as a result of implementing the proposed General Plan, as well as the effectiveness of its scenic protection policies, will be evaluated in the General Plan EIR. While significant impacts related to light and glare are anticipated to be limited, the General Plan EIR will address this issue and the effectiveness of the policies of the proposed General Plan. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Air Quality. Development pursuant to the proposed General Plan will result in an increased number of vehicle trips, leading to increased emissions of air pollutants. The potential of these increases to conflict with or obstruct implementation of applicable air quality standards affecting Antioch will be analyzed. The potential of these increases to contribute substantially to existing or projected violations of applicable air quality standards also will be analyzed in the General Plan EIR. In addition, the potential effects of these increased air pollutant emissions on existing and future development within City of Antioch will be analyzed. While no significant impacts related to odors are anticipated, the General Plan EIR will identify any existing problems and analyze proposed changes in land use that could increase the exposure of people to objectionable odors. Mitigation measures, where necessary, will be identified to lessen or avoid any significant impacts.

Biological Resources. The effects of the proposed City of Antioch General Plan build out on biological resources, riparian habitat area, and wetlands will be analyzed in the General Plan EIR. The proposed General Plan EIR will identify existing wildlife dispersal and/or migration areas, and address the potential impacts of General Plan build out, as well as the effectiveness of proposed preservation policies and plans in relation to these areas. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Cultural Resources. Impacts upon historic, archaeological, and paleontological resources could result from General Plan implementation in the form of individual private development and public works projects, even though City of Antioch maintains policies to protect and minimize any adverse impacts on these resources. Potential impacts, as well as the effectiveness of proposed General Plan policies will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Geology and Soils. The potential effects of fault rupture and ground shaking on existing and future development within the City of Antioch will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing risks from seismic hazards. The potential effects of ground failure on existing and future development within the study area will be analyzed, along with the effectiveness of proposed General Plan policies aimed at reducing risks from secondary seismic hazards. The potential effects of erosion or loss of topsoil, slope failure, or expansive soils related to existing and future development within study area will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing

associated risks. The effectiveness of proposed General Plan policies aimed at ensuring adequate sewage disposal will also be analyzed. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Hazards and Hazardous Materials. While it is not anticipated that the implementation of the proposed General Plan will result in significant environmental impacts relative to the accidental release of hazardous materials and/or hazardous wastes, to ensure that significant impacts do not result, these issues will be addressed in the General Plan EIR. The risks associated with the transportation of hazardous materials throughout the City will also be analyzed. The potential for significant impacts on school facilities resulting from the emission of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of schools also will be addressed in the General Plan EIR. The proposed General Plan provides for the use and reuse of hazardous materials sites identified pursuant to Government Code Section 675962.5. A potentially significant hazard for people residing or working in the area could result. These issues will be addressed in the General Plan EIR. New development within or near wildland areas may expose additional persons to hazardous conditions. Additionally, there is the potential for an increase in the occurrence of fire in these areas due to increasing population and the fact that a majority of wildland fires are caused by human carelessness. The General Plan EIR will address exposure to hazards affecting existing and future development within the study area. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Hydrology and Water Quality. Future development within the City of Antioch has the potential to cause changes in amount and quality of surface water runoff, which could affect the quality of lakes and groundwater. New development also has the potential to alter existing drainage patterns. Such modified patterns could result in substantial erosion or soil deposition. These issues will be addressed in the General Plan EIR. Increases in runoff resulting from the introduction of impervious surfaces by new development may exceed the capacity of existing and future storm drain and flood control facilities. The proposed General Plan contains policies to avoid such impacts. The effectiveness of such policies to eliminate significant impacts will be addressed in the General Plan EIR. Due to urban runoff from developed properties, impacts to groundwater quality could occur as a result of General Plan build out. This urban runoff contains contaminants (heavy metals, pesticides, etc.) that may or may not percolate into the groundwater. This issue will be analyzed in the General Plan EIR. Failure of dams and levees could cause widespread flooding. Potential flooding impacts will be analyzed in the General Plan EIR. The potential effects of seismic seiching, dam failures, and failure of levees on existing and future development within study area also will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Land Use and Planning. Land use designations and development intensities within the City of Antioch may be changed with adoption of the proposed General Plan. One objective of the proposed General Plan is to eliminate conflicts among adopted land use designations and the plans, policies, and regulations of agencies having direct or indirect jurisdiction over land use within the City (e.g., State and Federal agencies, public service agencies). There is no assurance that, even if an accord were reached among these agencies and the County, that outside agencies would, in fact, adopt the recommendations of the General Plan. However, the General Plan specifically rejects Association of Bay Area governments' employment growth projections, which indicate that the City of Antioch will continue to suffer a significant imbalance between local jobs and housing. The General Plan

proposes programs to increase the number of local employment opportunities and achieve a local balance between jobs and housing. The environmental effects of the land use changes will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary and feasible, to lessen or avoid any significant impacts.

Noise. Development that occurs pursuant to the updated Antioch General Plan will result in increased traffic, leading to increased noise levels along affected roadways. Development (primarily industrial) that occurs pursuant to the updated Antioch General Plan could create ground borne vibrations. Development that occurs pursuant to the proposed General Plan will result in temporary construction activities, leading to temporary increases in noise levels. The potential exists for future development occurring pursuant to the adopted General Plan to expose people to noise generated at public and private airports. The potential effects of increased noise and the relationship of future noise levels and relevant noise standards will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Population and Housing. A General Plan is, by definition, growth inducing, in that it provides a plan for accommodating future increases in population, housing, and employment. It also provides a plan for ensuring that adequate infrastructure is available to serve that growth. The effects of population and housing growth that will be induced by the proposed General Plan will be addressed in the EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Public Services. Antioch's existing police and fire protection systems and their capacity to support future growth will be reviewed to determine if the services and facilities will be sufficient to support additional demand. Potential impacts on police and fire protection services will be addressed in the General Plan EIR. The ability of existing school facilities serving Antioch to support future growth will be analyzed, and potential impacts on school facilities will be evaluated in the General Plan EIR. The ability of governmental facilities serving the City to support future growth will be analyzed as well. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Recreation. The ability of existing park and recreation facilities serving the City of Antioch to support future growth will be analyzed. Potential impacts will be addressed in the General Plan EIR. Implementation of the proposed General Plan will increase demand for park and recreation facilities and will require the construction of new parks. Depending upon the location and function of these new parks, it is possible that park construction related to development occurring pursuant to the proposed General Plan could result in adverse physical effects on the environment. These potential effects will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Transportation / Traffic. The land use changes proposed as part of the updated Antioch General Plan will result in an increased number of vehicle trips that may lead to potential traffic congestion beyond that addressed in existing adopted plans and policies. The effects of traffic and the proposed General Plan on existing and future development within the study area will be analyzed in the General Plan EIR. Future levels of service resulting from the traffic that will be generated by

implementation of the proposed City General Plan land uses will be addressed. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Utilities and Service Systems. The General Plan EIR will address existing sewage treatment services, projected future capacities, and their ability to accommodate increased demand associated with build out of the proposed General Plan. Impacts on sewage collection and treatment facilities will be addressed in the General Plan EIR. Implementation of the proposed General Plan will increase demand for water facilities, and will require the construction of new facilities. Depending upon the location of these new facilities, it is possible that their construction could result in adverse physical effects on the environment. These potential physical effects will be addressed in the General Plan EIR. Because the proposed General Plan is likely to modify at least some of the land use and growth assumptions that formed the basis of the County's Solid Waste Management Plan as it affects the Antioch area, it is possible that future development consistent with the General Plan could exceed the capacity of area landfills. Impacts on solid waste disposal facilities will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

Cumulative Impacts. The proposed General Plan will define the extent of future development within the City of Antioch. If development within the study area, as well as within surrounding communities, were to progress at or near the maximum extent allowed under these agencies' General Plans, potentially significant cumulative impacts may occur and extend beyond the boundaries of City. In addition, it is possible that the impacts of implementing the Antioch General Plan will combine with impacts associated with development occurring in surrounding cities to create significant cumulative impacts. An assessment of the cumulative impacts of the proposed Antioch General Plan and adjacent jurisdictions will be conducted. Mitigation measures will be identified, where necessary, to lessen or avoid any significant impacts.

FOR FURTHER INFORMATION CONTACT

Information related to the proposed General Plan may be found at the following Web page: http://www.ci.antioch.ca.us. Additional information, comments, and/or questions related to the preparation of the EIR and the CEQA process should be submitted to:

Ms. Nina Oshinsky
City of Antioch
Community Development Department
Third & "H" Streets
Antioch, CA 94509
Tel: (925) 779-7035
Fax: (925) 779-7034

Materials related to the proposed General Plan will be available for public inspection during normal business hours (8:00 a.m. to 5:00 p.m. Monday-Friday) at the address above. A public meeting will be conducted at a later date to provide the public an opportunity to comment on the EIR.

INITIAL STUDY

CITY OF ANTIOCH GENERAL PLAN UPDATE
CONTRA COSTA COUNTY

Prepared for:

City of Antioch
3rd and "H" Streets
Antioch, California 94509
(925) 779-7035

Prepared by:

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1650 Spruce Street, Suite 500
Riverside, California 92507
(909) 781-9310

LSA Project No. CAN030

LSA

March 26, 2003

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

Antioch's updated General Plan will be a blueprint for the City's future. It describes the projected growth and development within the City over the long term, and acts as a "constitution" for public and private development, the foundation on which City authorities will make development and other land use-related decisions. The General Plan is meant to express the City's goals with respect to both the man-made and natural environments, and sets forth the policies and implementation measures to achieve them for the welfare of those who live, work, and do business in the City.

This Initial Study has evaluated each of the issues contained in the checklist provided in Section 3.0 of this document.

1.2 FINDINGS OF THIS INITIAL STUDY

Pursuant to the California Environmental Quality Act (CEQA), State CEQA Guidelines, and the City's local CEQA Guidelines, this Initial Study has been prepared in order to determine whether implementation of Antioch's proposed General Plan (proposed project) will result in significant environmental impacts, which would require the preparation of an Environmental Impact Report (EIR).

This Initial Study is based on an Environmental Checklist Form, as suggested in Section 15063 (d)(3) of the State CEQA Guidelines. The Form is found in Section 3.0 of this Initial Study. It contains a series of questions about the proposed project for each of the listed areas. The Form is used to evaluate whether or not there are any significant environmental effects associated with implementation of the proposed project.

Following the Form in Section 3.2 is an explanation for each answer on the Form. The Form and accompanying evaluation of the responses provide the information and analysis upon which the City may make its determination as to whether or not an EIR may be required for the project. The Form is used to review the potential environmental effects of the proposed project for each of the following areas:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Recreation
- Public Services

- Transportation/Traffic
- Utilities/Service Systems
- Mandatory Findings of Significance

1.3 CONTACT PERSON

The Lead Agency for the Initial Study for the proposed project is the City of Antioch. Any questions about the preparation of this Initial Study, its assumptions, or its conclusions should be referred to the following:

Ms. Nina Oshinsky
City of Antioch
Community Development Department
3rd and "H" Streets
Antioch, California 94531
(925) 779-7035

2.0 PROJECT DESCRIPTION

2.1 PROJECT SITE SETTING

The City of Antioch is located in eastern Contra Costa County, approximately 40 miles northeast of downtown Oakland. Antioch's City limits encompass 31.16 square miles; its General Plan study area, which encompasses the City, along with Antioch's sphere of influence and additional lands to the south, covers 36.11 square miles. To the west of Antioch is the City of Pittsburg. The City of Oakley is located east of Antioch, and the City of Brentwood is to the southeast. Unincorporated territories border Antioch in the northeastern and southern portions of the General Plan study area.

The City of Antioch extends in a roughly square pattern, from Pittsburg on the west to the Antioch Bridge on the east, and from the foothills of Mt. Diablo on the south to the San Joaquin River on the north (see Figure 1). The City is bisected by State Route 4 (SR-4), an east-west-oriented four-lane freeway, which is planned for widening in the near future. The Southern Pacific Railroad line runs east-west just north of SR-4; the Burlington Northern Santa Fe Railroad line runs east-west along the San Joaquin River waterfront. The Contra Costa Canal is located south of SR-4, and traverses the Planning Area in an east-west direction.

On the north side of SR-4, older residential areas and the historic Rivertown (Downtown) area are organized in a traditional grid street pattern. Small lots of vacant, undeveloped land are situated between homes, such as the lots at the intersection of "J" and Third Streets. There are few large undeveloped parcels. Many of these vacant parcels are small or irregular in shape.

South of SR-4, the suburban street patterns of newer residential areas reflect their development as a series of separate subdivisions and planned residential communities. Some vacant or underutilized parcels exist within the subdivisions. The hill and valley areas south of the Contra Costa Canal have grown most recently.

South of SR-4, minor ridgelines occur northeast of the Contra Loma Boulevard/James Donlon Boulevard intersection, east and west of Hillcrest Avenue, and in the area separating Lone Tree Way from Lone Tree Valley. Major ridgelines associated with the foothills of Mt. Diablo occur along the entire southwest boundary of the Planning Area, from Somersville Road to the City's southeastern boundary adjacent to the City of Brentwood. Most of the open lands in the southwest area of the City are located within either Black Diamond Mines Regional Preserve or Contra Loma Regional Park (both operated by the East Bay Regional Park District), or within the proposed Sand Creek Specific Plan, an area of mostly privately-owned ranch land that is planned for development.

North of SR-4, the majority of the San Joaquin River shoreline is in park or open space uses. To the west of Rivertown, and bordering Pittsburg, the Dow Wetland Preserve forms part of the City's shoreline. To the east of Rivertown, the Antioch Dunes National Wildlife Refuge and other open areas occupy the City's shoreline. The Contra Costa County Fairgrounds and Lake Alhambra are upland open areas amongst higher-density residential uses north of SR-4.

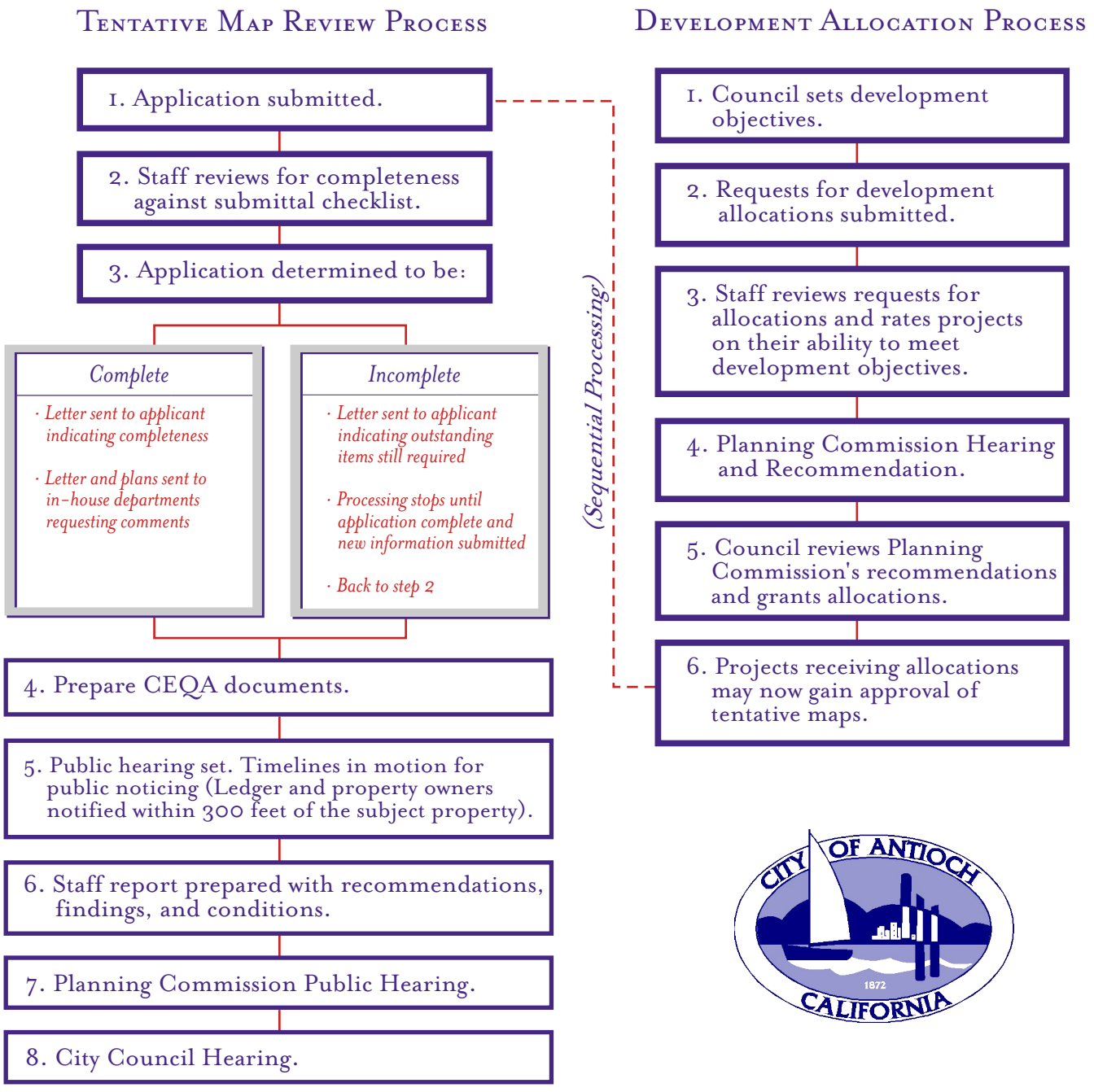

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FIGURE 1

City of Antioch
General Plan Update
Initial Study

Relationship of Tentative Map Review and Development Allocation Processes

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Built at the turn of the century when the San Joaquin River provided port facilities for agriculture, mining, canning, general shipping, and manufacturing, the Downtown area was the historical retail center for the City of Antioch. However, during the latter half of the 20th century, as automobile and truck transportation increased, most of the commerce left the Downtown area and moved south of what is now SR-4. As a result, the City's main retail areas are currently auto-oriented and located on main arterials. The intersection of SR-4 and Somersville Road is the City of Antioch's principle retail area; shopping centers in this area include County East Mall, Delta Fair Shopping Center, Albertson's/Long's Center, and Somersville Shopping Center. Other commercial areas, Deer Valley Plaza and Williamson Ranch Plaza, are located along Lone Tree Way. Like most retail areas in Antioch, with the exception of Downtown, these commercial areas are served by busy arterials, are accessible mainly by car, and have expansive parking lots in front of each retail strip.

Industrial facilities within Antioch are generally located in the northern portion of the community. These industrial areas encompass a mix of business park uses, light industries, warehousing, and heavier industries located along the San Joaquin River.

2.2 PROPOSED DISCRETIONARY ACTIONS

Approval of an amendment to the Antioch General Plan, adopting the 2003 update and related environmental documentation by the Antioch City Council.

2.3 PROJECT DESCRIPTION

State law requires each city and county to adopt a General Plan that contains, at a minimum, seven elements. State law permits cities and counties to organize the information, goals, policies, and programs included in their General Plans in the manner best suited to the needs of the city or county. Thus, the seven mandatory elements of a jurisdiction's General Plan need not be specific chapters or sections, provided that all the subjects required by State law are addressed. The seven mandatory elements are as follows:

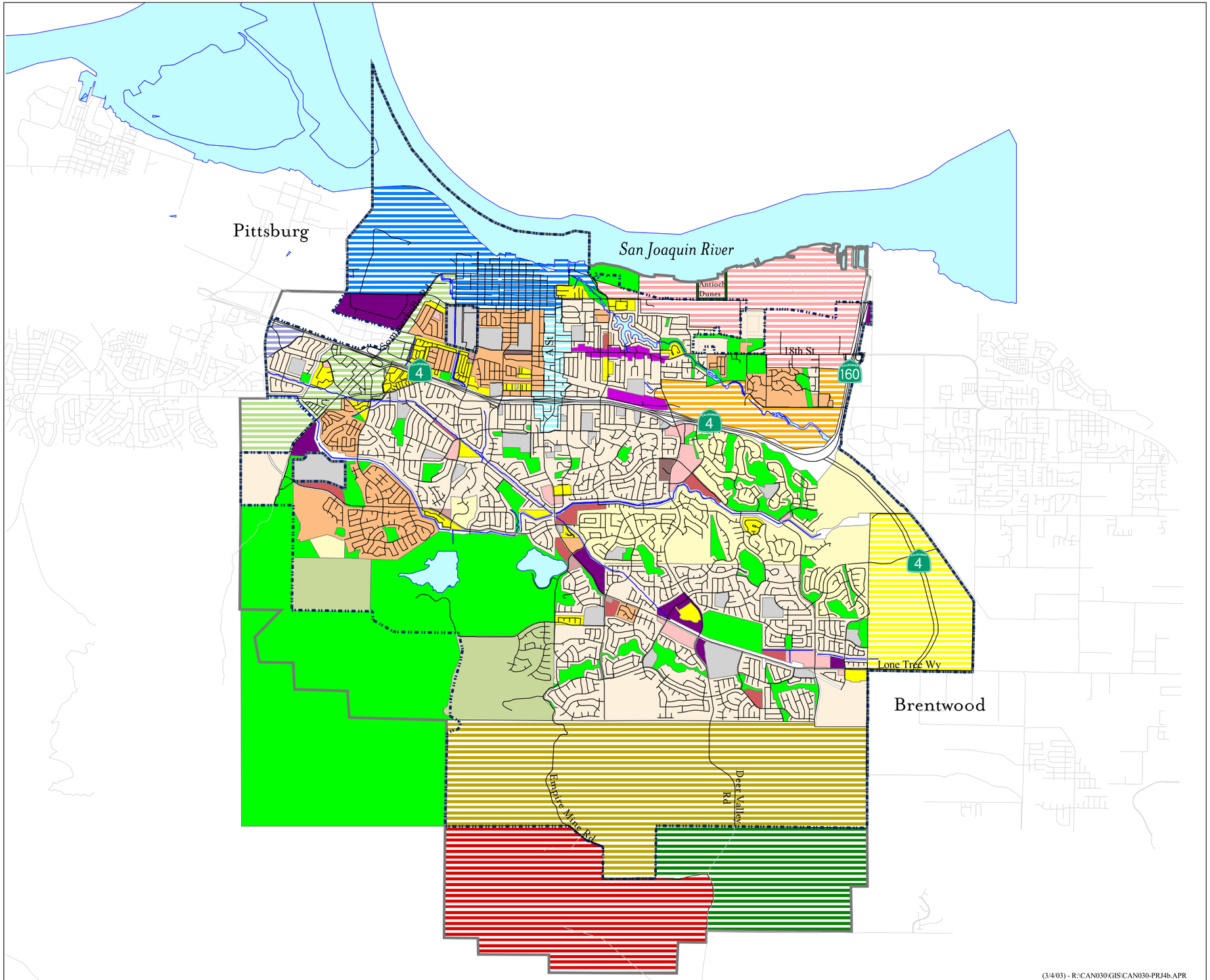
- The **LAND USE ELEMENT** designates the general distribution and intensity of uses of the land for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses.
- The **CIRCULATION ELEMENT** is correlated with the land use element. It identifies the general locations and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities.
- The **HOUSING ELEMENT** provides comprehensive assessment of current and projected housing needs for all economic segments of the community, as well as groups having special housing needs (e.g., homeless, elderly, handicapped, etc.). In addition, it embodies policy for providing adequate housing and includes action programs for this purpose.
- The **CONSERVATION ELEMENT** addresses the conservation, development, and use of natural resources, including water, soils, rivers, and mineral deposits.

- The **OPEN SPACE ELEMENT** details plans and measures for preserving open space for natural resources, the managed production of resources, outdoor recreation, public health and safety, and the identification of agricultural lands.
- The **NOISE ELEMENT** identifies and appraises noise problems within the community and forms the basis for land use distribution.
- The **SAFETY ELEMENT** establishes policies and programs to protect the community from risks with regard to seismic, geologic, flood, and fire hazards.

State law permits cities and counties to adopt other elements in a General Plan to address issues in addition to those included in the seven mandated elements. The Antioch General Plan includes three "optional" General Plan elements. Although State law does not mandate these elements, once adopted, they have the same force and effect as policies related to the General Plan elements required by the State. These "optional" issues are as follows:

- The **GROWTH MANAGEMENT ELEMENT** delineates performance standards for public services and facilities, defining the responsibility of new development to "pay its own way" and provide a net benefit to the community. This Element also sets forth a program to manage the rate of residential growth within the City.
- The **PUBLIC SERVICES AND FACILITIES ELEMENT** includes policies and programs to define the manner in which established minimum level of service standards for circulation, drainage, water and sewer facilities, parks and recreation facilities, police and fire services, and other services and facilities will be met. The General Plan also identifies responsibilities to be placed on new development, and indicates what the consequences will be if such minimum standards are not achieved.
- The **ECONOMIC DEVELOPMENT ELEMENT** includes strategies devoted to the promotion of a healthy economic base within the City of Antioch, expansion of retail sales tax generation within the City, and expansion of Antioch's local employment base.

The proposed General Plan is intended to promote a focused and balanced pattern of growth that accommodates the demand for housing, employment opportunities, and public services/facilities, while minimizing the impacts of increasing urban development. The proposed land uses for the City are illustrated in Figure 2 and shown below in Tables A-C. Figure 3 is the proposed circulation map.



Estate Residential (1 du/ac)
Low Density Residential (4 du/ac)
Medium Low Density Residential (6 du/ac)
Medium Density Residential (10 du/ac)
High Density Residential (25-40 du/ac)
Convenience Commercial
Neighborhood Commercial
Service Commercial
Mixed Use
Office
Business Park
Heavy Industrial
Public/Institutional
Open Space

Focus Areas
- A St Interchange
- East Lone Tree Specific Plan
- Eastern Employment Areas
- Ginochio
- Rivertown/Urban Waterfront
- Roddy Ranch
- SR 4 Industrial Frontage
- Sand Creek Specific Plan
- Somersville Rd Corridor
- Western Gateway

Jurisdictional and Infrastructure
- City Boundary
- Roads
- Plan Area
- Water Bodies
- Water Way / Edge of Water

N

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FIGURE 2

City of Antioch
General Plan Update
Initial Study

General Plan Land Use

Table A – Anticipated General Plan Build Out in the City of Antioch

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq. ft.)	Business Park/Industrial (sq. ft.)
RESIDENTIAL				
Estate Residential	905	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	14,775	--	--	--
Medium Density Residential	6,490	4,330	--	--
High Density Residential		5,310	--	--
SUBTOTAL	***26,270***	***9,640***		
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	***--***	***--***	***--***	***--***
SUBTOTAL	***--***	***325***	***--***	***6,293,300***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	5,926,125
Ginochio Property	--	--	--	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch	--	--	--	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek Specific Plan	4,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	360	2,045,530	--
Western Gateway	--	340	560,350	--
SUBTOTAL	***7,524***	***3,956***	***6,929,165***	***20,046,425***
TOTAL	**33,794**	**13,921**	**11,097,495**	**29,842,935**

Population	**131,450**
Employed Population	**73,805**
Total Jobs	**67,100**
Retail Jobs	**14,850**
Non-Retail Jobs	**52,250**
Jobs/Population Ratio	**0.91**

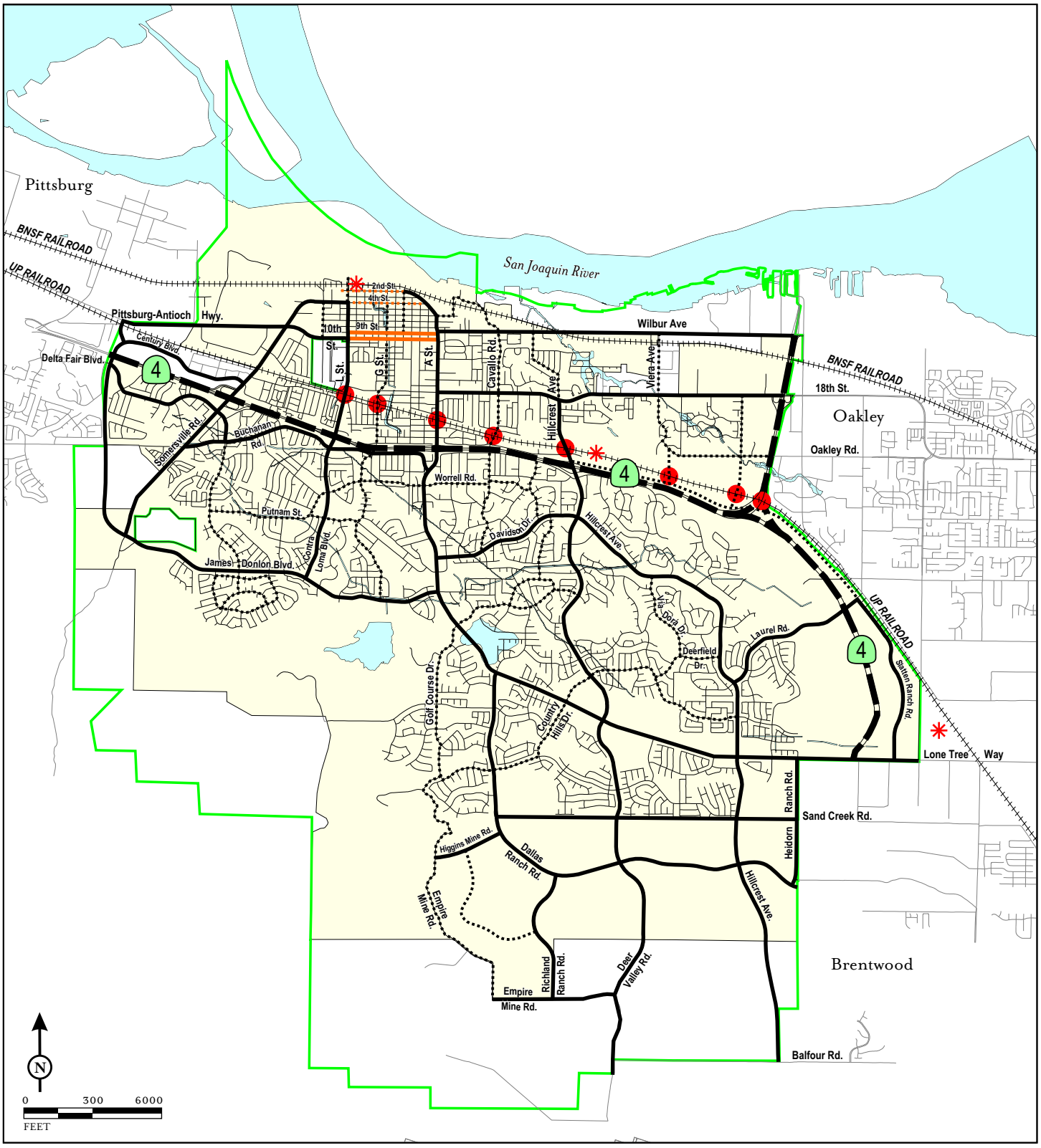
Table B – Anticipated General Plan Build Out in the Unincorporated Area

Land Uses	Single-Family (Dwelling Unit)	Multi-Family (Dwelling Unit)	Commercial/ Office (sq. ft.)	Business Park/Industrial (sq. ft.)
RESIDENTIAL				
Estate Residential	15	--	--	--
Low Density Residential	--	--	--	--
Medium Low Density Residential	250	--	--	--
Medium Density Residential	30	--	--	--
High Density Residential	--	--	--	--
SUBTOTAL	***295***	**--**	**--**	**--**
COMMERCIAL				
Convenience Commercial	--	--	--	--
Neighborhood Commercial	--	--	--	--
Service Commercial	--	--	--	--
Commercial Office	--	--	--	--
SUBTOTAL	**--**	**--**	**--**	**--**
INDUSTRIAL				
Business Park	--	--	--	--
SPECIAL				
Mixed-Use	--	--	--	--
Public Institutional	--	--	--	--
Open Space	--	--	--	--
SUBTOTAL	**--**	**--**	**--**	**--**
FOCUS AREAS				
"A" Street Interchange	--	--	--	--
East Lone Tree Specific Plan	--	--	--	--
Eastern Employment Areas	--	--	--	7,137,875
Ginochio Property	1,215	135	175,000	
Rivertown/Urban Waterfront	--	--	--	--
Roddy Ranch	2,350	275	425,000	--
SR-4 Frontage	--	--	--	--
Sand Creek Specific Plan	--	--	--	--
Somersville Road Corridor	--	240	--	1,581,690
Western Gateway	--	--	--	--
SUBTOTAL	***3,565***	***650***	***600,000***	***8,719,565***
TOTAL	**3,860**	**650**	**600,000**	***8,719,565***

Population	**12,425**
Employed Population	**6,960**
Total Jobs	**8,155**
Retail Jobs	**310**
Non-Retail Jobs	**7,845**
Jobs/Population Ratio	**1.17**

Table C – Anticipated General Plan Build Out in the General Plan Study Area

Land Uses	Single-Family (Dwelling Units)	Multi-Family (Dwelling Units)	Commercial/ Office (sq. ft.)	Business Park/Industrial (sq. ft.)
RESIDENTIAL				
Estate Residential	1,830	--	--	--
Low Density Residential	4,100	--	--	--
Medium Low Density Residential	15,025	--	--	--
Medium Density Residential	6,520	4,330	--	--
High Density Residential	--	5,310	--	--
SUBTOTAL	***27,475***	***9,640***	***-***	***--***
COMMERCIAL				
Convenience Commercial	--	--	277,900	--
Neighborhood Commercial	--	--	1,631,100	--
Service Commercial	--	--	776,680	--
Commercial Office	--	--	1,482,650	--
SUBTOTAL	***--***	***--***	***4,168,330***	***--***
INDUSTRIAL				
Business Park	--	--	--	3,503,210
SPECIAL				
Mixed-Use	--	325	--	324,950
Public Institutional	--	--	--	5,968,350
Open Space	--	--	--	--
SUBTOTAL	***--***	***325***	***--***	***9,796,510***
FOCUS AREAS				
"A" Street Interchange	120	--	894,960	--
East Lone Tree Specific Plan	1,100	250	1,135,000	2,152,300
Eastern Employment Areas	12	248	25,000	13,064,000
Ginochio Property	1,215	135	175,000	--
Rivertown/Urban Waterfront	1,755	2,225	1,028,325	3,489,100
Roddy Ranch	2,350	275	425,000	--
SR-4 Frontage	--	--	--	5,878,900
Sand Creek Specific Plan	4,537	433	1,240,000	2,600,000
Somersville Road Corridor	--	--	--	--
Western Gateway	--	340	--	560,350
SUBTOTAL	***11,947***	***4,803***	***7,529,165***	***28,765,990***
TOTAL	**38,512**	**14,768**	**11,157,495**	**38,562,500**
Population	**143,875**			
Employed Population	**80,765**			
Total Jobs	**75,255**			
Retail Jobs	**15,160**			
Non-Retail Jobs	**60,095**			
Jobs/Population Ratio	**0.93**			



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CITY OF ANTIOCH

PLANNING AREA BOUNDARY

FREEWAYS

ARTERIALS

ARTERIAL (COUPLET)

MAJOR COLLECTOR

MAJOR COLLECTOR (COUPLET)

RAIL

RAILROAD GRADE SEPARATION

RAIL TRANSIT STATION

FIGURE 3

City of Antioch
General Plan Update
Initial Study

Circulation

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3.0 INITIAL STUDY

3.1 ENVIRONMENTAL CHECKLIST FORM

The following pages contain the Environmental Checklist Form (Form) for the proposed project. The Form is marked with findings as to the environmental effects of the project. A checked box in column 1 requires preparation of additional environmental analysis in the form of an EIR.

As explained in Section 1.0, this analysis has been undertaken, pursuant to the provisions of CEQA, to provide the City of Antioch with the factual basis for determining, based on the information available, the form of environmental documentation the project warrants. The basis for each of the findings listed in the attached Form is explained in Section 3.2, Environmental Analysis and Explanation of Checklist Responses.

ENVIRONMENTAL CHECKLIST FORM

1. **Project Title**: City of Antioch General Plan Update

2. **Lead Agency Name and Address**: City of Antioch
   Community Development Department
   3rd and "H" Streets
   Antioch, California 94509

3. **Contact Person:** Ms. Nina Oshinsky
   Tel: (925) 779-7035

4. **Project Location:** Citywide

5. **Project Applicant:** City of Antioch

6. **Existing and Proposed General Plan Designations:** Varies citywide

7. **Existing and Proposed Zoning:** Varies citywide

8. **Project Description:** The General Plan provides policy direction and implementation strategies for managing future growth and change within the City over the long term (20-25 years). The Housing Element portion of the General Plan focuses on addressing the housing needs of City residents during the current Housing Element planning period of January 1, 1999, through June 30, 2006. The Antioch General Plan represents a comprehensive update of its existing General Plan.

9. **Existing and Proposed Surrounding Land Use and Setting:** Varies citywide

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (■) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

■	Aesthetics	■	Hazards & Hazardous Materials	■	Public Services
?	Agricultural Resources	■	Hydrology/Water Quality	■	Recreation
■	Air Quality	■	Land Use/Planning	■	Transportation/Traffic
■	Biological Resources	?	Mineral Resources	■	Utilities/Service Systems
■	Cultural Resources	■	Noise	■	Mandatory Findings of Significance
■	Geology/Soils	■	Population/Housing		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	■
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

_____ _____

Signature Date

_____ _____

Printed Name For

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 17, "Earlier Analysis," may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (d). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans and zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
1. **AESTHETICS:** Would the project:				
a) Have a substantial adverse effect on a scenic vista?	**X**			
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	**X**			
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	**X**			
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	**X**			
2. **AGRICULTURE RESOURCES:** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				**X**
b) Conflict with agricultural zoning or Williamson Act contracts?				**X**
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				**X**
3. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	**X**			
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	**X**			
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	**X**			

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?	**X**			
e) Create objectionable odors affecting a substantial number of people?	**X**			
4. **BIOLOGICAL RESOURCES:** Would the project:				
a) Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?	**X**			
b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in Issue l(d)? Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Wildlife Service?	**X**			
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	**X**			
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native or resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?	**X**			
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	**X**			
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, other approved local, regional, or State habitat conservation plan?				**X**
5. **CULTURAL RESOURCES:** Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	**X**			
b) Cause a substantial adverse change in the significance of archaeological resources pursuant to Section 15064.5?	**X**			
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	**X**			
d) Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
6. **GEOLOGY AND SOILS:** Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				**X**
(ii) Strong seismic ground shaking?	**X**			
(iii) Seismic-related ground failure, including liquefaction?	**X**			
(iv) Landslides?	**X**			
(b) Result in substantial soil erosion or the loss of topsoil?	**X**			
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	**X**			
(d) Be located on expansive soil, as defined in Table 18-a-B of the Uniform Building Code (1994), creating substantial risks to life or property?	**X**			
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				**X**
7. **HAZARDS AND HAZARDOUS MATERIALS:** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	**X**			
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	**X**			
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	**X**			
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	**X**			

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
e) For a project located within an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				**X**
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				**X**
g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**X**			
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	**X**			
8. **HYDROLOGY AND WATER QUALITY:** Would the project:				
a) Violate any water quality standards or waste discharge requirements?			**X**	
b) Substantially degrade groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of 115 pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	**X**			
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	**X**			
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or surface runoff in a manner that would result in flooding on- or off-site?	**X**			
e) Create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	**X**			
f) Otherwise substantially degrade water quality?	**X**			
g) Place housing within a 100-year floodplain, as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				**X**
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				**X**

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			**X**	
j) Result in inundation by seiche, tsunami, or mudflow?			**X**	
9. **LAND USE AND PLANNING:** Would the project:				
a) Physically divide an established community?			**X**	
b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?				**X**
10. **MINERAL RESOURCES:** Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				**X**
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				**X**
11. **NOISE:** Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	**X**			
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	**X**			
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	**X**			
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	**X**			
e) For a project located within an airport land use plan, or where such a plan has not been adopted within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				**X**
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				**X**

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
12. **POPULATION AND HOUSING:** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	**X**			
b) Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?				**X**
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				**X**
13. **PUBLIC SERVICES:** Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?	**X**			
b) Police protection?	**X**			
c) Schools?	**X**			
d) Parks?	**X**			
e) Other public facilities?	**X**			
14. **RECREATION:** Would the project:				
a) Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	**X**			
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	**X**			
15. **TRANSPORTATION/TRAFFIC:** Would the project:				
a) Cause an increase in the traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	**X**			
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	**X**			
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			**X**	
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			**X**	
e) Result in inadequate emergency access?			**X**	
f) Result in inadequate parking capacity?			**X**	

Issues and Supporting Information	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Conflict with adopted policies or programs supporting alternative transportation (e.g., bus turnouts and bicycle racks)?			**X**	
16. **UTILITIES AND SERVICE SYSTEMS:** Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				**X**
b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	**X**			
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	**X**			
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	**X**			
e) Result in a determination by the wastewater treatment provider that services or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	**X**			
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			**X**	
g) Comply with Federal, State, and local statues and regulations related to solid waste?				**X**
17. **MANDATORY FINDINGS OF SIGNIFICANCE:**				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	**X**			
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?	**X**			
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	**X**			

3.2 EXPLANATIONS TO THE CHECKLIST FORM

1. Aesthetics. Would the project:

a) Have a substantial adverse effect on a scenic vista?

Potentially Significant Impact. Antioch enjoys a magnificent and varied natural setting, consisting of the San Joaquin River, moderate to steep hills, broad valleys, narrow canyons, and lakes. Views of Mt. Diablo, ridgelines, and the San Joaquin River are important visual resources. Because the San Joaquin River historically served as the City's major access point, and the hills as housing for local mining operations, these views are also a reminder of Antioch's history. New developments south of SR-4, specifically those built on or near the ridgelines, have obstructed some historic and panoramic views of Mt. Diablo and the ridgelines that were once visible from roads and neighborhoods located at a distance from these features. However, new opportunities to view the San Joaquin River are being developed with projects such as the Municipal Public Marina (built in 1988), Antioch riverfront promenade, and the "A" Street extension into Rivertown.

The Antioch General Plan contains policies designed to protect scenic vistas and highways from adverse impacts from future development activities. The potential for significant impacts to vistas as a result of implementing the proposed General Plan, as well as the effectiveness of its scenic protection policies, will be evaluated in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Potentially Significant Impact. Combined, the City's varied topography, natural habitats, history, and developed environment provide numerous sites and areas that have been identified as scenic resources. Scenic resources have been identified in the existing and the proposed General Plan. Both the existing and the proposed General Plans contain policies for the protection of scenic resources. The potential for significant impacts to scenic resources as a result of implementing the proposed General Plan, as well as the effectiveness of its scenic protection policies, will be evaluated in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Potentially Significant Impact. The land use distribution and/or policies of the proposed General Plan could result in alterations to existing views and scenic resources within the City. Antioch has policies in place and is proposing policies in the updated General Plan with respect to minimizing the aesthetic impacts of proposed development. Implementation of the proposed General Plan will be analyzed to determine the degree to which aesthetics are affected and policies will be effective. This analysis will be documented in the General Plan EIR, and mitigation measures will be identified, where necessary, to address any significant impacts.

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Potentially Significant Impact. New development consistent with the proposed General Plan will increase the amount of light and glare in developed areas (from exterior lighting, street lighting,

vehicular lighting, and interior lighting visible from the outside). To minimize potential light and glare impacts, future development will be required to comply with applicable policies governing light and glare outlined in the General Plan, City of Antioch development standards, and/or requirements mandated during the environmental review of individual developments. The proposed Antioch General Plan contains policies to minimize potential light and glare impacts from proposed development projects. While significant impacts related to light and glare are anticipated to be limited, this issue, and the effectiveness of the proposed General Plan, will be addressed by the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

2. Agricultural Resources. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to us in assessing impacts on agriculture and farmland. Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resource Agency, to non-agricultural use?

No Impact. The lands planned for development by the proposed General Plan do not include prime farmlands or important agricultural resources. Thus no impacts are anticipated.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The lands planned for development by the proposed General Plan do not include any land zoned for agriculture or land subject to a Williamson Act contract. Thus no impacts are anticipated.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agriculture?

No Impact. The lands planned for development by the proposed General Plan are not adjacent to lands zoned for agriculture or lands subject to a Williamson Act contract. Thus no impacts are anticipated.

3. Air Quality. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant Impact. California is divided into 15 air basins for the purpose of managing the air resources of the State on a regional basis. Areas within each air basin are considered to share the same air masses and are therefore expected to have similar ambient air quality. Additionally, the State is divided into 35 Air Pollution Control Districts (APCD) and Air Quality Management Districts (AQMD), which are county or regional authorities that have primary responsibility for controlling air pollution. Air basin boundaries may fall within the jurisdiction of one or more APCD/AQMD.

Antioch is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the San Francisco Bay Area. The BAAQMD's Bay Area Clean Air Plans (CAPs) contain district-wide control measures to reduce carbon monoxide and ozone precursor emissions. The State standards for these pollutants are more stringent than the national standards. The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and from indirect sources (e.g., traffic associated with new development), and for monitoring ambient pollutant concentrations. Indirect sources are defined as facilities that do not have equipment that directly emits substantial amounts of pollution, but that attract large numbers of mobile sources of pollution. Direct emissions from motor vehicles are regulated by California Air Resources Board (CARB) and EPA.

Development pursuant to the proposed General Plan will result in an increased number of vehicle trips, leading to increased emissions of air pollutants. The potential of these increases to conflict with or obstruct implementation of applicable air quality standards within Antioch will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Potentially Significant Impact. Since 1970, air quality has been regulated at the Federal level under the Clean Air Act (CAA). This act authorized the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for air pollutants of nationwide concern. The EPA has established standards for six criteria air pollutants. These pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), suspended particulate matter (PM_{10}), and lead (Pb). $PM_{2.5}$ particulate matter has recently been added to this listing; however, data to document ambient conditions or quantify these emissions do not yet exist. Primary standards for air pollutants were established to protect public health, while secondary standards were established to protect the public welfare by preventing impairment of visibility and damage to vegetation and property.

In addition to more stringent ambient air quality standards than the corresponding NAAQS for the six criteria air pollutants, CARB has set state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health.

Regional Air Quality

The Federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in non-attainment or maintenance areas of the State.

The CARB oversees activities of local air quality management agencies, and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. The SIP is a plan that provides for implementation, maintenance, and enforcement of the NAAQS. CARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by CARB to classify air basins as "attainment" or "non-attainment" with respect to each pollutant and to areas that meet the NAAQS,

while non-attainment refers to areas that do not meet the AAQS. Maintenance areas refer to geographic areas that were once non-attainment but have shown recently that the areas are achieving the AAQS.

The Federal CAA prohibits Federal departments and agencies or other agencies from acting on behalf of the Federal government, and the Metropolitan Planning Organization (MPO) from engaging in, supporting in any way, providing financial assistance for, licensing, permitting or approving any activity that does not conform to the SIP.

The Association of Bay Area Governments (ABAG) is the MPO for Contra Costa County and the San Francisco Bay Area. Federal law requires that a proposed project conform to the SIP. The AQMP must be reviewed and approved by the EPA before it becomes part of the SIP. SIP status in the region is complex because of a combination of EPA-proposed action on the SIP and legal action by various parties.

Area Air Quality

The major pollutants of concern in the San Francisco Bay Area are ozone and carbon monoxide. There are no monitoring stations in Antioch; the monitoring station closest to the site is in Pittsburg, which measures ozone, carbon monoxide, NO_2, and PM_{10} levels. The Concord monitoring station, which is the next closest monitoring station, also measures PM_{10} (from 1996 to 2000). Pollutant monitoring results for the years 1996 to 2000 in Pittsburg and Concord indicate that air quality in the Contra Costa County area has generally been good. From 1996 to 1998, pollution levels at the Concord station have not exceeded the State PM_{10} standards more than three times in a calendar year, and have not exceeded Federal standards during the same period. State PM_{10} standards were exceeded 12 times in 1999 and 6 times in 2000 at the Pittsburg station. Between 1996 and 1998, federal PM_{10} standards were not exceeded at the Concord station. Federal and State carbon monoxide standards were not exceeded at the Pittsburg monitoring station during the 5-year period. Ozone levels have been lower than the federal standard at the Pittsburg monitoring station, and the State ozone standard was exceeded less than 5 days per year during the past 5 years of published data.

Table D – Ambient Air Quality Standards

Pollutant	Averaging Time	State	Federal	
			Primary	Secondary
Ozone (O_3)	1 Hour	0.09 ppm (180µg/m^3)	0.12 ppm (235 µg/m^3 uu	Same as Primary Standard
	8 Hours	0.08 ppm	0.08 ppm	
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.25 ppm (470 µg/m^3)	--	
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)	--
	1 Hour	20.0 ppm (23 mg/m^3)	35.0 ppm (40 mg/m^3)	--

Table D – Ambient Air Quality Standards

Pollutant	Averaging Time	State	Federal	
			Primary	Secondary
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m^3	--	--
	24 Hours	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	--	50 µg/m^3	
Suspended Particulate Matter (PM_{25})	Annual Arithmetic Mean	--	15 µg/m^3	--
	24 Hours	--	65 µg/m^3	--
Sulfur Dioxide (SO_2)	Annual Average	--	0.03 ppm (80 µg/m^3)	Same as Primary Standard
	24 Hours	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	
	3 Hours	--	--	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	--	--
Lead (Pb)	30-Day Average	1.5 µg/m^3	--	--
	Calendar Quarter	--	1.5 µg/m^3	Same as Primary Standard
Sulfates	24 Hours	25 µg/m^3	--	--
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	--	--
Vinyl Chloride (Chloroethene)	24 Hours	0.01 ppm (26 µg/m^3)	--	--
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m. PST)	**	--	

Note: ** In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with ARB Method V.

Source: CARB Fact Sheet 39, 1998.

Development pursuant to the proposed General Plan will result in an increased number of vehicle trips, leading to increased emissions of air pollutants. The potential of these increases to contribute substantially to existing or projected violations of applicable air quality standards will be analyzed in the General Plan EIR, and mitigation measures will be identified, where necessary, to address any significant impacts.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Potentially Significant Impact. Future development will be reviewed to ascertain potential project-specific air quality impacts and to ensure compliance with applicable standards, guidelines, rules, or practices mandated by the ABAG, the City, and/or the BAAQMD. Potential air quality impacts related to build out were previously addressed in the General Plan EIR. Development pursuant to the proposed General Plan will result in an increased number of vehicle trips, leading to increased emissions of air pollutants, including pollutants for which the air basin encompassing the City of

Antioch is in a state of non-attainment. The potential effects of these increased air pollutant emissions on existing and future development within Antioch will be analyzed in the General Plan EIR, and mitigation measures will be identified, where necessary, to address any significant impacts.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. Grading and construction activities associated with development of new uses pursuant to the General Plan will generate temporary increased levels of particulate matter and emissions from construction equipment. Subsequent to construction, an increase in air emissions will occur as a result of increased traffic volumes associated with operation of the proposed on-site uses, use of equipment, and off-site power and natural gas consumption. Residences, schools, and parks would be considered receptors sensitive to air emissions generated during the construction and occupation of new housing developments. Future development will be reviewed to ascertain potential project-specific air quality impacts and to ensure compliance with applicable standards, guidelines, rules, or practices mandated by the ABAG, the City, and/or the BAAQMD. The potential exists for carbon monoxide "hot spots" to occur in localized areas of high traffic congestion, thereby affecting sensitive population groups. The impacts of these hot spots can be reduced through standard traffic mitigation measures (e.g., decreasing peak hour trips). Also, sensitive receptors may be exposed toxic air contaminants, such as might be emitted from factories. The potential effects, if any, of increased exposure on sensitive population groups will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) Would the project create objectionable odors affecting a substantial number of people?

Potentially Significant Impact. Potential odors associated with the proposed project would result from the application of asphalt and paint during future development. Any such odors, if perceptible, would be of limited duration. While no significant impacts related to odors are anticipated, the General Plan EIR will identify any existing problems and analyze proposed changes in land use that could increase the exposure of people to objectionable odors. Mitigation measures, where necessary, will be identified to address any significant impacts.

4. Biological Resources. Would the project:

a) Have a substantial adverse effect, either directly or indirectly or through habitat modification, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Potentially Significant Impact. In Antioch, variation in topography, soil, and drainage create conditions for a variety of natural communities, each with its own assemblage of native plant and animal species. Although it is largely urbanized, portions of remaining undeveloped lands contain vegetation and habitat types the California Department of Fish and Game considers rare and worthy of consideration in the California Natural Diversity Data Base:

- Native grasslands
- Vernal pools
- Stabilized interior dunes
- Seasonal wetlands
- Freshwater seeps
- Freshwater marshes

- Coastal brackish marshes
- Alkaline floodplains
- Alkali seeps
- Valley oak woodlands
- Riparian woodland

These habitats include species that are listed as "endangered" or "threatened" under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA) or that have been "proposed" or are "candidates" for such listing. These also include species that are listed as "endangered," "threatened," or "rare" under the CESA or that have been petitioned (i.e., are "candidates") for listing. Each of these species warrants intensive analysis for purposes of project review under the CEQA. Any potential project impacts to these species may involve permitting or other compliance requirements under CEQA.

To ensure that significant impacts to sensitive biological resources do not occur, future development of residential uses will be in accordance with applicable City standards and guidelines, and CESA and FESA, as well as the requirements mandated during the environmental review of individual projects. Although areas containing significant biological resources are protected by General Plan policies related to sensitive biotic resources, there is still the potential to affect these areas through development activity. Significant, widespread impacts are not anticipated; however, the effects of the updated Antioch General Plan on biological resources will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Potentially Significant Impact. Although riparian habitats are protected by General Plan policies related to sensitive biotic resources, there is still the potential to affect these areas through development activity. Significant, widespread impacts are not anticipated; however, the effects of the updated Antioch General Plan build out on riparian habitat areas will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

Potentially Significant Impact. Please refer to responses 4(a) and 4(b).

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native or resident migratory wildlife corridors, or impeded the use of native wildlife nursery sites?

Potentially Significant Impact. Wildlife within the Antioch General Plan study area is diverse. There are policies provided in the proposed General Plan update to protect habitat linkages, and to mitigate the potential impacts of development on these linkages, as well as the species using these dispersal areas. To ensure that significant impacts to wildlife corridors, nursery sites, or native resident/migratory wildlife populations do not occur, development of residential uses will be in accordance with applicable City, State, and Federal standards and guidelines, as well as the

requirements mandated during the environmental review of individual projects. The General Plan EIR will address the potential impacts of General Plan build out, as well as the effectiveness of proposed preservation policies and plans in relation to these areas. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Potentially Significant Impact. Please refer to Response 4(d).

f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?

No Impact. There are no adopted habitat conservation plans or natural community conservation plans affecting the General Plan study area.

5. Cultural Resources. Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?

Potentially Significant Impact. Cultural resources are places, structures, or objects that are important for scientific, historic, and/or religious reasons to cultures, communities, groups, or individuals. Cultural resources include historic and prehistoric archaeological sites, architectural remains, engineering structures, and artifacts that provide evidence of past human activity. They also include places, resources, or items of importance in the traditions of societies and religions.

Prehistoric cultural resources in the San Francisco Bay region tend to be located near sources of fresh water, along the bay shore, and in the hills of Contra Costa County. A records search indicated that eight prehistoric archaeological sites have been recorded within the Antioch General Plan area. Therefore, it is likely that additional unidentified prehistoric cultural resources exist within the Antioch area. Antioch is home to a variety of historical resources, ranging from landmark commercial buildings to Victorian, Craftsman, and Modern-style homes to churches, schools, and civic buildings. The City and environs also contain historical archaeological deposits associated with homes, farms, ranch sites, and industrial activities. Twenty historical archaeological sites are recorded within the study area. The Antioch waterfront is a distinctive resource both on- and off-shore. Numerous shipwrecks are mapped on topographic maps and one submerged vessel is listed with the California State Lands Commission.

Fifty-six of Antioch's historical buildings and four monuments to vanished sites are listed on national, State, and local registers of historic properties and landmarks.

CEQA Guidelines Section 15064.5 defines historic resources as any object, building, structure, site, area, place, record, manuscript or other resource listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historic resources, or the lead agency. Generally a resource is considered to be "historically significant" if it meets one or more of the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of important persons in the past;
- It embodies the distinctive characteristics of a type, period, region or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important in prehistory or history.

Because Antioch is known to have been visited and permanently inhabited by Euro-Americans since the 18th century, significant historic structures (or their ruins) may exist within the City, along with other historic resources that have yet to be identified. Although Antioch and the proposed General Plan have policies to protect the disturbance of, and minimize adverse impacts on, historic resources, the potential exists for significant impacts to historic resources to occur as a result of individual public and private development projects. The General Plan EIR will address this issue, along with the effectiveness of current policies. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to ' 15064.5?

Potentially Significant Impact. According to State CEQA Guidelines (Section 15064.5) and Public Resources Code (Sections 21083.1 and 21083.2), the proposed project would be considered to have a significant impact if it would cause a substantial adverse change in the significance of a unique archaeological resource (e.g., an artifact, object, or site about which it can be clearly demonstrated that, without merely adding the current body of knowledge, there is a high probability that it contains information needed to answer important scientific research questions, has a special and particular quality such as being the oldest or best available example of its type, or is directly associated with a scientifically recognized important prehistoric or historic event or person).

Given the amount of undisturbed land that remains available for development, impacts upon archaeological resources could result from General Plan implementation in the form of individual private development and public works projects, even though Antioch maintains policies to protect and minimize any adverse impacts on archaeological resources. Such potential impacts, as well as the effectiveness of proposed General Plan policies will be addressed in the General Plan EIR. Mitigation will be identified, where necessary, to address any significant impacts.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Potentially Significant Impact. Fossils (non-renewable paleontological resources) are very important for dating sedimentary rocks, and thus determining the time of movement of faults against which those sediments lie. Numerous fossils have been collected from the Antioch Planning Area. A fossil locality search at the CAS identified marine fossils collected from almost all of the sedimentary formations located in Antioch. Literature review indicated that all of the formations north of Mt. Diablo contain fossils. At least eight fossil localities occur within and immediately adjacent to the Antioch Planing Area and another five are within a one-mile radius of the Planning Area. Fossils in

the Planning Area identified by UCMP include mammoths, primitive horses, bison, rats, beaver-type creatures, and sloths.

Based on the soil types within Antioch and previous paleontological studies, paleontological resources are known to be present within unincorporated areas. Due to the amount of undisturbed land remaining, it is possible that there will be impacts upon paleontological resources as a result of General Plan implementation in the form of individual private development and public works projects.

The proposed General Plan will contain policies to protect and minimize any adverse impacts on paleontological resources. Any such potential impacts, as well as the effectiveness of these policies will be analyzed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. In the event human remains are discovered, Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendent (MLD). With the permission of the landowner or his/her authorized representative, the descendent may inspect the site of the discovery. The descendent is required to complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Adherence to applicable State requirements related to the disturbance, identification, and removal of human remains will reduce potential impacts related to this issue to a less than significant level.

6. Geology and Soils. Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidences of known fault? Refer to Division of Mines and Geological Special Publication 42.

No Impact. There are no faults subject to the Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) within Antioch. Although no known active faults are located within the Planning Area, several major faults are located within a few miles. Historically active faults (exhibiting evidence of movement in the last 200 years) in Contra Costa County include the Hayward, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville faults. The largest regional fault, the San Andreas Fault, is located approximately 45 miles west of Antioch.

ii) Strong seismic ground shaking?

Potentially Significant Impact. Eastern Contra Costa County, as well as the San Francisco Bay Area as a whole, is located in one of the most seismically active regions in the United States. Major earthquakes have occurred in the vicinity of Antioch in the past, and can be expected to occur again in the near future. The 1999 Working Group on California Earthquake Probabilities estimated that there is a 70 percent probability of at least one magnitude 6.7 or greater earthquake to occur on one of the major faults within the San Francisco Bay region before 2030. Furthermore, they determined that there is a 30 percent chance of one or more magnitude 6.7 or greater earthquakes occurring somewhere along the Calaveras, Concord-Green Valley, Mount Diablo Thrust, and Greenville Faults before 2030.

The intensity of ground shaking that would occur in Antioch as a result of an earthquake in the Bay Area is partly related to the size of the earthquake, its distance from the City, and the response of the geologic materials within the Planning Area. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site, the greater the intensity of ground shaking. ABAG has mapped the distribution of ground shaking intensity. Ground shaking intensity is described using the Modified Mercalli Scale, which ranges from I (not felt) to XII (widespread devastation). A large earthquake on the Concord-Green Valley fault is projected to produce the maximum ground shaking intensities in Antioch with Modified Mercalli intensity IX (damage to buried pipelines and partial collapse of poorly-built structures) in Bay Mud deposits along the San Joaquin River, north of SR-4. Strong ground shaking of Mercalli intensity VII would occur locally along creek beds in inland portions of Antioch; however, the major portion of the Planning Area is projected to experience ground shaking of intensity VII on the Modified Mercalli scale, which is associated with non-structural damage. A large earthquake on the Hayward fault is projected to produce ground shaking intensities of Mercalli VIII along the San Joaquin River, north of SR-4, and less intense ground shaking in upland areas.

Located within a seismically active region, Antioch is subject to ground shaking effects associated with regional seismic events. Seismic activity along regional faults may have ground shaking effects within the City's boundaries. Development of new structures within the City will be designed and constructed in accordance with requirements of the latest edition of the Uniform Building Code (UBC) and applicable Antioch requirements.

The potential effects of ground shaking on existing and future development within unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing risks from seismic hazards. Mitigation measures will be identified, where necessary, to address any significant impacts.

iii) Seismic-related ground failure, including liquefaction?

Potentially Significant Impact. Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake ground shaking. The area directly adjacent to the San Joaquin River has a high to very high potential for liquefaction. Upland areas away from the river have a very low to moderate potential for liquefaction.

Due to regional seismic activity, secondary seismic impacts, such as soil settlement and/or subsidence and liquefaction, may occur in various portions of the City. New development within the City will be designed and constructed to meet the most current seismic safety standards for liquefaction included in the UBC and/or standards established by the City. The potential effects of these types of ground

failure on existing and future development within the unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing risks from these secondary seismic hazards. Mitigation measures will be identified, where necessary, to address any significant impacts.

iv) Landslides?

Potentially Significant Impact. The strong ground motion that occurs during earthquakes can induce landslides, generally where unstable slope conditions already exist. Most of the southwest corner of the Planning Area is susceptible to landslides with the majority of slopes considered to be moderately unstable. These areas are identified in the General Plan Safety Element as generally not being available for development. In addition, specific mitigation requirements are set forth in the General Plan.

Portions of the City are located in hillside areas that could be subject to potential landslides or mudslides. New developments will be designed and constructed to meet the most current landslide safety standards included in the UBC and/or standards established by the City. The UBC establishes specific-site investigation requirements and defines various standards by which hillside projects are assessed. The potential effects of slope failure on existing and future development within unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing risks from landslide hazards. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Result in substantial soil erosion or the loss of topsoil?

Potentially Significant Impact. The susceptibility of soils to erosion varies depending on the location, base material, topography, surrounding environment (e.g., natural cover or paved surfaces), and the level of ground disturbance activities. Certain lands within the City are subject to potential impacts from erosion or loss of topsoil due to natural and/or man-made conditions. Compliance with National Pollution Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPP) requirements as well as common construction and grading practices will be required. The potential effects of erosion or loss of topsoil related to existing and future development within unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing associated risks. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse?

Potentially Significant Impact. See responses to questions 6(a) and 6(b). Soils prone to collapse are commonly associated with man-made fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods. When saturated, collapsible soils undergo a rearrangement of their grains and the water removes the cohesive (or cementing) material, and a rapid, substantial settlement may occur. Lateral spread is the lateral displacement of surficial blocks of sediment as the result of liquefaction in a subsurface layer. The potential effects of landslide, lateral spreading, subsidence, liquefaction or collapse on existing and future development within unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan

policies aimed at reducing risks from these hazards. Mitigation measures will be identified, where necessary, to address any significant impacts.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Potentially Significant Impact. Expansive soils have a significant amount of clay particles that can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The occurrence of these soils is often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed, and they can occur in hillside areas as well as low-lying alluvial basins. Expansive soils, as defined in Table 18-1-B of the UBC (1994), are known to exist within Antioch. If not managed properly, these soils could pose a significant risk to life and property. The potential effects of expansive soils on existing and future development within unincorporated areas will be analyzed in the General Plan EIR, along with the effectiveness of proposed General Plan policies aimed at reducing risks from these hazards. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. Future development within the City will generally utilize municipal sewer systems. As a result, there will be no impacts related to this issue.

7. Hazards and Hazardous Materials. Would the project:

a) Create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials?

Potentially Significant Impact. The potential release of hazardous materials along roadways is an on-going condition that is regulated by Federal, State, and local regulations. This condition will exist with or without the proposed project. Incidental amounts of hazardous materials may be utilized during the construction and/or occupation of new residential units. Every home, business, and industry uses or produces, to some extent, flammable, hazardous, and/or toxic materials. The potential for accidental explosion or release of hazardous substances from existing and future industries Antioch exists, but is not anticipated to be higher than is typical for any other location in Northern California. Within Antioch, the highest potential for an inadvertent hazardous substance release is a vehicular accident on the State Route 4 freeway.

The use, storage, and manufacture of hazardous materials are highly regulated by the State and Federal governments, as well as by local regulations. While it is not anticipated that the implementation of the proposed General Plan will result in significant environmental impacts relative to the accidental release of hazardous materials and/or hazardous wastes, to ensure that significant impacts do not result, the General Plan EIR will address the issue of these risks, as well as the risks associated with the transportation of hazardous materials throughout the City. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Potentially Significant Impact. Please refer to response 7(a). Virtually any land use has some utilization of or association with toxic and/or hazardous substances. These substances may include petroleum products, paints, household cleaners, solvents, pesticides, and herbicides. The toxicity of such substances varies. It is anticipated that the nature and quantity of materials utilized will be typical of those of residential, commercial, industrial, and other uses permitted by the proposed General Plan. SR-4 is a hazardous materials/hazardous waste transportation route, connecting eastern Contra Costa County to the Central Valley, the San Francisco Bay area, and the rest of the State and nation. The transport of hazardous materials is highly regulated by the State and Federal governments.

While it is not anticipated that the implementation of the proposed General Plan will result in significant environmental impacts relative to the accidental release of hazardous materials and/or hazardous wastes, to ensure that significant impacts do not result, the General Plan EIR will address the issue of these risks, as well as the risks associated with the transportation of hazardous materials throughout the City. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Potentially Significant Impact. The siting of school facilities is determined by individual school districts, based on criteria established by the State Department of Education. While Antioch can regulate the location of industrial uses within its municipal boundaries, it cannot control the actions of local school districts in siting new schools. As a result, the potential for significant impacts on school facilities resulting from hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of a school will be addressed in the General Plan EIR. Mitigation measures, where necessary, will be identified to address any significant impacts.

d) Be located on site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Potentially Significant Impact. The proposed General Plan provides for the use and reuse of hazardous materials sites identified pursuant to Government Code Section 675962.5. As a result, the potential exists for creating a potentially significant hazard for people residing or working in the area. This issue will be addressed in the General Plan EIR. Mitigation measures, where necessary, will be identified to address any significant impacts.

e) For a project located within an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. None of the General Plan study area is located within two miles of an airport.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. Please refer to Response 7(d). None of the General Plan study area is located within two miles of a private airstrip.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Potentially Significant Impact. Adopted emergency response plans and emergency evacuation procedures of the City of Antioch are not expected to be substantially affected by the adoption or implementation of the proposed General Plan. To ensure that significant impacts do not result, an assessment of the adequacy of emergency response and evacuation plans and potential impacts on these plans will be included in the General Plan EIR. Mitigation measures will be identified, where feasible, to address any significant impacts.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires including where wildlands are adjacent to urbanized areas or where residents are intermixed with wildlands?

Potentially Significant Impact. Areas of potential wildland fire hazard exist within the southern, mostly currently unincorporated portions of the General Plan study area, including rural, hilly terrain, as well as the areas adjacent to or covered by natural grasslands and brush. New development within or near these areas may expose additional persons to hazardous conditions. Additionally, there is the potential for an increase in the occurrence of fire in these areas due to increasing population and the fact that a majority of wildland fires is caused by human carelessness. The General Plan EIR will address exposure to hazards affecting existing and future development within the study area. Mitigation measures will be identified, where feasible, to address any significant impacts.

8. Hydrology and Water Quality. Would the project:

a) Violate any water quality standards or waste discharge requirements?

Less than Significant Impact. Under Section 402 of the Clean Water Act, the Regional Water Quality Control Board (RWQCB) issues NPDES permits to regulate waste dischargers to "waters of the nation." Waters of the nation include rivers, lakes, and their tributary waters. Waste discharges include discharges of stormwater and construction project discharges. A construction project resulting in the disturbance of 5 or more acres requires a NPDES permit. Construction project proponents are required to prepare a SWPPP. Through the City's environmental review process, future residential development would be evaluated on an individual basis for potential violation of water quality standards or waste discharge requirements as it is proposed. By following Best Management Practices (BMPs) as specified by the NPDES permit and an approved SWPPP during construction, potential impacts associated with this issue will be reduced to a less than significant level.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater re-charge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a

level which would not support existing land uses or planned uses for which permits have been granted)?

Potentially Significant Impact. New development that occurs within the Antioch General Plan study area has the potential to increase the use of groundwater and cause changes in absorption rates. It is thus possible that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. These issues will be addressed by the General Plan EIR and, where necessary, mitigation measures will be identified to address any significant impacts.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or situation on- or off-site?

Potentially Significant Impact. New development consistent with the proposed General Plan will be required to adhere to standard practices designed to prevent erosion and siltation during the construction phase. In new developments, local drainage facilities would be constructed by developers in accordance with master plans of drainage to connect with the City's storm drain system minimizing the potential of flooding. Nevertheless, new development that occurs within the Antioch General Plan study area has the potential to alter existing drainage patterns, streams and rivers. Such modified patterns could result in substantial erosion or soil deposition. These issues will be addressed by the General Plan EIR and, where necessary, mitigation measures will be identified to address any significant impacts.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Potentially Significant Impact. Please refer to the response 8(c).

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Potentially Significant Impact. New construction anticipated by the proposed General Plan would increase the amount of surface coverage; therefore, the total volume of surface water runoff would be increased by the proposed project. Increases in runoff resulting from the introduction of impervious surfaces by new development may exceed the capacity of existing and future storm drain and flood control facilities. The proposed General Plan contains policies to avoid such impacts. The effectiveness of such policies to eliminate significant impacts will be addressed in the General Plan EIR. Mitigation measures, where necessary, will be identified to address any significant impacts.

f) Otherwise substantially degrade water quality?

Potentially Significant Impact. Each new development project that would occur pursuant to the provisions of the General Plan will be evaluated on an individual basis regarding degradation of water quality, including implementation of NPDES permits. In addition, each new development project will obtain all required permits and adhere to any other applicable measures to ensure water quality. Due to urban runoff from developed properties, impacts to groundwater quality could occur as a result of General Plan build out. This urban runoff contains contaminants (heavy metals, pesticides, etc.) that may or may not percolate into the groundwater. This issue will be analyzed by the General

Plan EIR, and mitigation measures will be identified, where necessary, to address any significant impacts.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazards delineation?

No Impact. Future development in conjunction with the General Plan Update may occur in areas that lie within a 100-year flood zone. However, continuing flood control improvements will reduce potential flood hazards. In addition, development in areas with flood hazards will be subject to all applicable floodplain development guidelines to limit the personal and property damage that may occur due to flooding and inundation, including a prohibition in the General Plan against development that is subject to the 100-year flood. Each new development would be evaluated on an individual basis and would be required to comply with uniform building codes and regulations.

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

No Impact. Please refer to the response 8(g).

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less than Significant Impact. Existing drainage courses will generally be maintained as riparian corridors, thereby maintaining an important filtration path. Required drainage improvements will be installed per applicable requirements of the City and/or Contra Costa County Flood Control District. In addition, performing routine maintenance to existing flood control systems will reduce associated risk.

j) Result in inundation by seiche, tsunami, or mudflow?

Less than Significant Impact. Earthquakes can cause tsunamis ("tidal waves") and seiches (oscillating waves in enclosed water bodies). There are no enclosed bodies of water in the vicinity of the Planning Area that would be affected by seiches. Low-lying portions of the City adjacent to the San Joaquin River could be affected by a tsunami. However, projected wave height and tsunami run-up is expected to be small in the interior portions of the San Francisco Bay and the Delta. Some coastal inundation and damage could occur in Antioch if a tsunami coincided with very high tides or an extreme storm. The design, construction, placement, and maintenance of any water retention/detention facility will adhere to applicable City, UBC standards, and/or previously referenced flood/erosion control requirements. Therefore, potential impacts associated with seiche or mudflows will be reduced to a less than significant level.

9. Land Use and Planning. Would the project:

a) Physically divide an established community?

Less Than Significant Impact. Development anticipated by the General Plan Update would involve development of vacant land and underutilized land. The proposed project would involve a change in land use from vacant land to urban residential use. Such development will complete existing

residential neighborhoods, but will not significantly divide any community or reduce access to community amenities. Project impacts are therefore considered less than significant. No mitigation measures are required.

b) Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. Development anticipated by the General Plan Update would be located on land designated for a variety of urban uses. Future development would be reviewed to determine compliance with the City's development standards. No significant impacts would result from the project development. No mitigation measures are necessary.

c) Conflict with any applicable habitat conservation plan or natural communities?

No Impact. Please refer to response 9(b).

10. Mineral Resources. Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

No Impact. None of the areas identified in the General Plan as available for new development contains known mineral resources that would be of value to the region and residents of the state.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. Please refer to the response 10(a).

11. Noise. Would the project:

Sound refers to anything that is or may be perceived by the ear. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 decibels (dB) or greater since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dB that are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

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1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dB that are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact. Development that occurs pursuant to the updated Antioch General Plan will result in increased traffic, leading to increased noise levels along affected roadways. The potential effects of increased noise and the relationship of future noise levels and relevant noise standards will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Would the project result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Potentially Significant Impact. The construction of new residential uses will require the use of earthmoving vehicles and construction equipment. The operation of this equipment will temporarily increase the potential for ground borne vibration and/or noise. Potential ground borne noise/vibration impacts resulting construction of new uses envisioned by the General Plan Update will be short-term. This issue will be evaluated as part of the environmental review of future residential development. Construction activities associated with new residential development will be required to comply with applicable City standards regarding the generation of ground vibration or ground borne noise. Adherence to these measures will reduce impacts associated with this issue to a less than significant level.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact. As part of the alternatives analysis of the General Plan EIR, comparisons will be made of the projected impacts of the proposed project (General Plan update) and the "no project" alternative (no future development and build out of the existing General Plan) with respect to ambient noise. Mitigation measures, where necessary, will be identified to address any significant impacts.

d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact. Development that occurs pursuant to the updated Antioch General Plan will result in temporary construction activities, leading to temporary increases in noise levels. The potential effects of these temporary increases in noise and their relationship to relevant noise standards will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) For a project located within an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. None of the lands suitable for development identified in the proposed General Plan are within two miles of a public airport or public use airport.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. Please refer to Response 11(e).

12. Population and Housing. Would the project:

a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

Potentially Significant Impact. A General Plan is, by definition, growth-inducing in that it provides a plan for accommodating future increases in population, housing, and employment. It also provides a plan for ensuring that adequate infrastructure is available to serve that growth. The effects of the growth that will be induced by the proposed General Plan will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. Future developments anticipated by the General Plan Update would be constructed on vacant and underutilized land within the City, and does not displace existing housing. No significant impacts would occur as a result of the proposed project.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. Please refer to the response 12(b).

13. Public Services. Would the project affect:

a) Fire Protection?

Potentially Significant Impact. New development facilitated by the General Plan will be served by the Costa County Fire Protection District, and may require improvements to existing facilities or increases in staffing and equipment. The General Plan sets performance standards for the provision of fire protection services. New development will be required to comply with the fire protection standards of the City's General Plan Growth Management Element and Public Services and Facilities Element. Implementation of the proposed General Plan will increase demand for fire protection and may require the construction of new fire stations. Antioch's existing fire protection system and its capacity to support future growth will be reviewed to determine if the services and facilities will be sufficient to support additional demand. These potential impacts on fire protection services will be

addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

b) Police Protection?

Potentially Significant Impact. New development facilitated by the General Plan will be served by the Antioch Police Department, and may require improvements to existing facilities or increases in staffing and equipment. The General Plan sets performance standards for the provision of police protection services. New development will be required to comply with the police protection standards of the City's General Plan Growth Management Element and Public Services and Facilities Element. Implementation of the proposed General Plan will increase demand for fire protection and may require the construction of new fire stations. Antioch's existing police services and their capacity to support future growth will be reviewed to determine if the services and facilities will be sufficient to support additional demand. These potential impacts on fire protection services will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Schools?

Potentially Significant Impact. Development of additional housing is provided to meet anticipated population growth, therefore increasing the demand on schools. Additional facilities and staffing may be necessary to accommodate the growth. Payment of fees and compliance with the requirements of local school districts will mitigate the impacts of development that might occur pursuant to the proposed Housing Element.

d) Parks?

Potentially Significant Impact. New development facilitated by the General Plan will be served by City of Antioch park facilities and recreation services, and may require improvements to existing facilities or increases in staffing and equipment. The General Plan sets performance standards for the provision of park facilities. New development will be required to comply with the standards of the City's General Plan Growth Management Element and Public Services and Facilities Element. Implementation of the proposed General Plan will increase demand for park facilities, and may require the construction of parks. Antioch's existing park system and its capacity to support future growth will be reviewed to determine if the services and facilities will be sufficient to support additional demand. These potential impacts on park facilities will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) Other Public Facilities?

Potentially Significant Impact. Implementation of the proposed General Plan will increase demand for public services and may require the construction of new governmental facilities to serve a growing unincorporated population. The ability of governmental facilities serving the City of Antioch to support future growth will be analyzed. Mitigation measures will be identified, where necessary, to address any significant impacts.

14. Recreation. Would the project:

a) Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Potentially Significant Impact. See response 13(d).

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical affect on the environment?

Potentially Significant Impact. See response 13(d).

15. Transportation/Traffic. Would the project:

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

Potentially Significant Impact. The land use changes proposed as part of the updated Antioch General Plan will result in an increased number of vehicle trips, which may lead to potential traffic congestion beyond that addressed in existing adopted plans and policies. The effects of traffic on existing and future development within the study area will be analyzed in the General Plan EIR, and mitigation measures will be identified where necessary, to address significant impacts.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Potentially Significant Impact. The increased traffic referred to in response to Question 15(a) has the potential to exceed applicable City growth management and County Congestion Management Plan level of service standards. Future levels of service resulting from the traffic that will be generated by implementation of the new General Plan will be addressed, and mitigation measures will be identified where necessary, to address significant impacts.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Less Than Significant Impact. There are no airports within or adjacent to the General Plan study area. The anticipated amount of development would not result in any changes to air traffic patterns, nor would the anticipated amount of development result in any substantial safety risks related to aircraft traffic. No mitigation measures are necessary.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. All future roadway development occurring pursuant to the provisions of the General Plan will adhere to applicable standards of Antioch pertaining to roadway design. Use of roadways within the City will be required to adhere to applicable provisions of the State Vehicle and/or Streets and Highway Codes. Adherence to these standards would reduce any potential impacts related to this issue to a less than significant level.

e) Would the project result in inadequate emergency access?

No Impact. The roadway network will be designed, constructed, and maintained to ensure that adequate and efficient emergency access is maintained. Future development within the City will be required to adhere to applicable emergency access/evacuation guidelines promulgated by the Antioch Police Department, Contra Costa County Fire Protection District, and/or other responsible entity; therefore, no impacts associated with this issue are anticipated.

f) Would the project result in inadequate parking capacity?

Less than Significant Impact. Development anticipated by the General Plan Update involves the construction of residential, commercial, industrial, institutional, and other types of development projects. Each development will be required to adhere to all applicable City of Antioch parking standards. Adherence to these standards will reduce potential parking impacts to a less than significant level. No mitigation measures are necessary.

g) Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Less than Significant Impact. Section 65089(b)(3)(A) of the Government Code requires, "trip reduction and travel demand element that promotes alternative transportation methods, including, but not limited to, carpools, vanpools, transit, bicycles, and park-and-ride lots; improvements in the balance between jobs and housing; and other strategies, including, but not limited to, flexible work hours, telecommuting, and parking management programs." The Contra Costa County Transportation Commission has also facilitated implementation of a number of Transportation Demand Management (TDM) projects, in cooperation with Caltrans, local agencies, and adjoining counties. These efforts reduce reliance on the single occupant vehicle. All future development projects occurring pursuant to the provisions of the proposed General Plan will adhere to all applicable policies, plans, and programs Antioch has in place to support alternative modes of transportation. Adherence to such policies, regulations, and standards would reduce potential impacts to below a level of significance.

16. Utilities and Service System. Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. The City is responsible for collection of wastewater and maintenance of local sewer lines. The Delta Diablo Sanitation District (DDSD) provides sewer treatment service to Antioch, as well as to Pittsburg and Bay Point. Expansion of current facilities at the DDSD wastewater treatment plant was finished in 1990, increasing capacity from 13.5 mgd to 16.5 mgd. The next planned expansion will increase the plant capacity from 16.5 mgd to 22.5 mgd; however, DDSD estimates that this additional capacity will not be needed until after 2008.

Implementation of the proposed General Plan will result in additional demand for sewage treatment services for unincorporated communities. These increased demands could result in the need for

construction of treatment facilities and treatment capacity in excess of that currently permitted by applicable regional water quality board; however, any expanded facilities will be required to meet the treatment requirements of the Regional Water Quality Control Board. Therefore, no impact is anticipated.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Potentially Significant Impact. As noted in response to Question 16(a), implementation of the proposed General Plan will increase demand for water and wastewater treatment facilities, and may require the construction of new facilities. Depending upon the location of these new facilities, it is possible that their construction could result in adverse physical effects on the environment. These potential physical effects will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Potentially Significant Impact. Implementation of the proposed General Plan will result in the need for new drainage and flood control facilities. Depending upon the location of these new facilities, it is possible that their construction could result in adverse physical effects on the environment. These potential physical effects will be addressed in the General Plan EIR. Mitigation measures will be identified, where necessary, to address any significant impacts.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Potentially Significant Impact. Antioch's two principal sources of water are the San Joaquin River and the Contra Costa Water District (CCWD). CCWD supplies the City with raw water obtained from the Sacramento-San Joaquin Delta and delivers it to Antioch via the Contra Costa Canal. In addition to CCWD water, Antioch has the right to divert water directly from the San Joaquin River, and has a pumping plant for this purpose. In the last several years the City has increased the amount of water pumped from the San Joaquin River to approximately 9,000 acre-feet, a level that is approaching the amount purchased annually from CCWD.

Although CCWD does not impose daily entitlements for water on the City, there is a physical limitation on the amount of water that can be delivered through the Contra Costa Canal. Daily deliveries are based on the daily estimates provided by each raw water customer, and the Canal operates at close to peak capacity during peak hours and the summer.

In 2001, CCWD began construction of a new multi-purpose pipeline linking the Randall-Bold Treatment Plant in Oakley with the Central County Treated Water Service Area. The new pipeline will be used to transport either treated or raw water east or west, depending on conditions and needs, and will enable CCWD to meet projected demands for the CCWD service area through 2040.

Water that the City can pump from the San Joaquin River is not limited by an allotment or contract, but by the water quality of the River. Water quality in the San Joaquin River near Antioch varies during the course of a year. Generally, the water quality is best during the spring when winter snows have thawed and the salinity of the River is at a minimum. However, the City cannot rely on the quality of this water supply from month-to-month.

Implementation of the proposed General Plan will result in additional demand for water supplies. These increased demands could exceed existing entitlements and available resources, and require area water agencies to obtain new supplies or entitlements. The General Plan EIR will address existing water supply availability, projected future supplies, and the ability of area water agencies to accommodate increased demand associated with build out of the proposed General Plan. The General Plan EIR will address impacts on water supplies. Mitigation measures will be identified, where necessary, to address any significant impacts.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Potentially Significant Impact. Please refer to the response 16(b).

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. Solid waste collection is a "demand-responsive" service and current service levels can be expanded and funded through user fees without difficulty. Future development will also coordinate with a certified waste hauler to develop curbside collection of recyclable materials within the City. All future development within the City will be required to comply with applicable elements of the California Solid Waste Reuse and Recycling Access Act of 1991. The volume of solid waste generated by the anticipated housing units set forth by the General Plan Update is not anticipated to adversely impact landfills or other solid waste disposal facility. Where needed, appropriate mitigation measures will be required to reduce potential impacts to a level that is less than significant.

g) Comply with Federal, State, and local statutes and regulations related to solid waste?

No Impact. All new development related to the General Plan update will be required to comply with federal, state, and local solid waste requirements. Therefore, no impacts are anticipated.

17. Mandatory Findings of Significance

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant Impact. As noted in the detailed responses that precede this question, the updated Antioch General Plan has the potential to result in significant impacts on biological

resources. In addition, future development within the General Plan study area has the potential to affect cultural resources that serve as examples of California history or prehistory. The General Plan EIR will address this issue, and mitigation measures will be identified, where feasible, to avoid and/or reduce any significant impacts.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potentially Significant Impact. The proposed General Plan will define the extent of future development within the City of Antioch. If development within the City were to progress at or near the maximum extent allowed under the City's General Plan and surrounding agencies (e.g., Contra Costa County, cities of Pittsburg, Oakley, and Brentwood) also had development progress at or near the maximum extent allowed under their General Plans, cumulative impacts could occur. An assessment of the cumulative impacts of the update Antioch General Plan and adjacent jurisdictions will be conducted, and mitigation measures will be identified in the General Plan EIR to reduce and/or eliminate potentially significant cumulative impacts.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact. Increases in traffic-related noise and air pollutant emissions, alteration of existing viewsheds, potential seismic and flooding hazards, and the introduction of new lighting and glare sources may have effects on the existing and future residents within the City of Antioch. In addition, air pollutant emissions associated with the implementation of the proposed General Plan may result in impacts to subregional and/or regional air quality. The General Plan EIR will assess the severity of these effects generated by the proposed project and identify mitigation measures to reduce and/or eliminate potentially significant impacts.

4.0 REFERENCES

Association of Bay Area Governments, *Projections 2002*.

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California Air Resources Board, 1997. Air Quality Attainment Plan for Ozone, PM_{10}, and Nitrogen Dioxides.

California Air Resources Board, 1997. State Implementation Plan for Ozone, PM_{10}, and Nitrogen Dioxides.

California Department of Finance, Population Projections, Stanley R. Hoffman Associates.

City of Antioch, 1988. *Antioch General Plan*, Printing 1994.

City of Antioch, 2002. *Draft General Plan.*

United States Geological Survey, *Ground Water Atlas of the US, Segment 1, California, Nevada.* http://capp.water.usgs.gov/gwa/ch_b/index.html.

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General Manager

April 21, 2003

RECEIVED
APR 23 2003
CITY OF ANTIOCH
COMMUNITY DEVELOPMENT

Ms. Nina Oshinsky
Community Development Department
City of Antioch
P.O. Box 5007
Antioch, CA 94531

Subject: City of Antioch General Plan Update
Black Diamond Mines Regional Preserve

Dear Ms. Oshinsky:

Thank you for providing the East Bay Regional Park District ("District") with the Notice of Preparation for the proposed City of Antioch General Plan Update. The following are the District's scoping comments for consideration in preparing the General Plan and EIR.

The District currently owns and/or operates a number of existing and planned park and trail facilities within and near the City of Antioch. These include the following:

- Black Diamond Mines Regional Preserve
- Contra Loma Regional Recreation Area
- Big Break Regional Shoreline
- Antioch-Oakley Fishing Pier
- Delta-DeAnza Regional Trail
- Contra Loma to Marsh Creek Trail (planned)

All of these facilities have the potential to be affected by the proposed project and should be identified and evaluated for potential impacts in the subject General Plan and EIR. In particular, we are concerned about a number of large proposed residential and commercial developments in southern Antioch and unincorporated Contra Costa County, which are being considered for development under the proposed General Plan Update. These include the following proposed projects:

- Sand Creek Specific Plan area
- Roddy Ranch property
- Ginochio Ranch property

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TEL 510 635-0135 FAX 510 569-4319 TDD 510 633-0460 www.ebparks.org

As you may be aware, the District submitted extensive comments on the proposed Sand Creek Specific Plan and EIR in late 2002. Subsequently, the Antioch City Council directed staff to withdraw the EIR for the Specific Plan and to instead prepare a program-level EIR on the proposed developments in the Sand Creek Valley. In our earlier comments on the Specific Plan and EIR, we identified a number of inconsistencies between the current General Plan and the proposed land use policies of the proposed Specific Plan. It would now appear that with the proposed General Plan Update that the City has the opportunity to address land use questions in southern Antioch in the appropriate manner, starting with the General Plan, then the Specific Plan at a program-level, and concluding with specific project-level review of proposed developments. In this respect, the General Plan Update can provide for appropriate land use policies in the southern Antioch area that are responsive to the numerous concerns raised by the District in its earlier comment letters on Sand Creek.

Aesthetics: The General Plan needs to contain policies that provide for the protection of existing view sheds both from development looking towards open space and from open space looking towards development. For example, we identified a number of potentially significant impacts to Black Diamond Mines from development in the Sand Creek Valley; however, these significant adverse impacts were not addressed or mitigated in the earlier EIR. Similar significant visual impacts would occur to Black Diamond Mines from development on the Roddy Ranch.

Agricultural Resources: The Initial Study incorrectly concludes that the proposed project would not involve changes in the existing environment that would result in the conversion of farmland to non-agricultural uses. As development moves south from Antioch towards agricultural lands in the Sand Creek Valley, it will place additional pressures on adjacent agricultural lands. This includes trespass, vandalism, illegal dumping, killing of livestock, etc, plus increased conflicts over noise, odors and other practices typical of agriculture. The General Plan needs to provide policies that protect existing agriculture from such areas by creating buffers, easements and other measures to protect such operations.

Biological Resources: The Initial Study correctly concludes that there will be a number of significant impacts to biological resources from build-out of the development contemplated in the General Plan Update. A number of these sensitive resources were identified in our comment letters on the Sand Creek EIR and they are directly relevant to this effort as well.

The Antioch City Council has voted not to participate in the East Contra Costa Habitat Conservation Plan (HCP). This planning effort has been underway for five years and will likely be completed and adopted prior to the completion of the General Plan Update. Therefore, the General Plan may, and likely will, conflict with this HCP. The East Contra Costa HCP takes a regional approach towards species conservation and recovery, it addresses the individual and cumulative effects of a number of developments, including Antioch's, and it provides a coordinated strategy for the mitigating the effects of development on the impacted species.

If, by contrast, the City of Antioch were to prepare its own City-wide HCP or project-by-project HCP's, there would be no way for such piece-meal efforts to meet the same objectives as the

regional HCP. As a result, the City would have no effective means of addressing or mitigating for cumulative and regional effects to such species as San Joaquin kit fox, red-legged frog and tiger salamander. Individual developments in the Sand Creek Valley, Roddy or Ginochio ranches would have a much greater chance of receiving a Jeopardy Opinion from the Fish and Wildlife Service who may deny critical permits for these large developments. Those projects that ultimately pass this difficult threshold would likely be held to a much higher mitigation standards and higher mitigation costs. Ultimately, such costs and delays would be passed on to new homebuyers and businesses. This may serve as a disincentive to development in these areas.

Cultural Resources: In our comments on the Sand Creek Specific Plan EIR, we raised a number of concerns about potential impacts to sensitive cultural resources at Black Diamond Mines. These include trespass and vandalism in the historic town sites and mines associated with the coal and sand mining of the larger area. There are a number of known and potential cultural resource sites in Sand Creek Valley and on the adjacent Roddy and Ginochio ranches. These undeveloped areas played an important part in the cultural history of the City of Antioch and the larger region. The General Plan Update and EIR need to identify these sites, protect those that remain and mitigate for the loss of those sites that are ultimately developed.

Geologic Hazards: The Initial Study is silent of the effects of the historic mines as a geologic hazard and a public safety issue. Earthquakes may result in surface failure in historically mined areas, such as the Sand Creek Valley. Houses located above historic mine sites may be severely damaged or destroyed by such events. Release of pockets of methane and other gasses from the mines in residential areas also poses a significant public safety concern. Also, trespass and vandalism of mines may result in injury or death to trespassers. There is a long history of such tragedies in the area. The General Plan Update and EIR need to identify and address these issues.

Land Use: Figure 1 shows the current and proposed land uses in the City of Antioch Planning Area. There are a number of omissions in the map that should be corrected. Some of these omissions create a false perception about the proximity and potential conflicts of proposed neighboring land uses. Please correct the map, as described below:

1. The Gravel property just north of Black Diamond Mines is mapped entirely as "Estate Residential". Approximately 60 acres of this 160-acre property is to be donated as public open space dedicated to the District. The map should be revised to reflect this approved vesting tentative map requirement.

2. Approval of the Black Diamond Estates development, just east of Black Diamond Mines and south of Fredrickson Lane was conditioned upon a 184-acre dedication of open space to the District. The map should be revised to reflect this requirement.

3. The District owns a strip of parkland, which effectively separates the Zeka/Higgins property in the Sand Creek Valley from Roddy Ranch to the south. This 150-foot wide by one-mile long strip of land is used by the District for maintenance and access to Black Diamond Mines. A number of assumptions about connecting land uses between these

two proposed developments must reflect the actual ownership and purpose of the District's property. This is especially important for the discussion of traffic and circulation because street connections across District land between the two developments would not likely be permitted. This is also important for other land use conflicts, such as trespass, vandalism, illegal encroachment, aesthetics and mine safety.

Public Services: The Initial Study is silent on how the proposed project would affect the demand for District fire and police services, and the demand and impacts to District-managed regional parks and trails. The following potential impacts should be identified, evaluated and fully mitigated for in the subject General Plan Update and EIR.

1. Fire Services – Development in the Sand Creek Valley would abut more than three miles of wildlands at Black Diamond Mines and development at Roddy Ranch would abut about one mile of Black Diamond Mines wildlands. The EIR should address the increased demand for District-provided fire services along this interface. This should include the increased risk of residential fire spreading into the wildlands, and wildland fire spreading into the residential areas.

   The parklands in this area have existed for more than thirty years and the current agricultural uses of Sand Creek Valley and Roddy Ranch are compatible adjacent land uses. Conversion from agriculture to development will create a fire safety conflict along the common boundaries with our park. Any southern Antioch developments that are provided for through the General Plan Update should be conditioned upon providing adequate fuel break buffers within the proposed development areas.

2. Police Services - Development in southern Antioch will also result in increased demand for police services at Black Diamond Mines and Contra Loma Regional Recreation Area. Increased public usage of these parks by new residents will result in more police calls, emergency rescues and law enforcement. Such costs are not offset by increased gate revenues, nor by fine monies, which go to Contra Costa County. In addition, increased trespass and vandalism along four miles of Black Diamond Mines park boundaries will result in increased police calls, enforcement and incident reports. Any developments in southern Antioch that are provided for through the General Plan Update should be conditioned upon providing adequate funding for increased District police services.

3. Regional Parks – Build out of the proposed General Plan will result in several thousand new housing units in Antioch. While the Initial Study does note that this will have an impact on the demand for new City parks, it is silent on the increased demand for use of existing regional parks and the demand for creation of new regional parks. The District is already experiencing increased usage at its existing regional parks for recent growth in Antioch. Such increased usage has not had a corresponding increased in gate revenues to keep up with increased operating costs. This includes maintenance and upgrades to roads and trails, restrooms, parking areas, signage, infrastructure and other District recreational and interpretive programs. In addition, increased use and maintenance of District

facilities will result in the need for new regulatory permits, restrictions and mitigation measures to protect sensitive biological resources in our parks. Any developments in southern Antioch that are provided for through the General Plan Update should be conditioned upon providing adequate funding for increased District costs to operate our impacted park facilities.

4. Trails – Increased wear on regional trails and local trail connections to regional parks will result from the increased number of residents in Antioch. While the District has been unsuccessful in increasing its maintenance funding through previous ballot initiatives, these maintenance needs still remain, and coupled with increased demand, these trails will need to be rehabilitated. This would include new pavement, landscaping, restrooms, signage and other infrastructure. In addition, future residents in the Sand Creek Valley and Roddy Ranch area will also be demanding access to Black Diamond Mines via new trail connections from these developments. The District would have no funding source to provide for these trails or maintain such trails. Any southern Antioch developments that are provided for through the General Plan Update should be conditioned upon providing adequate funding for increased District costs to operate our impacted trail facilities.

Please provide us with copies of the draft General Plan Update, supporting studies and the draft Environmental Impact Report. Please contact me at (510) 544-2600 if you have questions regarding our letter.

Sincerely,

Brad Olson
Environmental Programs Manager

EAST BAY REGIONAL PARK DISTRICT

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June 11, 2003

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P.O. Box 5007
Antioch, CA 94531-5007

Ms. Nina Oshinsky
Community Development
P.O. Box 5007
Antioch, CA 94531-5007

Re: City of Antioch, Draft General Plan

Dear City of Antioch Representatives:

It has come to my attention that a Draft General Plan, dated May 7, 2003, has been prepared as part of the City of Antioch General Plan Update process. As a governmental agency (established under the California Public Resources Code) that may be significantly affected by the proposed action, please send us a copy of the Draft General Plan and any other documents related to the project. Please also include us on the notification and mailing lists for any communications related to the project.

For your information, the East Bay Regional Park District has numerous ties with the City of Antioch, including, but not limited to, the following: 1) Numerous Regional parklands and trails, such as Black Diamond Mines Regional Preserve, Contra Loma Regional Park, Antioch/Oakley Regional Shoreline, the Delta/DeAnza Regional Trail, and the Mokelumne Coast to Crest Regional Trail, and 2) an agreement with the City that allows for the Antioch Community Park on a portion of Contra Loma Regional Park.

We previously provided information and comments regarding the Notice of Preparation and Initial Study for the Draft General Plan. We request that you provide us with a copy of the Draft Environmental Impact Report for the project as soon as it is available. Please contact me if you have any questions regarding these matters.

Sincerely,

Larry Tong
Interagency Planning Manager

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Greenbelt Alliance

PROTECTING OPEN SPACE AND PROMOTING LIVABLE COMMUNITIES

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CITY OF ANTIOCH
COMMUNITY DEVELOPMENT

VIA FACSIMILE (925) 779-7003

Nina Oshinsky
Community Development Department
City of Antioch
P.O. Box 5007
Antioch, CA 94531-5007

April 22, 2003

Dear Ms. Oshinsky,

Greenbelt Alliance just received a copy of the notice of preparation for the General Plan Environmental Impact Report. The document is stamped with the date March 28, 2003, yet we only received it today, April 22, 2003. This is unacceptable. We had requested notification both verbally and in writing (see attached). We request a thirty-day extension to submit comments. In addition, please send us notices in a timely fashion in the future.

Thank you,

Elinor Buchen
East Bay Associate Field Representative

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Greenbelt Alliance

PROTECTING OPEN SPACE AND PROMOTING LIVABLE COMMUNITIES

VIA FASCIMILE (925) 779-7003

Nina Oshinsky
Community Development Department
City of Antioch
P.O. Box 5007
Antioch CA 94531-5007

March 11, 2003

Dear Ms. Oshinsky,

Greenbelt Alliance requests that you send us a notice of preparation for the Environmental Impact Report for the new General Plan. Please keep us informed about the General Plan Update process. Thank you for your consideration.

Sincerely,

Elinor Buchen
East Bay Associate Field Representative

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Ms. Nina Oshinsky
City of Antioch
Community Development Department
Third & "H" Streets
Antioch, CA 94509

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CITY OF ANTIOCH
COMMUNITY DEVELOPMENT

Dear Ms. Oshinsky:

City of Antioch General Plan Update – Notice of Preparation and Initial Study

Thank you for including the California Department of Transportation in the environmental review process for the proposed general plan update. We have reviewed the Notice of Preparation and Initial Study and have the following comments to offer:

The traffic study should analyze the effect this general plan update will have on State highway facilities and include, but not be limited to the following:

1. Existing Conditions – Current year traffic volumes and peak hour level of service (LOS) analysis of affected State highway facilities.

2. Proposed General Plan Update Only with Select Link Analysis – Trip generation and assignment for build-out of general plan. Select link analysis represents a project only (in this case, proposed general plan amendment only) traffic model run, where the project's trips are distributed and assigned along a loaded highway network. This procedure isolates the specific impact on the State highway network.

3. General Plan Build-out Only – Trip assignment and peak hour LOS analysis. Include current land uses and other pending general plan amendments.

4. General Plan Build-out plus Proposed General Plan Update– Trip assignment and peak hour LOS analysis. Include proposed general plan amendment and other pending general plan amendments.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We recommend you utilize Caltrans' *"Guide for the Preparation of Traffic Impact Studies"* which can be accessed from the following webpage: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

We look forward to reviewing the DEIR for the City of Antioch General Plan Update. Please send two copies to:

Lisa Carboni
Office of Transit and Community Planning
Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Should you require further information or have any questions regarding this letter, please call Lisa Carboni of my staff at (510) 622-5491.

Sincerely,

Timothy C. Sable

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

CONTRA COSTA COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT
~~Current Planning Division~~
651 Pine Street, N. Wing - 2nd Floor
Martinez, CA 94553
Telephone: (925) 335-1210 Fax: (925) 335-1222

FAX TRANSMITTAL

Date: April 26, 2003

Page 1 of 26

TO: Nina Oshinsky COMPANY: City of Antioch Comm. Dev. Dept.

FAX NO. 779-7034 PHONE NO. _____

MESSAGE: Original copy of Comment Letter in response to NOP for Antioch General Plan Update shall be hand delivered on Mon., April 28.

FROM: Patrick Roche PHONE NO. (925) 335-1242

Community Development Department

County Administration Building
651 Pine Street
4th Floor, North Wing
Martinez, California 94553-0095

Phone:

Contra Costa County

Dennis M. Barry, AICP
Community Development Director

April 26, 2003

Ms. Nina Oshinsky
Community Development Department
City of Antioch
P.O. Box 5007
Antioch, CA 94531

Subject: *Response to Notice of Preparation, General Plan Environmental Impact Report; City of Antioch General Plan Update*

Dear Ms. Oshinsky:

Thank you for providing Contra Costa County with the Notice of Preparation for the proposed City of Antioch General Plan Update. We offer the following scoping comments for consideration in preparing the General Plan and Environmental Impact Report (EIR):

Comments on the Initial Study

1. Agricultural Resources: The Initial Study that accompanies the Notice of Preparation incorrectly concludes that there would be no impact on Agricultural Resources (page 3-4 and page 3-12).

   The answer and explanation in response to item 2.a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland) is not consistent with the Contra Costa County Important Farmlands Map (Yr. 2000) prepared by the California Department of Conservation. This map prepared pursuant to Farmland Mapping and Monitoring Program of the California Resources Agency identifies several acres of "Farmland of Statewide Importance" in the "Eastern Employment" Focus Area as depicted in Figure 1: General Plan Land Use Map. The proper response to this question in the Initial Study is that the General Plan proposal would have potentially significant impact on important farmland.

   The answer and explanation to 2.b) Conflict with Agricultural Zoning or Williamson Act contracts is not consistent with the County General Plan and

Office Hours Monday - Friday: 8:00 a.m. - 5:00 p.m.
Office is closed the 1st, 3rd & 5th Fridays of each month

Zoning Districts for the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area as depicted in Figure 1: General Plan Land Use Map. The "Roddy Ranch" Focus Area is within an unincorporated area under County jurisdiction that is outside the County's Urban Limit Line, is designated as Agricultural Lands (AL) under the County General Plan and was recently was rezoned to the A-20: Exclusive Agricultural District when the property was subdivided and a Land Use Permit was approved for a golf course. The "Ginnochio" Focus Area is also within an unincorporated area under County jurisdiction that is outside the County's Urban Limit Line, is designated as Agricultural Lands (AL) under the County General Plan and because a substantial portion of the "Ginnochio" Focus Area is under an existing Williamson Act contract between the landowner and Contra Costa County, it is zoned under the County's A-4: Agricultural Preserve District. For your reference, this Williamson Act contract was entered into on January 28, 1969 and it is listed in the County records as Agricultural Preserve # 15-68 (County File: RZ#1319). The landowner filed a Notice of Non-Renewal of Agricultural Preserve #15-68 with the County on November 28, 2000. The non-renewal notice covers Assessor Parcel Numbers 019-120-002, 019-120-007, 019-120-008, and 057-060-008. Based on this non-renewal notice the Williamson Act contract will expire on January 1, 2011. This means that approximately 1,000 acres within the "Ginnochio" Focus Area are still under an active Williamson Act contract through January 1, 2011. The County has advised the City of Antioch of the status of this active Williamson Act contract in a prior letter to Victor Carniglia, dated October 20, 2000, which was in comment on a preliminary development plan submitted for a project referred to as "The Vineyards At Summerset", City File: PD-00-3. It is troubling that the City of Antioch would prepare and release an Initial Study that would claim there is no conflict with a Williamson Act contract when the County has previously provided specific information documenting an active Williamson Act contract for the Ginnochio property.

Contra County is contesting the statement made on page 3-12 in the Initial Study that "The lands planned for development by the proposed General Plan are not adjacent to lands zoned for agricultural lands or lands subject to a Williamson Act. Thus no impacts are anticipated." As documented above, the General Plan proposals relating to the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area would indeed create a potentially significant impact because it conflicts with County General Plan land use designations and zoning districts that have established these unincorporated areas as agricultural lands, and, in the case of the "Ginnochio" Focus Area there is clearly a conflict with the Williamson Act. Contrary to the conclusions reached in the Initial Study, the EIR must analyze the impact of the General Plan proposal on agricultural resources as required under CEQA Guidelines and the Public Resources Code. This analysis should not only examine the direct impacts associated with the potential conversion of agricultural lands in the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area, it must also analyze the cumulative effects of the General Plan proposal to urbanize these two focus areas on other adjoining agricultural lands.

The EIR must also identify feasible mitigation measures to reduce the impact to a level of insignificance or provide a statement of overriding consideration.

Additionally, an EIR analysis of impact on agricultural resources is necessary in order for the Contra Costa Local Agency Formation Commission (LAFCO) to properly consider an expansion of the Antioch Sphere of Influence that would include the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area. In determining a Sphere of Influence area, California Government Code Section 56425 requires that LAFCO consider the present and planned land uses in area, including agricultural and open space lands, and make certain findings to approve a change in the Sphere of Influence. This is particularly important in relationship to the "Ginnochio" Focus Area, as it is still subject to Williamson Act contract. Since the "Ginnochio" Focus Area is subject to the requirements under California Government Code Section 56425.5 it is imperative that the EIR conduct a proper assessment of impacts on agricultural resources in order for LAFCO to consider an expansion of the Antioch Sphere of Influence for the Ginnochio property that is under Williamson Act contract. This analysis would also be needed in order for LAFCO to consider the eventual annexation of the Ginnochio property (see California Government Code Section 51243.5 (a), California Land Conservation Act of 1965).

Enclosed as Attachment "A" to this letter are the following items submitted to substantiate that the General Plan proposal will have a potentially significant impact on agricultural resources:

- Copies of County General Plan and Zoning Atlas Pages M-22m, M-23, L-23, and L-24
- Description of the Agricultural Lands land use designation excerpted from the County General Plan
- Copies of the A-4: Agricultural Preserve District and A-20: Exclusive Agricultural District
- October 30, 2000 letter to Victor Carniglia, Deputy Director of Community Development Department, City of Antioch, commenting on Preliminary Development Plans: PD-00-3, The Vineyards At Summerset, and PD-00-4, The Lakes At Summerset.

2. Land Use and Planning: The Initial Study that accompanies the Notice of Preparation incorrectly concludes that there would be no impact on Land Use and Planning (page 3-8 and page 3-28, Initial Study).

As discussed above, both the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area are each located within an unincorporated area and they are presently under County land use planning jurisdiction. These areas are outside the County's Urban Limit Line and are designated as Agricultural Lands (AL) under the County General Plan, and they are also within an agricultural zoning district. Contrary to the statement that "Development anticipated by the General Plan Update would

be located on land designated for a variety of urban uses. The answer and explanation to 9.b) Conflict with any applicable land use plan, policy, or regulation an agency with jurisdiction over the project (page 3-28, Initial Study) is plainly wrong and misleading. The Initial Study must conclude that the General Plan proposal would be in conflict with the land use plans, policies, and regulations for the land area under County land use jurisdiction. It is obvious that there would be a potentially significant impact because the City of Antioch's General Plan proposal is clearly in direct conflict with the County's land use policies in relationship to the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area. Contrary to the conclusions reached in the Initial Study, the EIR must analyze the impact of the General Plan proposal on the conflicts with the County's land use plans, policies, and regulations for "Roddy Ranch" Focus Area and "Ginnochio" Focus Area as required under CEQA Guidelines and the Public Resources Code. Furthermore, the EIR analysis must consider the cumulative effects that the General Plan proposal would have on pressures to urbanize the agricultural and open space lands designated in the unincorporated area which adjoin the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area. The EIR must also identify feasible mitigation measures to reduce the impact to a level of insignificance or provide a statement of overriding consideration.

3. Aesthetics: The County does not disagree with the conclusions in the Initial Study that the General Plan proposal would have a potentially significant impact on aesthetics, because it will likely impact scenic vistas, degrade the visual character and create a substantial new source of light or glare (page 3-4 and 3-11, Initial Study). This potential impact is particularly evident for the unincorporated areas referred to as "Roddy Ranch" Focus Area and "Ginnochio" Focus Area in Figure 1: General Plan Land Use Map. As the General Plan proposal would impact the unincorporated area south of the city limit, the EIR should evaluate the potential development of the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area on both City and County policies relating to the protection of scenic resources, including significant ridgelines and open hillsides. Beginning on page 9-4 and ending on page 9-8, Open Space Element, Contra Costa County General Plan (1995-2010), the EIR should assess the impact of potential development within the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area in relationship to the scenic resource policies and implementation measures described therein. Also, the EIR should assess the impact of potential development within "Roddy Ranch" Focus Area and "Ginnochio" Focus Area in relationship to the Scenic Routes policies and measures in the County General Plan, at page 5-32, because segments of Deer Valley Road and Empire Mine Road are designated as Scenic Routes and traverse through these two areas.

The County also strongly recommends that the EIR evaluate the visual impacts of potential development within the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area in relationship to designated open spaces and nearby parklands owned and operated by the East Bay Regional Park District (Black Diamond Mines Regional Preserve). If an unincorporated area to the south of the Antioch city

limit is included in the General Plan proposal it should contain policies and measures that provide for the protection of existing view sheds both from development looking towards designated open space and parklands, and from the designated open space and parklands looking towards development.

4. Biological Resources: The County does not disagree with the conclusions in the Initial Study that the General Plan proposal would have a potentially significant impact on biological resources (page 3-5 and pages 3-16 to 3-18, Initial Study). The General Plan proposal will likely have adverse impacts on endangered or special status species and their habitat, adverse impacts on riparian habitat or other sensitive nature communities, and potentially interfere or disrupt the movement of wildlife, and/or fragment wildlife habitat. The EIR should analyze the impact of the General Plan proposal on all aspects of biological resources as required under CEQA Guidelines and the Public Resources Code. Furthermore, the EIR analysis should consider the cumulative effects on biological resources that the General Plan proposal would have by inducing additional pressures to urbanize the in the unincorporated area, particularly the land area adjoining the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area. The EIR should also identify feasible mitigation measures that reduce the impacts to a level of insignificance or provide a statement of overriding consideration.

   The County disagrees with the conclusion in the Initial Study that there would be no conflict with the provisions of an adopted Habitat Conservation Plan (HCP). We note that the Antioch City Council was the only public agency in East County that voted against participation in the East Contra Costa Habitat Conservation Plan. The Habitat Conservation Plan, which has been underway for a number of years, takes a regional approach towards species conservation and recovery, it addresses the individual and cumulative effects of a number of developments in East County, including Antioch, and it will provide for a coordinated strategy for mitigation the effects of development in the regional on endangered or special status species, such as the San Joaquin kit fox, red-legged frog, and tiger salamander, to name a few. Several studies suggest that these species are known to occur adjacent to the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area, and possibly within these two areas. The adoption and implementation of Habitat Conservation Plan would be expected within the timeframe of the General Plan proposal. It appears that there could be a conflict between the General Plan proposal and the ongoing planning for the Habitat Conservation Plan. This apparent conflict should be addressed in the EIR.

5. Geology and Soils: The Initial Study does not address the matter of abandoned mines as a potential geologic and public safety hazard (page 3-6 and page 3-20 and 3-23, Initial Study). The County has previously raised concerns about this matter in commenting on the Draft EIR for the Sand Creek Specific Plan. It is noted the Sand Creek Specific Plan area is included within the area of the General Plan update. In regards to the Sand Creek Specific Plan area, the County requests that the EIR prepared for the General Plan Update also include thorough

geotechnical investigations, documentation, surverying and mapping related to the presence of abandoned mines, including mine openings, ventilation shafts, and the risks of collapse of abandoned mines. the EIR must analyze the impact of the General Plan proposal on agricultural resources as required under CEQA Guidelines and the Public Resources Code. In addition to identify the geologic and public safety hazards that might be posed by the abandoned mines, the EIR should identify feasible mitigation measures to reduce the impact to a level of insignificance or provide a statement of overriding consideration. The General Plan proposal should contain policies and measures that avoids development conflicts with abandoned mines, particularly within the Sand Creek Specific Plan area.

6. Hazards and Hazardous Materials: The County does not disagree with the conclusions in the Initial Study that the General Plan proposal would have a potentially significant impact by exposing people or structures to a significant risk of loss, injury, or death involving wildland fires (page 3-7 and pages 3-16 to 3-18, Initial Study). The Initial Study on page 3-25 acknowledges the potential of wildland fire hazard in the unincorporated areas to the south of the Antioch city limit, and indicates that EIR will address the exposure to such a hazard affecting existing and future development within the study area. It is noted that the Sand Creek Specific Plan area and the "Roddy Ranch" Focus Area adjoin the wildlands of the Black Diamond Regional Preserve. The EIR should address the increased demand for fire services along this proposed interface between wildlands and urban development, including fires services provided by the Contra Costa Fire Protection District, newly formed East Contra Costa County Fire Protection District, East Bay Regional District, and California Division of Forestry.

7. Hydrology and Water Quality: The County disagrees with the conclusions reached on (page 3-7 and page 3-27) that there would be no impact by placing housing or structures within 100-year flood plain. On page 3-7 8.g is checked as no impact, and yet on page 3-27 in the explanation to 8.g it is acknowledged that future development in conjunction with the General Plan Update may occur in areas that lie within a 100-year flood plain. It goes on to explain that there would be no impact because of continuing flood control improvements and implementation of flood plain development guidelines. The Initial Study does not provide any reports or studies to substantiate this claim. It is not at all clear that in preparing this Initial Study that the City of Antioch has even reviewed the several Flood Insurance Rate Maps (FIRM), prepared by the Federal Emergency Management Agency, for the areas covered under the General Plan proposal since they are not cited as a reference source. It is the customary practice that in answering and explaining a response to 8.g) that the preparer of the Initial Study at least indicate that they have reviewed maps that delineate flood hazards. For example, FIRM Map Panel 350 of 625, clearly shows that a significant portion of Deer Creek that traverses the "Roddy Ranch" Focus Area and a part of the "Ginnochio" Focus Area, to be in Zone "A", which the map legend labels as "areas of 100-yr flood, base flood elevations and flood hazard factors not

determined". The EIR must include a thorough analysis of flood hazards and document whether or not there is existing capacity within the flood control and storm drainage systems to accommodate the level of potential development projected in the General Plan proposal, and particular attention should be paid to the the "Roddy Ranch" Focus Area and "Ginnochio" Focus Area in relationship to impacts on Deer Creek. The EIR should review previous drainage studies prepared by the Contra Costa Flood Control and Water Conservation District, to determine if the General Plan proposal would exceed project flow rates. The analysis should include any potential diversion of drainage overflow and identify appropriate mitigation measures that would reduce these impacts to a level of insignificance.

The County questions the conclusion reached in the Initial Study (page 3-7 and page 3-25, Initial Study) that there would be a less than significant impact in response to 8 a) Violate any water quality standards or waste discharge requirements. The explanation provided on page 3-25 cites the City's existing National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit issued by the San Joaquin Valley Regional Water Quality Control Board. The Initial Study does not explain or elaborate on how the General Plan proposal would be consistent with the current NPDES permit issued to the City of Antioch, or whether or not it will need to be amended. The Initial Study is lacking in any substantial information that the General Plan proposal can meet the existing standards of the City's existing NPDES permit. The County strongly suggests the EIR should assess whether or not the General Plan proposal, which would include a significant expansion of urban development, could still meet all of the standards as contained in the NPDES permit. It is noted that the San Francisco Bay Regional Water Quality Control Board has recently issued NPDES municipal stormwater permit for the jurisdictions participating in the Contra Costa Clean Water Program. The City of Antioch should consider assessing the General Plan proposal's stormwater impacts based on the standards that are a part of the Contra Costa Clean Water Program NPDES permit, as it is possible that the San Joaquin Valley Regional Water Quality Control Board may require similar standards for the cities in Contra Costa County within their jurisdiction.

8. Transportation/Traffic: The County does not disagree with the conclusions in the Initial Study that the General Plan proposal would have a potentially significant impact on transportation and traffic (page 3-9 and pages 3-32 to 3-33, Initial Study). The EIR traffic analysis should include the following:

   A. Financially Constrained Transportation Improvements - As basic principle, the EIR analysis and evaluation of future traffic conditions should acknowledge financial constraints with planned transportation improvements for the Bay Area, Contra Costa County, East County Sub Area, and City of Antioch. The list of planned transportation improvements assumed in the traffic analysis should be those that are within the revenues anticipated by the Metropolitan Transportation

Commission, Contra Costa Transportation Authority, or the East Contra Costa Transportation Improvement Authority. Otherwise the EIR traffic analysis would provide an overly optimistic forecast of transportation capacity likely to serve the timeframe of the Antioch General Plan Update.

B. Consistency with CCTA Technical Procedures - The EIR traffic analysis and evaluation should be consistent with the Contra Costa Transportation Authority (CCTA)Technical Procedures manual, and the traffic analysis should be conducted in consultation with the member jurisdictions of the TRANSPLAN Committee. The EIR should document consistency the CCTA Technical Procedures manual.

C. Evaluate Impacts of Routes of Regional Significance - The EIR traffic analysis and evaluation should determine if the General Plan proposal would result in a violation of Traffic Service Objectives for Routes of Regional Significance as described in the East County Action Plan.

D. Impacts on Other Jurisdictions' Roadways - The EIR traffic analysis and evaluation should determine if the roadway extensions and/or roadway capacity widening as identified in Figure 2, Circulation Map, General Plan Update, particularly Hillcrest Avenue, Deer Valley, Empire Mine Road, Richland Ranch Road, and Sand Creek Road would shift traffic congestion to new locations or create new operational problems for roadways within other jurisdictions.

General Comments

9. Project Description: The project description is fundamentally lacking in following respects:

A. No Clear Timeframe for the General Plan - Since this is a General Plan Update it would be customary to identify the timeframe the new General Plan will cover (For example the Contra Costa County General Plan covers the period from 1995 to 2010). It is not at all clear from the Notice of Preparation or the Initial Study what exactly the timeframe this General Plan Update is supposed to cover. In the project description portion of the Initial Study (page 3-1) there is a parenthetical reference to a 20-25 year timeframe, but nowhere else in the Notice of Preparation or Initial Study is there a mention of any time period that this General Plan Update will cover.

B. Housing Element Status Unclear - Also on page 3-1 under project description, there is mention of the Housing Element portion of the General Plan that would cover the period from January 1, 1999, through

June 30, 2006. As you may be aware California Government Code Section 65580-65589.9 had established December 31, 2001 as the target date for jurisdictions in the Bay Area to update and adopt a revised Housing Element. Has the City of Antioch prepared a revised Housing Element? If so, is it under review by the California Department of Housing and Community Development (HCD)? Will this General Plan Update include a revised Housing Element that will have been reviewed and approved by HCD? The status of the Housing Element is unclear.

C. Proposed Actions Relating to Change in Sphere of Influence or Annexation Are Unclear – At page 2-3 in the Initial Study under 2.2 Proposed Discretionary Actions, it is stated that the action involves "approval an amendment to the Antioch General Plan, adopting the 2003 update and related environmental documentation by the Antioch City Council". It is unclear if the actions will also include a submittal to Contra Costa LAFCO requesting an expansion of the City's Sphere of Influence Boundary, to include unincorporated areas not presently within the Sphere of Influence, in the expectation that these areas will be annexed into the City of Antioch. Nowhere in the Notice of Preparation or the Initial Study is there any discussion or reference to expanding the City's Sphere of Influence. The General Plan Land Use maps provided as part of the Notice of Preparation and Initial Study do indicate the city limit lines and a plan area, and the Circulation map depicts a planning area boundary in the legend. However, a review of this document leaves one wondering what the City of Antioch intends to do with the existing Sphere of Influence boundary since there is no reference to a Sphere of Influence area in the text or maps. The City of Antioch needs to clarify its intentions with respect to possible expansion of its Sphere of Influence boundary and pre-zone certain unincorporated areas.

D. "Focus Area" Unclear – The term "Focus Areas" appears on the General Plan Land Use Map and in Tables A, B, and C in the Notice of Preparation. Nowhere in the Notice of Preparation or Initial Study is there a description or definition of what a "Focus Area" is supposed to be. The County is left to guess that it may mean that these are unincorporated areas that the City of Antioch intends to one day annex since Table B is entitled "Anticipated General Plan Build Out in the Unincorporated Area" and within this table a very specific level residential, commercial, and industrial development is allocated to the Eastern Employment Area, Ginnochio Property, and Roddy Ranch "Focus Areas". It is not clear that City of Antioch is intending to pre-zone these areas with the intent of annexation.

The "Roddy Ranch" Focus Area is also quite vague as to the kind of land uses and intensity of these uses that are to be planned within the area. For example, Table B on page 2-7 allocates 2,350 single family residential

units, 275 multi-family residential units, and 425,000 commercial office square footage in the "Roddy Ranch" Focus Area. We note that this is a much more expansive level of development (nearly 3 times greater) on this property than was identified in the Notice of Preparation issued in Spring of 2000 by the City of Antioch for the Roddy Ranch Development Project. It is difficult to comprehend how such a level of development is possible on the 540 acres of the upper and lower reaches of Horse Valley that were identified for development in Notice of Preparation issued in 2000 by the City of Antioch for the Roddy Ranch Development. Does the City of Antioch anticipate that development on the Roddy Ranch site would expand beyond the floor of Horse Valley into the hilly portions of the property? The County notes that a considerable number of acres within the western portion of the site (foothills of the Diablo Range) have deed restrictions that effectively dedicate this area as permanent open space (consider consulting with Save Mount Diablo about the status of these open space dedications).

10. Status of Previous Planning Efforts: The Notice of Preparation is silent on the status of previous planning efforts initiated by the City of Antioch, most notably the Sand Creek Specific Plan and the Roddy Ranch Development Plan application. The County along with others submitted an extensive set of comments on the Draft EIR prepared for the Sand Creek Specific Plan, but as yet we have not seen a Response to Comment or Final EIR document for this Specific Plan. Additionally, the County responded to a Notice of Preparation for EIR issued in Spring 2000 for an EIR relating to the Roddy Ranch Development Plan. Again, we have not seen the Draft EIR for Roddy Ranch Development Plan. What is the status of these previous planning efforts and how do they relate to the General Plan Update and EIR? Is it the intention of the City to use the EIR for the General Plan Update as the basis for considering project level environmental review on properties in the Sand Creek Specific Plan, the Roddy Ranch Development Plan, and Ginnochio Property? Or, will development proposals in these locations be expected to conduct site specific environmental review (e.g. Project Level EIR)?

11. No Source Notes or Data Provided: In conducting an Initial Study it is customary when using the checklist approach to not only provide an explanation for the conclusions, but also to disclose the source of the data or evidence relied upon in reaching those conclusions. The Initial Study released by City of Antioch is lacking in that there is very little in the way of source notes for data or supporting information that was used to reach certain conclusions. The back of document does present a general lists references. However, the explanations in response to the topic categories in the checklist, including agricultural resources, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, population and housing, public services, transportation/traffic, and utilities and service systems, fails to cite any source for the information provide therein.

12. NOP Comment Period: In the copy of the Notice of Preparation sent to Contra Costa County the date for close of comment was blank. We then received an April 3, 2003 letter from LSA indicating that comments should be submitted by April 26, 2003. We note for the record that April 26, 2003 falls on a Saturday when the City's offices are closed, and therefore assume that the City will accept comments on the next regular day of business which would be Monday, April 28, 2003.

13. No Signature or Date on the Initial Study: The Initial Study that was included in the Notice of Preparation (at page 3-2) did not have a signature of the person from the Lead Agency responsible for preparing the Initial Study and it was not dated.

Contra Costa County appreciates the opportunity to review and comment on the Notice of Preparation and Initial Study prepared for the City of Antioch General Plan Update, and requests that the comments and concerns addressed in this letter be addressed.

We are also requesting that the Contra Costa County Community Development Department be included for all mailings and notices regarding the General Plan Update and that all supporting studies and the Draft Environmental Impact Report be provided to the County.

Should you have any questions regarding the concerns and comments raised in this letter, please contact me by telephone at (925) 335-1242 or by e-mail at (925) proch@cd.co.contra-costa.ca.us.

Sincerely yours,

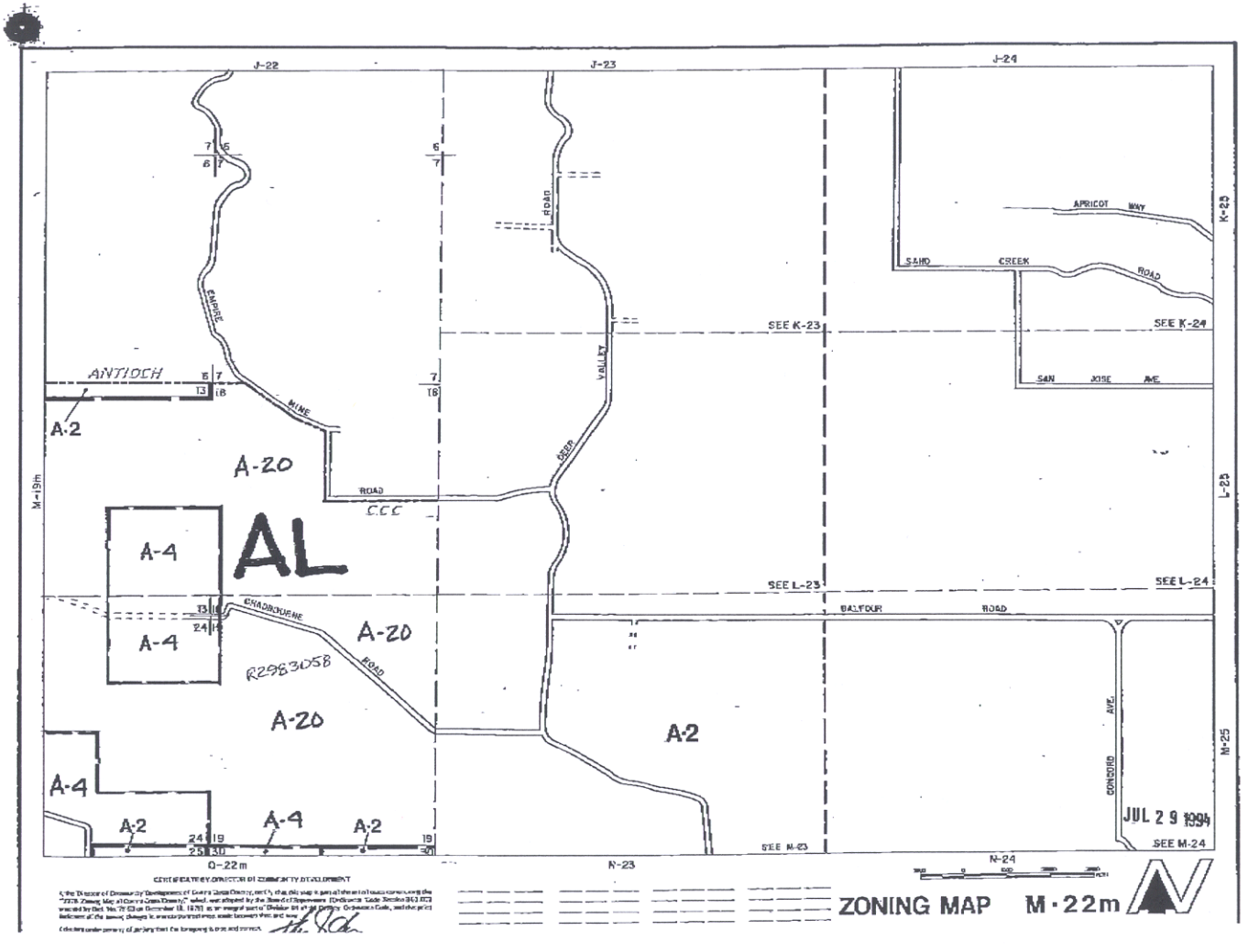
Patrick Roche
Principal Planner
Advance Planning Division

Attachments (1)

CC: Members, Board of Supervisors
J. Sweeten, CAO
D. Barry, Dir. Community Development Dept.
S. Kowalewski, CCC Public Works Dept.
P. Detjens, CCC Flood Control
J. Greitzer, TRANSPLAN Committee
A. Perrella, Contra Costa LAFCO
Program Mgr., Div. Land Resource Protection, CA Dept. of Conservation

ATTACHMENT "A"

- Copies of County General Plan and Zoning Atlas Pages M-22m, M-23, L-23, and L-24
- Description of the Agricultural Lands land use designation excerpted from the County General Plan
- Copies of the A-4: Agricultural Preserve District and A-20: Exclusive Agricultural District
- October 30, 2000 letter to Victor Carniglia, Deputy Director of Community Development Department, City of Antioch, commenting on Preliminary Development Plans: PD-00-3, The Vineyards At Summerset, and PD-00-4, The Lakes At Summerset.



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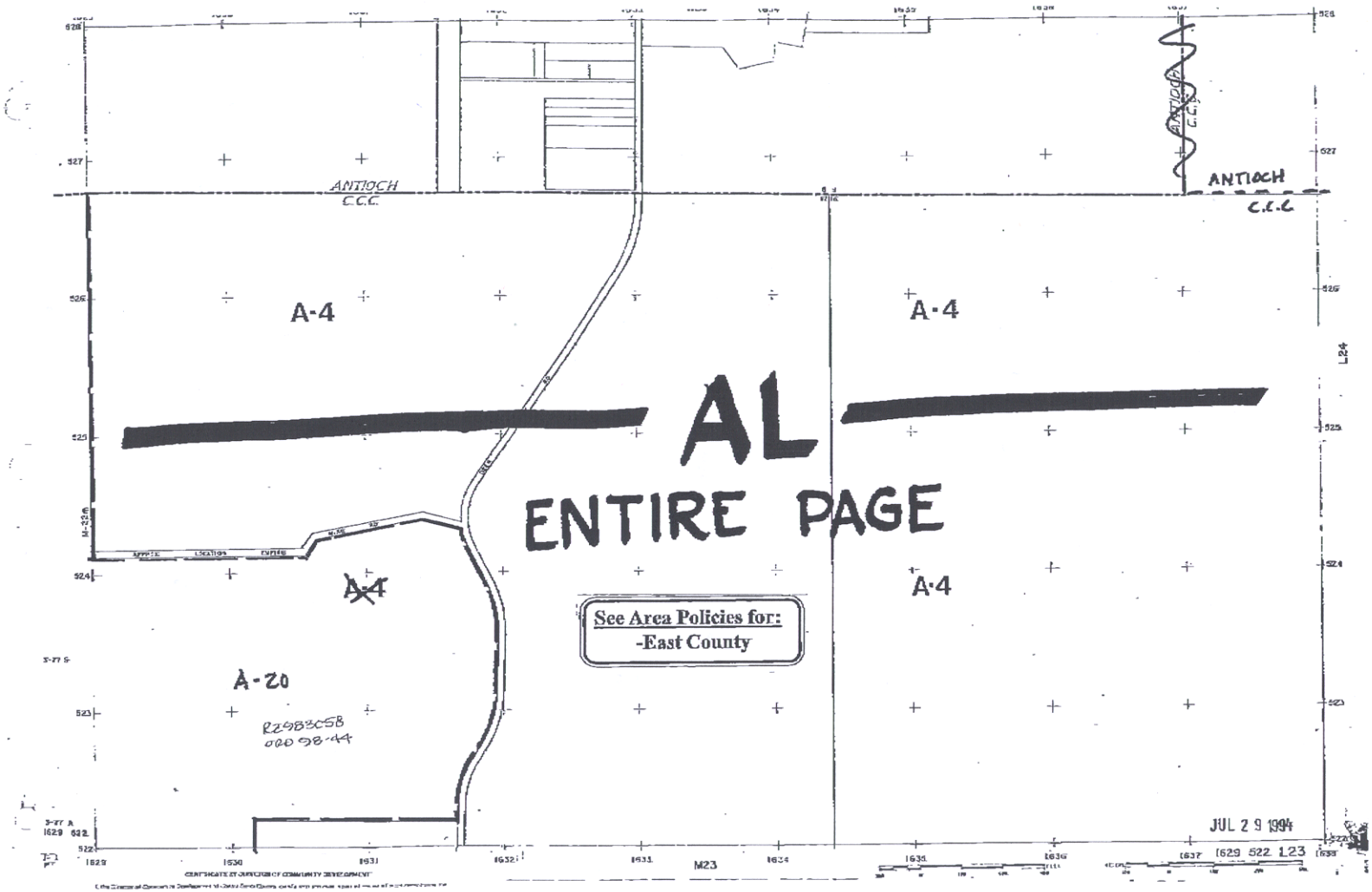
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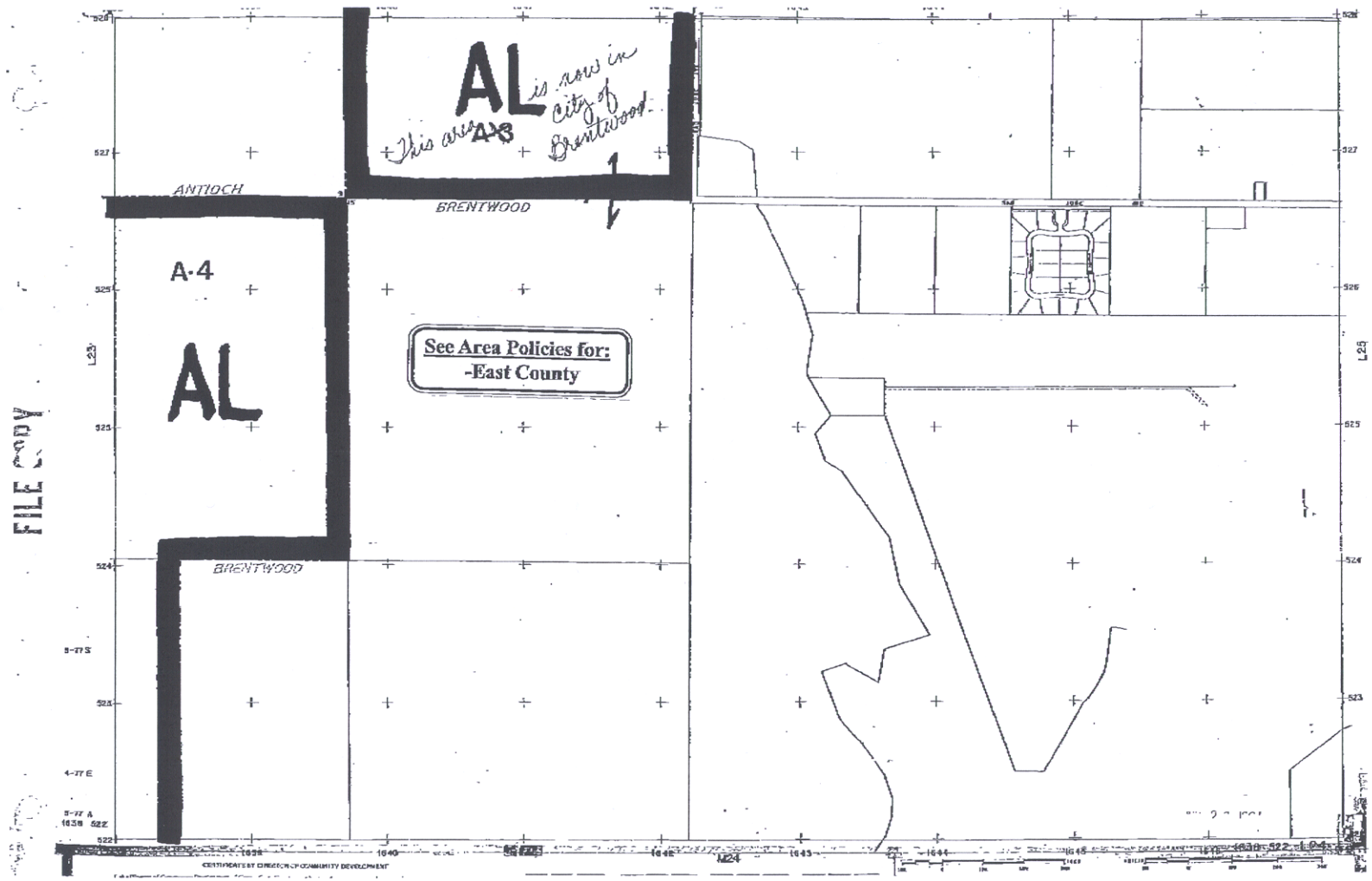
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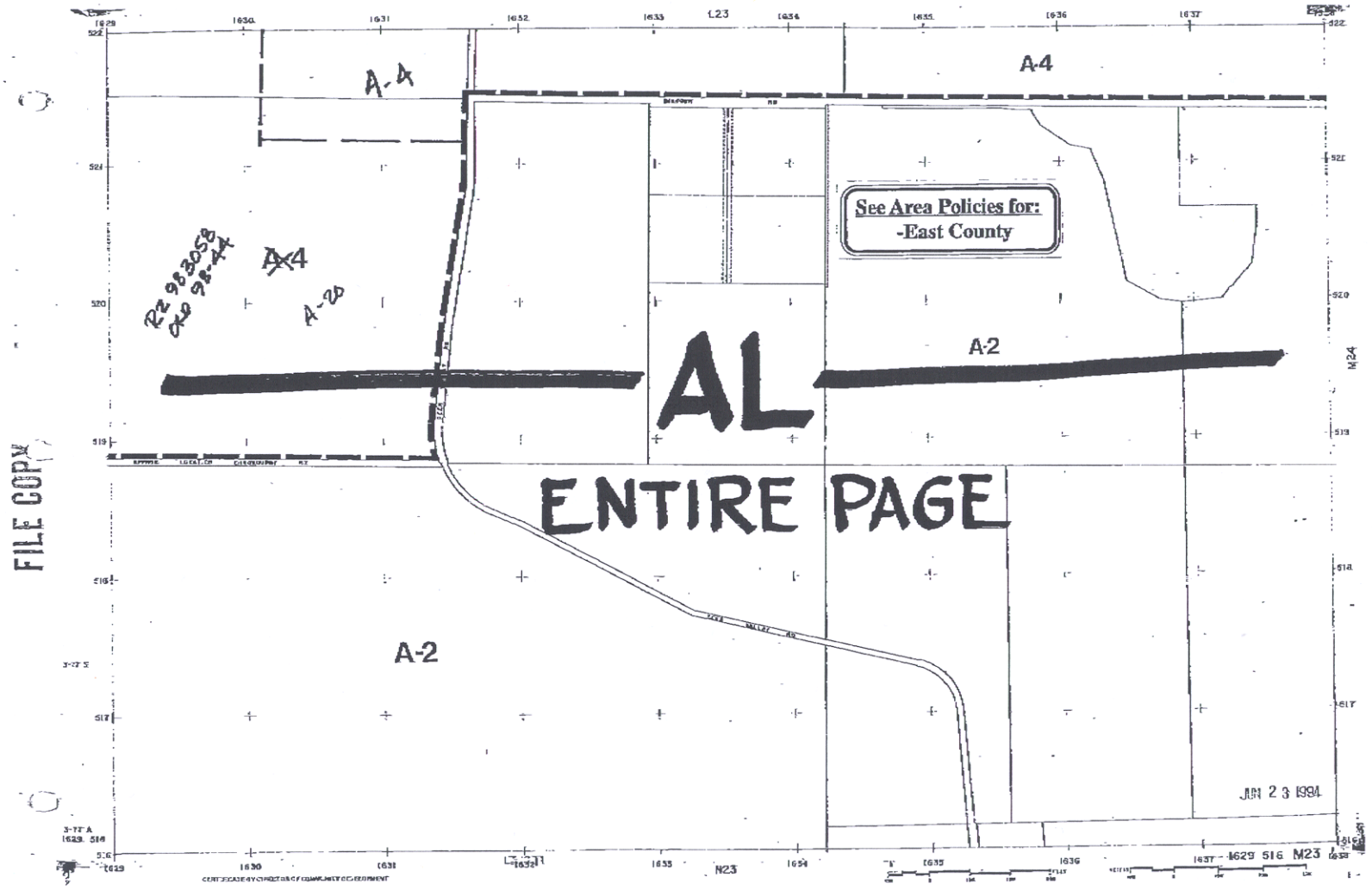
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Excerpts

i. Mixed Use - Laurel Road (M-9)

This site is located on the south side of Laurel Road at the ATSF railroad tracks. The site will serve as a transition from the lower density single-family residential use to traditional commercial uses.

j. "Mixed Use - Dougherty Valley Village Center (M-10).

This Mixed-Use designation identifies approximately 48 acres for the Village Center located at the confluence of the two main branches of Alamo Creek. This Mixed-Use category will permit a combination of high density residential, retail and office uses, civic uses, parks, playas, and open space. Within the Village Center portions of the project densities up to 40 units per net acre will be allowed. Up to 680,000 square feet of retail/office/civic uses could be allowed in the Village Center.

PUBLIC, SEMI-PUBLIC, LANDFILL AND OPEN SPACE USES

A total of eight land use designations have been defined for these uses. These include open space, agricultural, and recreational uses, as well as public/semi-public uses such as schools; public offices; highways and major flood control rights-of-way; and railroads. These use designations generally comprise non-urban uses under the 65/35 Land Preservation Standard.

a. Public and Semi-Public.

As the title implies, the "Public and Semi-Public" designation includes properties owned by public governmental agencies such as libraries, fire stations, schools, etc. This designation is also applied to public transportation corridors (freeways, highways, and BART), as well as privately owned transportation and utility corridors such as railroads, PG&E lines, and pipelines. The largest properties in this category are those of the U.S. Naval Weapons Station in Concord and Port Chicago.

A wide variety of public and private uses are allowed by this General Plan category. However, the construction of private residences or private commercial uses, and the subdivision of land, are not considered compatible with this designation.



b. Agricultural Lands.

This land use designation includes most of the privately owned rural lands in the County, excluding private lands that are composed of prime soils or lands that are located in or near the Delta. Most of these lands are in hilly portions of the County and are used for grazing livestock, or dry grain farming. The category also includes non-prime agricultural lands in flat East County areas, such as outside Oakley, which are planted in orchards. Some of the Agricultural Lands east of Oakley and Byron are included in the 100-year flood plain, as mapped by the Federal Emergency Management Agency (FEMA).

The purpose of the Agricultural Lands designation is to preserve and protect lands capable of and generally used for the production of food, fiber, and plant materials. The title is intended to be descriptive of the predominant land-extensive agricultural uses that take place in these areas, but the land use title or description shall not be used to exclude or limit other types of agricultural, open space

or non-urban uses such as landfills, except as noted below in the descriptions of "Agricultural Core," "Delta Recreation and Resources," "Watershed," "Parks and Recreation," and "Open Space." The maximum allowable density in this category is one dwelling unit per 5 acres.

The uses that are allowed in the Agricultural Lands designation include all land-dependent and non-land dependent agricultural production and related activities. In addition, the following uses may be allowed by issuance of a land use permit, which shall include conditions of approval that mitigate the impacts of the use upon nearby agricultural operations through the establishment of buffer areas and other techniques:

- facilities for processing agricultural products produced in the County such as dairies, rendering plants, and feed mills;
- commercial agricultural support services which are ancillary to the agricultural use of a parcel, such as veterinarians, feed stores, and equipment repair and welding; and
- small-scale visitor serving uses including small tasting rooms, stands for the sale of products grown or processed on the property, guest or "dude" ranches, horse training and boarding ranches, improved campgrounds, and "bed and breakfast" inns of five or fewer bedrooms which are on lots of 20 acres or more, extensive recreational facilities and private retreats.

The following standards shall apply to all uses allowed in the Agricultural Lands designation:

(1) Any subdivision of lands shall include conditions of approval which conform with the requirements of the "Ranchette Policy," which is outlined in the "Agricultural Resources" section of the Conservation Element (Chapter 8); and

(2) Residential and non-residential uses proposed in areas of special flood hazards, as shown on FEMA maps, shall conform to the requirements of the County Floodplain Management Ordinance (County Ord. #87-45) and the further requirements outlined in the "Delta Recreation" section (d) (5) below.

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c. Agricultural Core.

This designation applies to agricultural lands that are composed primarily of prime (Class I or II) soils in the Soil Conservation Service Land Use Capability Classifications, which are considered the very best soils for farming a wide variety of crops. Lands designated as Agricultural Core are located in East County outside the ULL to the east, south, and west of the City of Brentwood. Much of the land in this designation is under active cultivation of intensive row crops, such as tomatoes and other vegetables. A portion of the Agricultural Core lands are included within the 100-year flood zone, as identified by the U.S. Federal Emergency Management Agency (FEMA).

The purpose of the Agricultural Core designation is to preserve and protect the farmlands of the County which are the most capable of, and generally used for, the production of food, fiber, and plant materials. Agricultural operations in the Agricultural Core shall, in accordance with Measure C - 1990, be protected by requiring a higher minimum parcel size than the Agricultural Lands designation, to attempt to maintain economically viable, commercial agricultural units. The creation of small uneconomical units will be discouraged by land use controls and by specifically discouraging minor subdivisions and "ranchette" housing development.

~~of supervisors which shall make final decision on the land use permit along with the rezoning. (Ord. 80-24).~~

Chapter 84-80

A-20 EXCLUSIVE AGRICULTURAL DISTRICT

Article 84-80.2 General
Sections:
84-80.202 General provisions.
84-80.204 Purpose.
Article 84-80.4 Uses
Sections:
84-80.402 Uses—Allowed.
84-80.404 Uses with land use permit.
Article 84-80.6 Lots
Sections:
84-80.602 Area, width and depth.
Article 84-80.8 Building Height
Sections:
84-80.802 Maximum.
Article 84-80.10 Yards
Sections:
84-80.1002 Side.
84-80.1004 Setback.
84-80.1006 Rear.
84-80.1008 Residential land.
Article 84-80.12 Land Use and Variance Permits
Sections:
84-80.1202 Granting.
84-80.1204 Clustering.

Article 84-80.2 General

84-80.202 General provisions. All land within an A-20 exclusive agricultural district may be used for any of the following uses, under the regulations set forth in this chapter. (Ord. 79-108).

84-80.204 Purpose. The purpose of this chapter's regulations is to provide and protect areas for agricultural uses by preventing the establishment of urban and any other incompatible land uses thereon. (Ord. 79-108).

Article 84-80.4 Uses

84-80.402 Uses – Allowed. The following uses are allowed in the A-20 district:

(1) All types of agriculture, including general farming, horticulture, floriculture, dairying, livestock production and breeding, poultry and grain-fed rodent raising, aviaries, apiaries, forestry, and similar agricultural uses;

(2) Other agricultural uses, including the erection and maintenance of sheds, warehouses, granaries, dehydration plants, hullers, fruit and vegetable packing plants, and buildings for the storage of agricultural products and equipment;

(3) A stand not exceeding four hundred square feet and set back at least twenty-five feet from the front property line, for sale of agricultural products grown on the premises; and

(4) A detached single-family dwelling on each legally established lot and the accessory structures and uses normally auxiliary to it. (Ord. 79-108).

84-80.404 Uses with land use permit. The following uses are allowable on the issuance of a land use permit:

(1) Merchandising of agricultural supplies and services incidental to agricultural use;

(2) Canneries, wineries, and processing of agricultural products;

(3) Cold storage plants;

(4) Rendering plants and fertilizer plants or yards;

(5) Livestock auction or sales yards;

(6) Living accommodations for agricultural workers employed on the premises;

(7) Home occupation;

(8) Nurseries and greenhouses;

(9) Mushroom houses;

(10) Processing of milk not produced on premises;

(11) Dude ranches, riding academies, stables, dog kennels;

(12) Hospitals, eleemosynary and philanthropic institutions, convalescent homes, and animal hospitals;

(13) Churches, religious institutions, parochial and private schools, including nursery schools;

(14) Community buildings, clubs, activities of a quasi-public, social, fraternal or recreational character;

livestock, grain-fed rodents, or poultry shall be at least fifty feet from the boundary line of any residential land use district. (Ord. 1569: prior code § 8157(g): Ord. 1241).

84-40.1004 Yard – Setback. There shall be a setback (front yard) of at least twenty-five feet for any building or structure. (Ord. 1569: prior code § 8157(h): Ord. 1241).

84-40.1006 Yard – Rear. There shall be a rear yard of at least twenty-five feet for any building or structure. (Ord. 1569: prior code § 8157(i): Ord. 1241).

Article 84-40.12
Land Use and Variance Permits

84-40.1202 Land use and variance permit – Granting. Land use permits for the special uses enumerated in Section 84-40.404 and variance permits to modify the provisions contained in Sections 84-40.602 84-40.1006 may be granted in accordance with this Chapter 82-6. (Ord. 1569: prior code § 8157(j): Ord. 1241).

Chapter 84-42

A-4 AGRICULTURAL PRESERVE DISTRICT

Article 84-42.2 General
Sections:
84-42.202 General provisions.
84-42.204 Intent and purpose.
Article 84-42.4 Uses
Sections:
84-42.402 Uses–Permitted.
84-42.404 Uses- Requiring land use permit.
Article 84-42.6 Parcels
Sections:
84-42.602 Parcel -Size.
84-42.604 Parcel -Width.
Article 84-42.8 Lots
Sections:
84-42.802 Lot -Depth.
Article 84-42.10 Building Height
Sections:
84-42.1002 Building height Maximum
Article 84-42.12 Yards
Sections:
84-42.1202 Yard Side.
84-42.1204 Yard–Setback.
84-42.1206 Yard–Rear.
Article 84-42.14 Land Use and Variance Permit
Sections:
84-42.1402 Land use and variance permit–Granting.

Article 84-42.2
General

84-42.202 General provisions. All land within an A-4 agricultural preserve district may be used for any of the following uses, under the following regulations. set forth in this chapter (Ord. 68-54 § 1 (part), 1968: prior code § 8169 (part)).

84-42.204 Intent and purpose. This land use district is intended to provide areas that provide primarily for the commercial production of food and fibre and other compatible uses consistent with the intent and purpose of the Land Conservation Act of 1965. (Ord. 68-54 § (part), 1968: prior code § 8169 (part)).

Article 84-42.4
Uses

84-42.402 Uses – Permitted. Use permitted in the A-4 district shall be as follows:

(1) All types of commerical, agricultural production, including general farming horticulture, floriculture, livestock production aviaries, apiaries, forestry and similar agricultural uses, excepting those uses requiring a permit in Section 84-42.404;

(2) Those agricultural and compatible use specifically agreed upon between the county and the landowner at the time of entering into the agreement and designated in writing within the agreement. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(a)).

84-42.404 Uses – Requiring land use permit. In the A-4 district the following uses are permitted on the issuance of a land use permit:

(1) Related commercial agricultural uses including the erection or modification of sheds warehouses, granaries, hullers, dryers fruit and vegetable packing and buildings for the storage of agricultural products and equipment:

(2) A stand not exceeding four hundred square feet for the sale of agricultural products grown on the premises, if the stand is set back

least twenty-five feet from the front property line;

(3) Residence of the owner, owners, lessee, or lessor of the land on which the use is conducted. In no event shall any residential structure be permitted to be built or additional residential structure be erected on less than twenty acres per unit;

(4) Oil and gas drilling and production including the installation and use of only such equipment, structures and facilities as are necessary and convenient for drilling and extracting operations;

(5) A home occupation;

(6) Nurseries and greenhouses;

(7) Hog ranches;

(8) Dairying;

(9) Fur farms;

(10) Livestock and feed yards;

(11) Poultry raising;

(12) Commercial fish farming;

(13) Wineries and facilities for processing of all agricultural products produced on the premises;

(14) Living accommodations for agricultural workers employed on the property of the owner;

(15) Mushroom houses;

(16) Commercial radio and television receiving and transmitting facilities but not including broadcasting studios or business offices;

(17) Those uses described in Section 51201(e) of the Government Code. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(b)).

Article 84-42.6
Parcels

84-42.602 Parcel – Size. Unless otherwise permitted in accordance with Section 84-42.402(2), no structure permitted in the A-4 district shall be placed or erected upon a parcel smaller than twenty acres. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(c)).

84-42.604 Parcel – Width. No agricultural pursuit shall be permitted, and no structure permitted in the A-4 district shall be erected or placed on a lot less than three hundred feet in average width. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(d)).

Article 84-42.8
Lots

84-42.802 Lot – Depth. No agricultural pursuit shall be permitted, nor shall any structure or use herein permitted be erected, placed, or established on a lot less than three hundred feet deep. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(e)).

Article 84-42.10
Building Height

84-42.1002 Building height – Maximum. There shall be no maximum building or structure height in the A-4 district. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(f)).

Article 84-42.12
Yards

84-42.1202 Yard – Side. No side yard shall be less than fifty feet in width; barns, stables, and other buildings or structures used to house livestock, grainfed rodents, or poultry shall be at least fifty feet from the boundary line of any residential land use district. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(g)).

84-42.1204 Yard – Setback. There shall be a setback (front yard) of at least fifty feet for any building or structure. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(h)).

84-42.1206 Yard – Rear. There shall be a rear yard of at least twenty-five feet for any building or structure. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(i)).

Article 84-42.14
Land Use and Variance Permits

84-42.1402 Land use and variance permit – Granting. Land use permits for the special uses enumerated in Section 84-42.404 and variance permits to modify the provisions contained in Sections 84-42.602 – 84-42.1206 may be granted in accordance with Chapter 82-6. (Ord. 68-54 § 1 (part), 1968: prior code § 8169(j)).

Dennis M. Barry, AICP
Community Development Director

Community Development Department

Contra Costa County

County Administration Building
651 Pine Street
4th Floor, North Wing
Martinez, California 94553-0095

Phone:

October 30, 2000

Mr. Victor Carniglia
Deputy Director of Community Development
City of Antioch – City Hall
Community Development Department
P.O. Box 5007
Antioch, CA 94531-5007

Subject: PD-00-3, *THE VINEYARDS AT SUMMERSET*
PD-00-4, *THE LAKES AT SUMMERSET*

Dear Mr. Carniglia:

Contra Costa County is in receipt of the Preliminary Development Plans for two residential developments, the *VINEYARDS AT SUMMERSET* and the *LAKES AT SUMMERSET*. According to the referral, these projects involve the development of active adult communities on two sites, the *VINEYARDS AT SUMMERSET* on 938 acres and the *LAKES AT SUMMERSET* on 285 acres.

Contra Costa County forwards the following comments on the Preliminary Development Plans:

PD-00-3, *THE VINEYARDS AT SUMMERSET*

The 938-acre development site under the Preliminary Development Plan submitted to the City of Antioch for *THE VINEYARDS AT SUMMERSET* is located in an unincorporated area of Contra Costa County (APNs:019-120-008). The entire 938 acres are designated as Agricultural Land (AL) under the Land Use Element to the Contra Costa County General Plan, 1995-2010. The site is part of a larger area that was zoned A-4, Agricultural Preserve District, in order to enact a Williamson Act contract with Mr. John Ginochio. Contra Costa County entered into a Williamson Act contract with Mr. Ginochio was recorded on January 28, 1969. This contract is still in full force and effect. It is also worth noting that this area is not within the City of Antioch's Sphere of Influence boundary (nor in the Sphere of Influence boundary for the Delta Diablo Sanitation District). As you are aware this land area was placed directly outside the County's Urban Limit Line on August 1, 2000 when the Board of Supervisors adopted a General Plan Amendment (GP#99-0001) to modify the Urban Limit Line.

Enclosed for your information is a map of the County's Urban Limit Line reflecting the modifications recently approved by the Board of Supervisors. I have also enclosed map pages from our General Plan and Zoning Atlas which depict the current land use designations recognized by the County, excerpts from the County General Plan and Zoning Code that describe these land use designations, and a section of the map prepared by the County Assessor's Office identifying active Williamson Act contracts (note that the Ginochio parcels are labeled as AP#15-68).

As the enclosed material demonstrates, the proposal to develop the 938 acres of this unincorporated area as an active adult residential community would be inconsistent with the goals and policies of the Contra Costa County General Plan. The County's land use policy is to maintain this unincorporated area for agricultural use or other allowable non-urban uses. The County questions the City of Antioch's jurisdiction to accept a Preliminary Development Plan for a site that is not within the City's Incorporated Boundaries or Sphere of Influence. It also concerns us that within a matter of weeks of the Board of Supervisors action to modify the Urban Limit Line the City would accept a Preliminary Development Plan proposing to develop a residential community on 938 acres outside the newly established Urban Limit Line.

Additionally, consideration of residential development as contemplated under the Preliminary Development Plan would seem to violate the terms and conditions of the Williamson Act contract entered into between the County and the landowner. As provided under law, in order to terminate a contract the landowner must initiate either the process of non-renewal of the Williamson Act contract or petition the Board of Supervisors to cancel the Williamson Act contract before the subject property can be considered for an alternative non-agricultural land use. We are not aware that the landowner has initiated such a process with the County to terminate the Williamson Act contract for the subject site.

PD-00-4, *THE LAKES AT SUMMERSET*

The 285-acre development site under the Preliminary Development Plan submitted to the City of Antioch for *THE LAKES AT SUMMERSET* is located within the incorporated area of the City of Antioch. The County has no specific comments on the land use concepts presented in the development plan other than the plan's depiction of Hillcrest Avenue extending to Balfour Road. The County is not aware of any plan to extend Hillcrest Avenue to Balfour Road. An extension of Hillcrest Avenue has not been assumed in the roadway network assumptions in any previous or current traffic studies conducted in East County. The extension of Hillcrest Avenue to Balfour Road might have important ramifications on traffic conditions in the unincorporated area and the City of Brentwood, particularly in the Balfour Road vicinity. The City of Antioch should

Enclosed for your information is a map of the County's Urban Limit Line reflecting the modifications recently approved by the Board of Supervisors. I have also enclosed map pages from our General Plan and Zoning Atlas which depict the current land use designations recognized by the County, excerpts from the County General Plan and Zoning Code that describe these land use designations, and a section of the map prepared by the County Assessor's Office identifying active Williamson Act contracts (note that the Ginochio parcels are labeled as AP#15-68).

As the enclosed material demonstrates, the proposal to develop the 938 acres of this unincorporated area as an active adult residential community would be inconsistent with the goals and policies of the Contra Costa County General Plan. The County's land use policy is to maintain this unincorporated area for agricultural use or other allowable non-urban uses. The County questions the City of Antioch's jurisdiction to accept a Preliminary Development Plan for a site that is not within the City's Incorporated Boundaries or Sphere of Influence. It also concerns us that within a matter of weeks of the Board of Supervisors action to modify the Urban Limit Line the City would accept a Preliminary Development Plan proposing to develop a residential community on 938 acres outside the newly established Urban Limit Line.

Additionally, consideration of residential development as contemplated under the Preliminary Development Plan would seem to violate the terms and conditions of the Williamson Act contract entered into between the County and the landowner. As provided under law, in order to terminate a contract the landowner must initiate either the process of non-renewal of the Williamson Act contract or petition the Board of Supervisors to cancel the Williamson Act contract before the subject property can be considered for an alternative non-agricultural land use. We are not aware that the landowner has initiated such a process with the County to terminate the Williamson Act contract for the subject site.

PD-00-4, *THE LAKES AT SUMMERSET*

The 285-acre development site under the Preliminary Development Plan submitted to the City of Antioch for *THE LAKES AT SUMMERSET* is located within the incorporated area of the City of Antioch. The County has no specific comments on the land use concepts presented in the development plan other than the plan's depiction of Hillcrest Avenue extending to Balfour Road. The County is not aware of any plan to extend Hillcrest Avenue to Balfour Road. An extension of Hillcrest Avenue has not been assumed in the roadway network assumptions in any previous or current traffic studies conducted in East County. The extension of Hillcrest Avenue to Balfour Road might have important ramifications on traffic conditions in the unincorporated area and the City of Brentwood, particularly in the Balfour Road vicinity. The City of Antioch should

refer the concept of a Hillcrest Avenue extension to the TRANSPLAN Committee so that member jurisdictions of East County's Regional Transportation Planning Committee can evaluate how this new roadway link would affect the regional transportation system.

Thank you in advance for considering the County's comments on the above referenced Preliminary Development Plans. Should you have any questions or concerns regarding the County's comments, please contact me at (925) 335-1242.

Sincerely yours,

Patrick Roche

Patrick Roche
Advance Planning Division

Enclosures (4 items)

CC
(w/o enclosures): D. Barry, CDD
Members, Board of Supervisors
A. Perrella, Contra Costa LAFCo
J. Greitzer, TRASNPLAN staff

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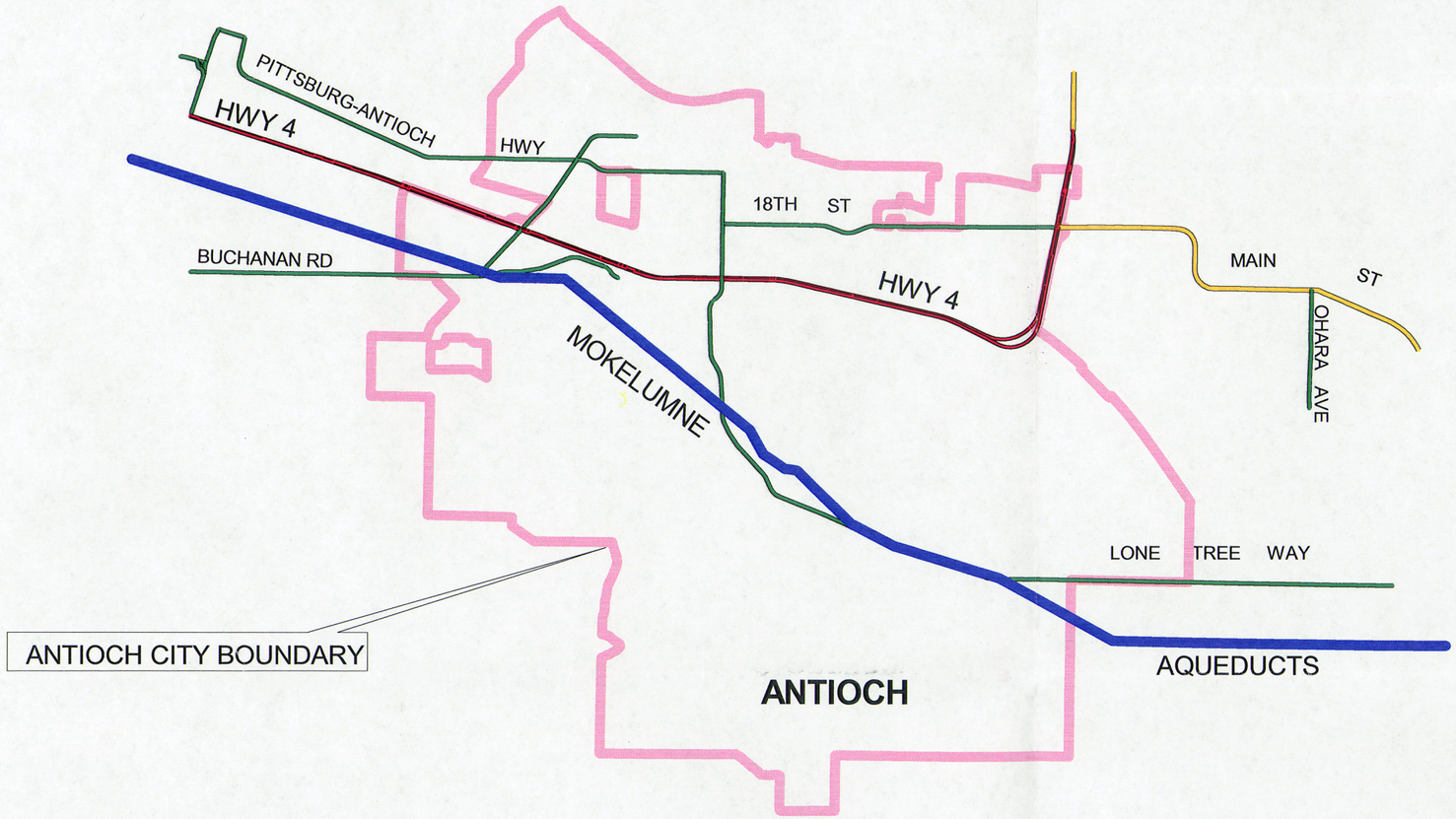
MOKELUMNE AQUEDUCTS
RIGHT OF WAY



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NOT TO SCALE

Freeway
Highway
Primary Road
Mokelumne Aqueducts
ANTIOCH CITY BOUNDARY

EAST BAY MUNICIPAL UTILITY DISTRICT
4/14/03

EAST BAY
MUNICIPAL UTILITY DISTRICT

RECEIVED
APR 29 2003
CITY OF ANTIOCH
COMMUNITY DEVELOPMENT

April 23, 2003

Ms. Nina Oshinsky
City of Antioch, Community Development Department
Third and H Streets
Antioch, CA 94509

Dear Ms. Oshinsky:

Re: Notice of Preparation for an Environmental Impact Report -
City of Antioch's General Plan Update

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of an Environmental Impact Report for the City of Antioch General Plan Update. EBMUD does not provide water or wastewater services to the City of Antioch (City), but sections of EBMUD's Mokelumne Aqueduct (see enclosed map) are within the City limits. EBMUD therefore submits the following comments as a responsible agency under the California Environmental Quality Act.

No longitudinal encroachments such as drainage ditches, utility lines, pipelines or roads will be permitted within the Mokelumne Aqueduct right-of-way. All property line fences must also be located completely outside the aqueduct property lines. Any pipelines crossing below the aqueducts must be encased in a steel conduit, and a minimum of two feet of clearance between the casing and the bottom of EBMUD aqueducts. Pipeline crossings shall be perpendicular to the aqueducts and on a constant grade across EBMUD property. Sanitary sewers, water lines or petroleum product lines crossing above the aqueducts must be encased in a steel or PVC conduit or reinforced concrete with a minimum vertical clearance of one foot between the pipeline and the top of EBMUD aqueducts.

Overhead electrical power conductors across EBMUD property shall be a minimum of 30 feet above ground. Communications/cable crossings shall be a minimum of 20 feet above ground. Supporting poles or towers shall be located outside the aqueduct right-of-way. Buried electrical cables shall be installed in conduit and encased in red concrete across the entire width of the aqueduct right-of-way. All other buried cables shall be installed in conduit and encased in the appropriate Underground Service Alert (USA) colored concrete across the entire width of the aqueduct right-of-way.

Railroad, freeway and highway crossings of the aqueduct right-of-way shall be on permanent bridges with a minimum vertical clearance of 14 feet 6 inches between the finished ground surface and the underside of the bridge. Crossings on grade will be over structurally encased aqueducts with a sleeve for a fourth aqueduct. Street and road

375 ELEVENTH STREET . OAKLAND . CA 94607-4240 . (510) 835-3000

Recycled Paper

crossings constructed on grade shall incorporate protection of the aqueducts. Based on the load carrying capability of the aqueduct, protective measures will be designed by EBMUD or by the applicant's licensed engineer to EBMUD standards with specific EBMUD approval of each design.

Gravity drainage of EBMUD's property shall be maintained. Open channels constructed across the right-of-way shall be paved with reinforced concrete. Headwalls, inlets and other appurtenances shall be located outside EBMUD's property. Paved drainage ditches shall be provided outside EBMUD's property at the top and/or toe of fill slopes or cuts constructed adjacent to EBMUD's property. Any changes in finished grade must be approved by EBMUD's Aqueduct Section. Earth fills or cuts on adjacent property shall not encroach onto EBMUD's property, except where authorized for vehicular crossings on grade, and except where EBMUD determines that there will be no detrimental effect on the aqueducts or their maintenance.

No buildings, portions of buildings, or other structures shall be constructed on EBMUD's property unless specific approval is given by EBMUD. No pile driving will be allowed within 50 feet of the aqueducts and no vibrating compaction equipment will be allowed over the aqueducts. The type and weight of any construction equipment working on the aqueduct right-of-way must be approved by EBMUD.

All EBMUD's survey monuments and markers shall be undisturbed. If any EBMUD's survey marker must be disturbed, it will be replaced or relocated by EBMUD at the applicant's expense. Any costs for inspection, review, permit fees/licenses and related expenses shall be the responsibility of the applicant. A preconstruction meeting will be required prior to start of construction work.

Any questions concerning these comments should be addressed to Clifford A. Threlkeld, Superintendent of Aqueduct Section at (209) 772-8010.

Sincerely,

WILLIAM R. KIRKPATRICK
Manager of Water Distribution Planning

WRK:OAH:sb
sb03_122.doc

Enclosure

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ALAMEDA COUNTY
Roberta Cooper
Scott Haggerty
(Chairperson)
Nate Miley
Shelia Young

CONTRA COSTA COUNTY
Mark DeSaulnier
Mark Ross
Gayle Uilkema
(Secretary)

MARIN COUNTY
Harold C. Brown, Jr.

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
Willie Brown, Jr.
Chris Daly
Jake McGoldrick

SAN MATEO COUNTY
Jerry Hill
Marland Townsend
(Vice-Chairperson)

SANTA CLARA COUNTY
Liz Kniss
Julia Miller
Dena Mossar
(Vacant)

SOLANO COUNTY
John F. Silva

SONOMA COUNTY
Tim Smith
Pamela Torliatt

William C. Norton
EXECUTIVE OFFICER/APCO

April 15, 2003

Nina Oshinsky
Community Development Department
City of Antioch
P.O. Box 5007
Antioch, CA 94531-5007

RECEIVED
APR 17 2003
CITY OF ANTIOCH
COMMUNITY DEVELOPMENT

Subject: City of Antioch General Plan Update

Dear Ms. Oshinsky:

Bay Area Air Quality Management District (District) staff have received your agency's Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Antioch General Plan Update. According to the NOP, the updated General Plan will be a blueprint for the City's future, describing the projected growth and development within the City over the long-term and serving as the foundation upon which the City will make development and other land use-related decisions.

District staff believe the DEIR should analyze the General Plan's potential impacts upon air quality. The Bay Area is currently a non-attainment area for federal and state ambient air quality standards for ground level ozone and state standards for particulate matter. The air quality standards are set at levels to protect public health and welfare. Toxic air contaminants are also an area of serious concern in the Bay Area. Any project which exposes sensitive receptors or the general public to substantial levels of criteria air pollutants or toxic air contaminants would be deemed to have a significant impact and would need to be properly mitigated. The major source of air pollution in the Bay Area is motor vehicles. As general background for readers, the DEIR should discuss the health effects of air pollution, the region's attainment status with regard to ambient air quality standards and the contribution of mobile and stationary sources to air pollution emissions.

The DEIR should evaluate whether implementing the General Plan will create or exacerbate land use conflicts that would result in adverse air quality impacts. Sensitive receptors could potentially be exposed to air pollutants. Various industrial, commercial and agricultural land uses can be potential sources of air pollutants. The DEIR should address all potential air quality impacts of plan development including: 1) the impacts of introducing new residents and other sensitive receptors near existing sources of air pollutants; and 2) the impacts of introducing new sources of air pollutants near existing sensitive receptors. The DEIR should also evaluate potential nuisance impacts, such as odors and dust that could result from plan implementation. Odors and dust may not necessarily cause physical harm, but can still be unpleasant and lead to citizen complaints. The plan should seek to avoid such impacts.

The DEIR should include an analysis of the General Plan's consistency with the Bay Area 2000 Clean Air Plan (CAP). In order to evaluate plan consistency

with the CAP, the City should consider the following: the General Plan's consistency with the CAP's population and vehicle use projections, the extent to which the General Plan implements transportation control measures from the CAP, and whether the General Plan provides buffer zones around sources of odors, toxics and accidental releases. If planned appropriately, new development in Antioch need not increase vehicle use at a rate inconsistent with the CAP. Using a smart growth model of development can encourage more walking, biking and transit use and actually reduce vehicle miles traveled (VMT) in the area.

In many cases, it is not necessary for jurisdictions to quantify future air pollutant emissions as part of their analysis of plan consistency. For more details, we recommend that the City refer to the *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans (1999)*. The document provides guidance on best practices for assessing and mitigating air quality impacts related to plan consistency, as well as for construction emissions, land use/design measures, project operations, motor vehicles, nuisance impacts and more. If you do not already have a copy of our guidelines, we recommend that you obtain a copy by calling our Public Information Division at (415) 749-4900 or downloading the online version from the District's web site at http://www.baaqmd.gov/planning/plntrns/ceqaguid.htm.

We commend the City of Antioch's participation in the current Contra Costa County "Shaping Our Future" smart growth planning process. Decisions from this process will help to guide a number of growth-related issues throughout the county including more efficient use of land, the reduction of traffic congestion and better transit service. We believe that through land use decisions that support transit, walking and cycling, Bay Area cities can help to minimize vehicle trips and to improve local and regional air quality. Such development patterns have been strongly supported by Contra Costa County residents at "Shaping Our Future" workshops. We strongly recommend that the General Plan provide policies and programs that will implement strategies that have come out of that county-wide planning process. We suggest that the City consider incorporating the following land use and design features in the General Plan to promote transportation alternatives to the single-occupant vehicle: transit-oriented development, higher density and in-fill development, neighborhood-serving commercial uses, and bicycle/pedestrian safety and access. District staff urge the City to consider adding an air quality element or section to the General Plan update as a comprehensive way for the City to ensure continued progress toward clean air.

If the analysis finds that implementing the General Plan will result in significant air quality impacts, then it is important that the City consider a number of possible air pollution mitigation measures in the DEIR. Some possible mitigation measures include improved transit, shuttles, bicycle/pedestrian measures, reduced parking, parking fees, access to services, and ridesharing, many of which are listed in the *BAAQMD CEQA Guidelines*. Without appropriate mitigation measures in place, future development projects could lead to a long-term cumulative increase in motor vehicle emissions, harming local and/or regional air quality and exposing residents to unhealthy air. We strongly urge you consider not only implementing transportation demand management (TDM) measures, but also focusing on a more sustainable model of development in order to reduce reliance on the automobile and thus minimize the need for TDM measures.

If you have any questions regarding these comments, please contact Suzanne Bourguignon, Environmental Planner, at (415) 749-5093.

Sincerely,

William C. Norton
Executive Officer/APCO

WN:SB

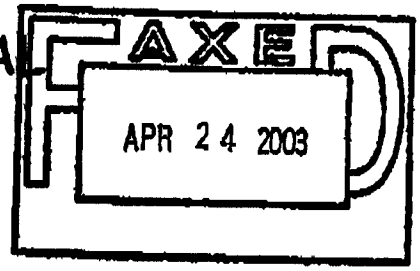
cc: BAAQMD Director Mark DeSaulnier
BAAQMD Director Mark Ross
BAAQMD Director Gayle Uilkema

File 060-01-01

Contra Costa County
FLOOD CONTROL
& Water Conservation District

Maurice M. Shiu
ex officio Chief Engineer
255 Glacier Drive, Martinez, CA 94553-4825
Telephone: (925) 313-2000
FAX (925) 313-2333

FAX TRANSMITTAL



DATE: 4/24/03

TIME: 3:45 p.m.

TO: NINA OSHINSKY

FIRM: CITY OF ANTIOCH

FAX NUMBER: (925) 779-7034

FROM: Hannah Wong, Engineering Staff

TOTAL NUMBER OF PAGES (incl. cover sheet): 3

MESSAGE:

OUR COMMENTS TO THE NOP/IS OF THE CITY OF ANTIOCH GENERAL PLAN UPDATE FOLLOWS.

PLEASE CALL ME IF YOU HAVE ANY QUESTIONS.

THANK YOU!

☞ If you have any questions or problems with this transmittal, please contact me at (925) 313-2381.

Hannah S. Wong

Contra Costa County
FLOOD CONTROL
& Water Conservation District

Maurice M. Shiu
ex officio Chief Engineer
255 Glacier Drive, Martinez, CA 94553-4825
Telephone: (925) 313-2000
FAX (925) 313-2333

April 24, 2003

Nina Oshinsky
City of Antioch
Community Development Department
Third & "H" Streets
Antioch, CA 94509

Files: 97-29G, 97-29J, 97-30C, 97-55, 97-56, and 97-104
97-29, 97-70, and 97-100
060-01-01
Antioch General Plan

Dear Ms. Oshinsky:

We have reviewed the Notice of Preparation (NOP) and Initial Study of a Draft Environmental Impact Report (DEIR) for the proposed City of Antioch General Plan. We received the NOP on March 31, 2003 and submit the following comments:

1) The Antioch General Plan covers six formed Drainage Areas 29G, 29J, 30C, 55, 56, and 104 and three unformed Drainage Areas 29, 70, and 100. Drainage Areas 55 and 56 are part of the Lone Tree Corridor Assessment District No. 26 and 27. The City of Antioch's sphere of influence outside the southern City boundary line (the Roddy Ranch and Ginochio properties) is in formed Drainage areas 104 and 105. Drainage area fees are required for any development within a formed drainage area.

2) The General Plan DEIR should include an in-depth discussion about the Flood Control District's adopted Drainage Area plans, their purpose and how they are implemented. These plans provide a framework for regional drainage in the Antioch area. Several of the Drainage Areas do not have local plans. The Flood Control District will work with the City and developers to plan facilities needed to serve these areas.

3) The General Plan should include a specific policy that requires the City or developers in the unformed drainage areas to draft and implement their own regional Drainage Master Plan. A Drainage Master Plan should be completed prior to considering development proposals in these areas. The Drainage Master Plan shall include detailed hydrologic modeling of the watershed that considers land use, existing facilities, soil, and topographic data. The Drainage Master Plan shall result in a plan with descriptions of proposed flood control facilities (which typically include basins, channels and storm drains), compliance with discharge requirements, cost estimates, and schedule.

   The Drainage Master Plan shall include an organization chart that details which agency will be responsible for Design, Planning, Hydrogeology, Current Development Review, Clean Water Program compliance, and Maintenance.

4) Portions of the City's General Plan area covers unincorporated areas of the County. Upon incorporation, the City should develop their own flood control plans and identify discharge points for those unformed drainage areas where no Drainage Master Plan exists. The City will be responsible for insuring the flood control implementation is performed correctly and the ongoing maintenance is perpetual.

5) We compared Contra Costa County's 1995-2010 General Plan Land Use Maps with Antioch's General Plan Land Use Map. The land use assumptions in the District's hydrology calculations are generally based on the previous County General Plan. The City's land use designations for the following Focus Areas have a greater density compared with the District's hydrology assumptions: East Lone Tree

Specific Plan, Ginochio Property, Rivertown/Urban Waterfront, Roddy Ranch, SR-4 Frontage, Sand Creek Specific Plan, Somersville Road Corridor and Western Gateway. Also, many areas designated as Medium Density Residential on the City's General Plan are at a greater density compared to the District's plan.

The DEIR should address the differences of increased density in the City's General Plan as compared with the County's 2010 Land Use Map and provide mitigation for any impacts the increased impervious surface may have on the existing watersheds. The various drainage systems included in the adopted Drainage Area plans for the Antioch area were designed to accommodate full development at the density allowed by the zoning at the time each plan was developed. Any increases in density over what was originally assumed may overtax the planned system. Additional analysis should be performed to confirm the adequacy of existing and proposed drainage facilities.

6) From Table C (Anticipated General Plan Build Out in the General Plan Study Area), it appears the following Focus Areas are comparable with the County's General Plan: "A" Street Interchange and the Eastern Employment Areas. Although these Focus Areas appear comparable with the County's General Plan, we would like to receive detailed land use maps of these Focus Areas so we may verify the land use assumptions agree with our General Plan.

7) The DEIR should stipulate that future developments in Antioch should design and construct storm drain facilities to adequately collect and convey storm water runoff, without diversion of the watershed, entering or originating within the development to the nearest natural watercourse or adequate man-made drainage facility per the drainage area plan.

8) The DEIR should mention that existing Flood Control District maintained basins are designed and function only as detention basins at this time. Additional functions, such as sedimentation/water quality features are above and beyond their currently designed purpose. Inclusion of these features could affect maintenance activities and ultimately maintenance costs. Additional funding would be required.

9) We previously reviewed the Draft Environmental Impact Report (DEIR) for the Sand Creek Specific Plan, which is one of the Focus Areas of this Study. This plan addressed development in Future Urban Area No. 1 (FUA-1) in the City of Antioch, located between the Black Diamond Mines Regional Preserve and Heidorn Ranch Road. FUA-1 is within Drainage Area 104. For specific comments regarding the Sand Creek area, please refer to our comment letter regarding this project, which was sent to the City on September 25, 2002.

We appreciate the opportunity to review the NOP and Initial Study for the Antioch General Plan update. We look forward to receiving a copy of the General Plan and DEIR, which include our comments. If you have any questions, or would like to meet to discuss our comments, please call me at (925) 313-2394 or Hannah Wong at (925) 313-2381.

Very truly yours,

Paul R. Detjens

Paul R. Detjens
Associate Civil Engineer
Flood Control Engineering

PRD:HW:cjd:gpp
G:\GrpData\FldCtl\CurDev\CITIES\Antioch\General Plan\NOP.doc

cc: G. Connaughton, Flood Control
E. Whan, Flood Control
Joe Brandt, City of Antioch

APPENDIX B

CULTURAL RESOURCES

TABLE D-1
California Academy of Sciences (CAS) Fossil Review: Antioch General Plan
List Fossil Localities Within One Mile of Project Area

Fossil Catalog Number	Fossil Type	Location Description
UCMP 78142	**Mammalia-Rodentia-Castoridae**	see Appendix A
UCMP 65643	**Mammoth(Pleistocene)**	
UCMP 65470	**Mammoth(Pleistocene)**	
CAS 60115	molusca	Markeley Canyon
CAS 27300	molusca	Stewartsville, North side of canyon, center
CAS 260	molusca	approx. 1 mile south of Stewartsville
CAS 4719	molusca	
CAS 52396		
CAS 25707	***Ampullina oviformis***	
CAS 52332	molusca	5 miles west of Brentwood, CA
CAS 28411		approx. 1 mile south of project area, Briones Valley
CAS 27856	***Lytoceros***	approx. 1 mile south of project area

TABLE D-2

University of California Museum of Paleontology (UCMP) Vertbetrate Fossil Locality Data

Loc prefix	Loc no	Loc name	County	map name	map scale	Map Source	Map edition	Lat deg	Lat min	Lat sec	lat dir	Long deg	Long min	Long sec	Long dir	variance in seconds	formation	Storage age
V	3719	Collinsville	Solano Co	Antioch	62500	USGS	1943	38	5	3	N	121	51	10	W		Soils	Rancholabrean
V	79073	Stratton Lane	Solano Co	Antioch North	24000	USGS	1953	38	4	57	N	121	50	38	W		Soils	Irvingtonian
V	4008	Antioch 2	Contra Costa Co	Antioch North	24000	USGS	1953	38	0	50	N	121	46	37	W		Soils	Rancholabrean
V	6030	Mokelumne Aqueduct No. 3,1	Contra Costa Co	Antioch North	24000	USGS	1953	38	0	12	N	121	51	39	W		Soils	Rancholabrean
V	65643	Markley Canyon 15	Contra Costa Co	Antioch South	24000	USGS	1953	37	31	19	N	121	52	27	W		Kirker	Chadronian
V	65470	Markley Canyon 17	Contra Costa Co	Antioch South	24000	USGS	1953	38	58	44	N	121	52	29	W		Cierbo	Clarendonian
V	78142	Markley Canyon 18	Contra Costa Co	Antioch South	24000	USGS	1953	37	58	43	N	121	51	22	W	5N;7W	San Pablo	Clarendonian
V	6680	Kirker 1	Contra Costa Co	Antioch South	24000	USGS	1953	37	58	35	N	121	51	36	W		Kirker	Orellan
V	4719	Heidorn	Contra Costa Co	Antioch South	24000	USGS	1953	37	57	34	N	121	49	19	W		Soils	Rancholabrean
V	6650	Antioch Dam	Contra Costa Co	Antioch South	24000	USGS	1953	37	58	39	N	121	49	24	W		Soils	Rancholabrean
V	70103	Stewartville 1	Contra Costa Co	Antioch South	24000	USGS	1953	37	56	13	N	121	51	4	W	5N;7W	Martinez	Tiffanian
V	71157	Stewartville 2	Contra Costa Co	Antioch South	24000	USGS	1953	37	56	13	N	121	51	4	W	5N;7W	Martinez	Tiffanian
V	6822	Markley Canyon 14	Contra Costa Co	Antioch South	24000	USGS	1953	37	58	50	N	121	52	20	W		Markley Ss	Uintan

Cataloged Specimens (UCMP)

Loc prefix	Loc no	Loc name	Spec no	Class	Order	Family	Genus	Species description
V	3719	Collinsville	33406	Mammalia	Proboscidea	Elephantidae	Mammuthus	M/
V	3719	Collinsville	33407	Mammalia	Perissodactyla	Equidae	Equus	LATERAL METAPODIAL
V	4008	Antioch 2	35652	Mammalia	Artiodactyla	Camelidae		DIST RADIUS
V	4008	Antioch 2	35653	Mammalia	Artiodactyla	Bovidae	Bison	TOOTH
V	4008	Antioch 2	35654	Mammalia	Perissodactyla	Equidae		TEETH
V	4008	Antioch 2	35655	Mammalia	Xenarthra	Mylodontidae	Glossotherium	ASTRAGALUS
V	4008	Antioch 2	35651	Mammalia	Artiodactyla	Camelidae		TOOTH
V	4719	Heidorn	38314	Mammalia	Perissodactyla	Equidae	Equus	CHEEK TEETH
V	6030	Mokelumne Aqueduct No	57559	Mammalia	Rodentia			SKULL FRAGS,DENTARY FRAGS,POSTCRANIAL BONE FRAGS
V	6650	Antioch Dam	76997	Mammalia	Proboscidea	Mammutidae	Mammut	SKULL FRAG
V	6822	Markley Canyon 14	80434	Osteichthyes				SCALE ?
V	78142	Markley Canyon 18	122037	Mammalia	Rodentia	Castoridae		I
V	78142	Markley Canyon 18	122038	Mammalia	Perissodactyla	Equidae	Pliohippus	tehonensis P OR M FRAG/
V	79073	Stratton Lane	141119	Mammalia	Rodentia	Cricetidae	Sigmodon	lindsayi /R M1 FIG

NOTE: Locality data plotted on the Antioch South, Antioch North and Brentwood USGS 7.5' topographic quadrangle maps.

ERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP.PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
009986		2ND ST	GRANGE HALL, ANTIOCH LUMBER COMPAN	ANTIOCH	P	1870	HIST.SURV.	4509-0006-0000		5S	
009987		606 3RD ST	DONLON HOME	ANTIOCH	P	1870	HIST.SURV.	4509-0007-0000		6Y	
067026		1888 A ST	ACQUI OF BLDG	ANTIOCH	U		PROJ.REVW.	HUD891201B	12/28/89	3S	
010003		501 B ST	STAMM HOUSE	ANTIOCH	P	1910	HIST.SURV.	4509-0023-0000		4S	
009981		119 BEEDE HOUSE RD	BEEDE HOUSE	ANTIOCH	P	1895	HIST.SURV.	4509-0001-0000		6Y	
067023		3610 DELTA FAIR BLVD	BLDG REHAB	ANTIOCH	U		PROJ.REVW.	HUD891130F	12/28/89	3S	
010004		512 E ST	REMFREE HOUSE	ANTIOCH	P	1870	HIST.SURV.	4509-0024-0000		7	
009982		EMPIRE MINE RD	EMPIRE BASIN MINE	ANTIOCH	P		HIST.SURV.	4509-0002-0000		6Y2	
096300		1903 EVERGREEN AVE		ANTIOCH	P	1942	PROJ.REVW.	HUD950425B	06/20/95	5S	
010005		F ST	ANTIOCH PIONEERS LANDING SITE	ANTIOCH	M	1850	HIST.SURV.	4509-0025-0000		5S	
010006		F ST	EMPIRE RAILROAD MONUMENT	ANTIOCH	M		HIST.SURV.	4509-0026-0000		6Y	
067025		200 F ST	EQUIPMENT PURCHASE	ANTIOCH	U		PROJ.REVW.	HUD891130H	12/28/89	3S	
084748		519 F ST	ANTIOCH HISTORICAL CENTER, ANTIOCH	ANTIOCH	M	1916	HIST.SURV.	4509-0030-0000	11/12/89	7	
009983		FULTON SHIPYARD RD	SMITHS LANDING SITE, FULTON SHIPYA	ANTIOCH	P	1850	HIST.SURV.	4509-0003-0000		6Y2	
095503		601 G ST		ANTIOCH	P	1905	PROJ.REVW.	HUD9502281	04/13/95	5S	
010007		101 H ST	CASINO THEATER	ANTIOCH	P	1910	HIST.SURV.	4509-0027-0000		3S	
009997		414 H ST	PIONEER HOSPITAL	ANTIOCH	P	1930	HIST.SURV.	4509-0017-0000		7J	
010008		LONE TREE WY	SHANNON RANCH/WILLIAMSON RANCH, WI	ANTIOCH	P	1895	ST.HS.LDMK	07-0017	05/27/92	1S	AC
							HIST.RES.	NPS-87000003-0000	01/29/87	6Y	
065733		217 ROSSI AVE	RESID REHAB	ANTIOCH	U		PROJ.REVW.	HUD890227G	03/30/89	1S	ACD
073327		SOMERSVILLE RD	BLACK DIAMOND MINES, BLACK DIAMOND	ANTIOCH	D	1859	NAT.REG.	07-0004	10/02/91	1S	ACD
							HIST.SURV.	4509-0029-9999	10/02/91	7L	
089540		SOMERSVILLE RD	MOUNT DIABLO COAL FIELD	ANTIOCH	D		HIST.RES.	SHL-0932-0000	05/13/80	6Y	
066116		2532 SOMERSVILLE RD	RESI REHAB	ANTIOCH	U		PROJ.REVW.	HUD8908168	09/13/89	6Y2	
069225		2846 SUNSET LANE		ANTIOCH	U	1930	PROJ.REVW.	HUD901010B	11/16/90	6Y	
066132		517 W 15TH ST	RESI REHAB	ANTIOCH	U		PROJ.REVW.	HUD890829A	09/22/89	6Y2	
082691		524 W 16TH ST		ANTIOCH	P	1935	PROJ.REVW.	HUD930525A	07/08/93	1S	ABC
009985		815 W 1ST ST	HARD, ROSWELL BUTLER HOME, HARD HO	ANTIOCH	M	1869	HIST.RES.	NPS-93001020-9999	09/30/93	7	
							ST.HS.LDMK	07-0018	01/18/92	6	
							ST.FND.PRG	619.0-HP-88-07-001	12/14/88	3S	
							HIST.SURV.	4509-0005-0000		1D	ABC
095483		815 W 1ST ST	ROSEWELL BUTLER HARD HOUSE	ANTIOCH	M	1867	HIST.RES.	NPS-93001020-0001	09/30/93	1D	ABC
095484		815 W 1ST ST	FENCE	ANTIOCH	M		HIST.RES.	NPS-93001020-0002	09/30/93	1D	ABC
095485		815 W 1ST ST	CISTERN	ANTIOCH	M		HIST.RES.	NPS-93001020-0003	09/30/93	3S	
009988		816 W 1ST ST	SANTA FE RAILROAD DEPOT, ATCHISON	ANTIOCH	P	1902	HIST.SURV.	4509-0008-0000		5S	
009989		W 2ND ST	BAKER HARDWARE AND PAINT STORE	ANTIOCH	P	1880	HIST.SURV.	4509-0009-0000		5S	
009990		W 2ND ST	MULHARE HOUSE	ANTIOCH	P	1863	HIST.SURV.	4509-0010-0000		4S	
009991		502 W 2ND ST	JOSLIN HOME	ANTIOCH	P	1890	HIST.SURV.	4509-0011-0000		6Y	
067024		512 W 2ND ST	EQUIP PURCHASE	ANTIOCH	U		PROJ.REVW.	HUD891130G	12/28/89	3S	
009992		W 3RD ST	ANTIOCH CITY HALL	ANTIOCH	M	1919	HIST.SURV.	4509-0012-0000		4S	
009993		W 3RD ST	ODD FELLOWS HALL	ANTIOCH	P	1877	HIST.SURV.	4509-0013-0000		3S	
009994		220 W 4TH ST	HARKINSON HOUSE	ANTIOCH	P	1890	HIST.SURV.	4509-0014-0000		6Y	
066133		314 W 4TH ST	RESI REHAB	ANTIOCH	U		PROJ.REVW.	HUD8908298	09/22/89	3S	
009996		601 W 4TH ST	JUDGE HARTLEY HOUSE, CHARLES MARSH	ANTIOCH	P	1887	HIST.SURV.	4509-0016-0000		1S	A
009995		1500 W 4TH ST	RIVERVIEW UNION HIGH SCHOOL	ANTIOCH	D	1910	HIST.RES.	NPS-98001243-0000	10/14/98	1S	
							NAT.REG.	07-0030	10/14/98	3S	
							HIST.SURV.	4509-0015-0000			

FICE OF HISTORIC PRESERVATION * * * Directory of Properties in the Historic Property Data File for CONTRA COSTA County.

ERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
009998		W 6TH ST	FIRST CONGREGATIONAL CHURCH	ANTIOCH	P	1891	HIST.SURV.	4509-0018-0000		4S	
009999		119 W 6TH ST	COX HOUSE	ANTIOCH	P	1900	HIST.SURV.	4509-0019-0000		4S	
010000		219 W 6TH ST	BROWN HOUSE	ANTIOCH	P	1890	HIST.SURV.	4509-0020-0000		4S	
010001		504 W 6TH ST	MCKELLIPS HOUSE	ANTIOCH	P	1886	HIST.SURV.	4509-0021-0000		4S	
088029		905 W 6TH ST		ANTIOCH	P	1924	PROJ.REVW.	HUD940202A	03/08/94	6Y2	
010002		319 W 7TH ST	WILLS RANCH	ANTIOCH	P	1871	HIST.SURV.	4509-0022-0000		4S	
119357		516 W 8TH ST		ANTIOCH	P	1915	HIST.RES.	DOE-07-95-0001-0000	08/21/95	6U2	
							PROJ.REVW.	HUD950821L	08/21/95	6U2	
087537		714 W 8TH ST		ANTIOCH	P	1910	PROJ.REVW.	HUD931026M	02/17/94	6Y2	
087539		714 W 8TH ST		ANTIOCH	P	1918	PROJ.REVW.	HUD931026M	02/17/94	6Y2	
087535		801 W 8TH ST		ANTIOCH	C	1942	PROJ.REVW.	HUD931026M	02/17/94	6Y2	
087538		712 W 9TH ST		ANTIOCH	P	1904	PROJ.REVW.	HUD931026M	02/17/94	6Y2	
087536		800 W 9TH ST		ANTIOCH	P	1930	PROJ.REVW.	HUD931026M	02/17/94	6Y2	
067058		1200 WEST 4TH ST	STC FISH PRODUCTS # 56	ANTIOCH	U		PROJ.REVW.	HUD891226A	01/16/90	6Y	
009984		WILBUR AVE	MARSH LANDING SITE	ANTIOCH	P	1838	HIST.SURV.	4509-0004-0000		7	
122955	20	WILBUR AVE		ANTIOCH	P	1948	HIST.RES.	DOE-07-99-0384-0000	06/07/99	6Y2	
							PROJ.REVW.	FHWA9905140	06/07/99	6Y2	
122956		WILBUR AVE		ANTIOCH	P	1918	HIST.RES.	DOE-07-99-0385-0000	06/07/99	6Y2	
							PROJ.REVW.	FHWA9905140	06/07/99	6Y2	
069302			BLACK DIAMOND HISTORIC DISTRICT	(VIC) ANTIOCH	U		PROJ.REVW.		10/28/77	2S1	

APPENDIX D - SUMMARY OF CULTURAL RESOURCES LEGISLATION

FEDERAL LEGISLATION

1. **Federal Antiquities Act of 1906 (P.L. 59-202, 32 Stat. 255).** Forbids and establishes criminal sanctions for disturbance of any object of antiquity of federal land without a permit issued by an authorizing authority.

2. **1872 Mining Law, amended 1988.** Excludes fossils (including petrified wood) from claim or patent. U.S. Forest Service and Bureau of Land Management regulates surface effects of development under this law. BLM regulations specifically state that operators may not knowingly disturb or destroy any scientifically important paleontological remains on federal lands; that they notify an authorized officer of such finds; and that said officer shall take action to protect or remove the resource(s).

3. **Mineral Leasing Act of 1920 (sec. 30).** Requires and provides for the protection of interest of the United States. Natural resources, including paleonto-logic resources, are commonly regarded as such interests.

4. **National Natural Landmarks Program, established 1962, administered under Historic Sites Act of 1935 (P.L. 74-292, 16 U.S.C. 461-467).** A National Natural Landmark is defined as "an area of national significance... that contains an outstanding representative example(s) of the nation's natural heritage, including...geological features...or fossil evidence of the development of life on earth." National significance is defined as "...examples of the full range of ecological and geological features, the usual as well as the unique, which best represent the nation's heritage, the knowledge and appreciation of which are important for the perpetuation of their inherent natural values and for associated scientific, educational, recreational, or inspirational benefit" (36 CFR 62, 1985).

5. **National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190, 83 Stat. 852, 42 USC 4321-4327).** Mandates evaluation of impacts in order to "preserve important historic, cultural, and natural aspects of our national heritage" (Section 101.b4).

6. **Executive Order 11593, May 31, 1971, Protection and Enhancement of the Cultural Environment (36 CFR 8921).** Requires federal agencies to inventory and protect properties under their jurisdiction. National Park Service regulations under 36 CFR provide that Paleontologic specimens may not be disturbed or removed without a permit.

7. **Archaeological and Historic Data Preservation Act of 1974 (P.L. 86-253, as amended by P.L. 93-921, 16 U.S.C. 469).Act of May 24, 1974 (88 Stat 174, sec. 3 a0, 4a).** Provides for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally licensed, or federally funded project. A "Statement of Program Approach" was published in the *Federal Register* on March 26, 1979 (40 FR 18117) to advise the manner in which this law will be implemented.

8. **36 CFR Part 800 (39 FR 3365, January 25, 1974, and 44 FR 6068, January 30, 1979): Procedures for the Protection of Historic and Cultural Properties.** Establishes procedures to ensure that historic and cultural resources are given proper consideration in the preparation of environmental impact statements.

9. **Federal Land Management and Policy Act of 1976 (FLPMA, P.L. 94-579, 43 U.S.C. 1701-1782).** Provides authority for BLM to regulate lands under its jurisdiction, managed in a manner to "protect the quality of scientific, scenic, historic, ecological, environmental...and archaeological values." Authority is given to establish areas of critical environmental concern (ACEC).

10. **Surface Mining Control and Reclamation Act of 1977 (SMCRA, P.L. 95-87, 30 U.S.C. 1201-1328).** Regulates surface coal mining and provides designation as unsuitable for surface mining if mining would "...result in significant damage to important cultural, scientific, and esthetic values and natural systems...."

11. **Paleontological Resource Management 1998**, Handbook H-8270-1 General Procedural Guidance for Paleontological Management.

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12. **California Environmental Quality Act of 1970 (CEQA, 13 PRC, 2100 et seq).** Requires identification of potential adverse impacts of a project to any object or site of scientific importance (Div. 1, PRC 5020.1(b)).

13. **Guidelines for the Implementation of the California Environmental Quality Act, as amended May 10, 1980 (14 Cal. Admin. Code: 15000 et seq).** Requires mitigation of adverse impacts to a Paleontologic site from development on public land by construction monitoring.

14. **Guidelines for the Implementation of CEQA, 1992, Appendix G, section J (Significant effects).** Defines when a project will normally have a significant effect on the environment. Paleontology is specifically mentioned as a protected resource. "A project will normally have a significant effect on the environment if it will...disrupt or adversely affect a

prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study...."

15. **California Environmental Quality Act, State of California Public Resources Code, 2100-21177 as amended January 1, 1999, Appendix G - Environmental Checklist Form.** Impacts to known, important paleonto-logical resources are specifically covered under CEQA as potentially significant effects (i.e., the project will have a significant effect on the environment). Specifically, each California project must answer the question: Cultural Resource - would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature? There are four possible answers: Potentially Significant Impact, Potentially Significant Unless Mitigation Incorporated, Less than Significant Impact, No Impact.

16. **Warren-Alquist Act (PRC 25000 et seq).** Requires the California Energy Commission to evaluate energy facility siting in unique areas of scientific concern (Section 26627).

17. **Public Resources Code, Section 5097.5 (State 1965, c. 1136, p. 2792).** Prohibits excavation or removal of any "vertebrate paleontological site...or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands." Public lands are defined to include lands owned by or under the jurisdiction of the state or any city, county, district, authority or public corporation, or any agency thereof. Defines any unauthorized disturbance or removal of archaeological, historical, or paleontological materials or sites located on public lands as a misdemeanor.

18. **Public Resources Code, Section 30244.** Requires reasonable mitigation of adverse impacts to paleontological resources from development on public land.

APPENDIX C

HIGHWAY CAPACITY MANUAL EXHIBITS

This table contains approximate values. It is meant for illustrative purposes only. The values are highly dependent on the assumptions used. It should not be used for operational analyses or final design. This table was derived using assumed values listed in the footnote.

EXHIBIT 10-7. EXAMPLE SERVICE VOLUMES FOR URBAN STREETS
(SEE FOOTNOTES FOR ASSUMED VALUES)

Lanes	Service Volumes (veh/h)				
	A	B	C	D	E
			Class I		
1	N/A	860	930	1020	1140
2	N/A	1720	1860	2030	2280
3	N/A	2580	2780	3050	3430
4	N/A	3450	3710	4060	4570
			Class II		
1	N/A	N/A	670	850	890
2	N/A	N/A	1470	1700	1780
3	N/A	N/A	2280	2550	2670
4	N/A	N/A	3090	3400	3560
			Class III		
1	N/A	N/A	480	780	850
2	N/A	N/A	1030	1600	1690
3	N/A	N/A	1560	2410	2540
4	N/A	N/A	2140	3220	3390
			Class IV		
1	N/A	N/A	540	780	800
2	N/A	N/A	1200	1570	1620
3	N/A	N/A	1900	2370	2430
4	N/A	N/A	2610	3160	3250

Notes
N/A - not achievable given assumptions below.
This table was derived from the conditions listed in the following table.

	Class			
	I	II	III	IV
Signal density (sig/mi)	0.8	3	5	10
Free-flow speed (mi/h)	50	40	35	30
Cycle length (s)	110	90	80	70
Effective green ratio	0.45	0.45	0.45	0.45
Adj. sat. flow rate	1850	1800	1750	1700
Arrival type	3	4	4	5
Unit extension (s)	3	3	3	3
Initial queue	0	0	0	0
Other delay	0	0	0	0
Peak-hour factor	0.92	0.92	0.92	0.92
% lefts, % rights	10	10	10	10
Left-turn bay	Yes	Yes	Yes	Yes
Lane utilization factor	According to Exhibit 10-23, Default Lane Utilization Factors			

different operating characteristics of urban and rural freeways. The example service volumes in the exhibit are highly dependent on the assumptions given in the footnote.

EXHIBIT 13-6. EXAMPLE SERVICE VOLUMES FOR BASIC FREEWAY SEGMENTS (SEE FOOTNOTE FOR ASSUMED VALUES)

	Number of Lanes	FFS (mi/h)	Service Volumes (veh/h) for LOS				
			A	B	C	D	E
Urban	2	63	1230	2030	2930	3840	4560
	3	65	1900	3110	4500	5850	6930
	4	66	2590	4250	6130	7930	9360
	5	68	3320	5430	7820	10,070	11,850
Rural	2	75	1410	2310	3340	4500	5790
	3	75	2110	3460	5010	6750	8680
	4	75	2820	4620	6680	9000	11,580
	5	75	3520	5780	8350	11,250	14,470

Notes:
Assumptions: Urban: 70-mi/h base free-flow speed, 12-ft-wide lanes, 6-ft-wide shoulders, level terrain, 5 percent heavy vehicles, no driver population adjustment, 0.92 PHF, 1 interchange per mile.
Rural: 75-mi/h base free-flow speed, 12-ft-wide lanes, 6-ft-wide shoulders, level terrain, 5 percent heavy vehicles, no driver population adjustment, 0.88 PHF, 0.5 interchanges per mile.

This table contains approximate values. It is meant for illustrative purposes only. The values are highly dependent on the assumptions used. It should not be used for operational analyses or final design. This table was derived using assumed values given in the footnote.

III. FREEWAY WEAVING

Weaving is defined as the crossing of two or more traffic streams traveling in the same general direction along a significant length of highway without the aid of traffic control devices (with the exception of guide signs). Weaving segments are formed when a merge area is closely followed by a diverge area, or when an on-ramp is closely followed by an off-ramp and the two are joined by an auxiliary lane. Note that if a one-lane on-ramp is closely followed by a one-lane off-ramp and the two are not connected by an auxiliary lane, the merge and diverge movements are considered separately using procedures for the analysis of ramp terminals.

Lane changing is a key descriptor of weaving operation

Weaving segments require intense lane-changing maneuvers as drivers must access lanes appropriate to their desired exit points. Thus, traffic in a weaving segment is subject to turbulence in excess of that normally present on basic freeway segments. The turbulence presents special operational problems and design requirements that are addressed by the procedures described in Chapter 24.

Exhibit 13-7 shows a weaving segment. If entry and exit roadways are referred to as legs, vehicles traveling from Leg A to Leg D must cross the path of vehicles traveling from Leg B to Leg C. Flows A-D and B-C are, therefore, referred to as weaving flows. Flows A-C and B-D may also exist, but they need not cross the path of other flows and are referred to as nonweaving flows.

Exhibit 13-7 shows a simple weaving segment formed by a single merge point followed by a single diverge point. Multiple weaving segments may be formed where one merge is followed by two diverge points or where two merge points are followed by one diverge point.

criteria, which were, again, unrelated to specific operational characteristics. Thus, information presented in this section is for general guidance only.

Ramp roadways differ from the freeway mainline in that

- They are roadways of limited length and width (often just one lane);
- Free-flow speed is frequently lower than that of the roadways connected, particularly the freeway;
- On single-lane ramps, where passing is not possible, the adverse impact of trucks and other slow-moving vehicles is more pronounced than on multilane roadways; and
- At ramp-street junctions, queuing may develop on the ramp, particularly if the ramp-street junction is signalized.

Exhibit 25-3 lists approximate criteria for the capacity of ramp roadways. These capacities are based on research studies (*1*) and previously noted work conducted in the 1970s (*2*).

The values in the exhibit are not capacities of freeway terminals, but rather of ramps themselves

EXHIBIT 25-3. APPROXIMATE CAPACITY OF RAMP ROADWAYS

Free-Flow Speed of Ramp, S_{FR} (mi/h)	Capacity (pc/h)	
	Single-Lane Ramps	Two-Lane Ramps
> 50	2200	4400
> 40–50	2100	4100
> 30–40	2000	3800
≥ 20–30	1900	3500
< 20	1800	3200

Note that Exhibit 25-3 gives the capacity of the ramp roadway itself, not that of the ramp-freeway terminal. There is no evidence, for example, that a two-lane on-ramp freeway terminal can accommodate more vehicles than a one-lane ramp terminal.

It is unlikely that two-lane on-ramps can accommodate more than 2,250 to 2,400 pc/h through the merge area itself. The two-lane configuration will achieve a merge with less turbulence and a higher LOS but will not increase the capacity of the merge, which is controlled by the capacity of the downstream freeway segment. For higher on-ramp flows, a two-lane on-ramp must be used in conjunction with a lane addition and a major merge configuration.

Two-lane off-ramps can accommodate higher ramp flows through the diverge area than can single-lane off-ramps. A major diverge configuration can also be considered, which may more effectively balance the per-lane flows on each departing leg.

Where an off-ramp terminates at a signalized or unsignalized intersection, the capacity of the ramp system may be controlled by the capacity of the ramp approach to the intersection. Signalized intersections are analyzed using the techniques of Chapter 16, and procedures to analyze unsignalized intersections are provided in Chapter 17.

LOS

LOS in merge (and diverge) influence areas is determined by density for all cases of stable operation, represented by LOS A through E. LOS F exists when the total flow departing from the merge area (v) exceeds the capacity of the downstream freeway segment. No density will be predicted for such cases. Refer to Chapter 22 for procedures to analyze LOS F conditions.

LOS criteria for merge and diverge areas are listed in Exhibit 25-4. The density values shown for LOS A through E assume stable operation, with no breakdowns within the merge influence area.

APPENDIX D

SAND CREEK RESOURCE MANAGEMENT PLAN

FRAMEWORK
FOR
RESOURCE MANAGEMENT PLAN
FOR
SAND CREEK FOCUS AREA

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APPENDIX A: FIGURES

FIGURES

Figure 1: Natural Communities

Figure 2: Vernal Pool Fairy Shrimp

Figure 3: San Joaquin Kit Fox

Figure 4: California Tiger Salamander

Figure 5: Burrowing Owl

Figure 6: California Red-legged Frog

Figure 7: Alameda Whipsnake

Figure 8: Plan Area Constraints Summary

Figure 9: Impact Zones

Figure 10: Grassland Sensitive Species

INTRODUCTION AND APPROACH

This Framework for Resources Management Plan for Sand Creek Focus Area (the "Plan") provides the framework for addressing the special status biological resources in the Sand Creek Focus Area in the City of Antioch (Figure 1). This Plan has been developed to provide a basis for establishing resource management policies for the Sand Creek Focus Area. As its name suggests, this Plan will serve as the framework for a more detailed Resource Management Plan ("RMP") which will refine the policies described in this Plan. The resource management policies developed in this Plan and in the resulting RMP are intended to inform and support the City's determinations regarding appropriate land uses for the Focus Area, which determinations will be implemented and given effect through the City's General Plan 2003 and its Sand Creek Specific Plan. Both the General Plan 2003 and the Sand Creek Specific Plan will be considered for adoption by the City Council in the fall of 2003.

This Plan takes a broad and integrated approach to these resources, based on three well-accepted principles from conservation biology. First, it considers the biological resources in the Focus Area in terms of natural communities at a regional scale. In doing so, the Plan recognizes the variable distribution and interactions of the sensitive resources in the area, providing a perspective superior to the common project-by-project and species-by-species approach typically applied to sensitive species issues. The natural communities present in the Sand Creek Focus Area and addressed in this Plan include the grassland community; the stream and riparian community; the chaparral, scrub and rock outcrop community; and the oak woodland and savannah community. The Plan also addresses the relationships between these natural communities and the existing preserved lands in regional proximity to these natural communities. This broad, regional approach is complementary to the General Plan and Specific Plan processes that will be used to consider and approve development proposals for the Focus Area, and helps to ensure that the benefits of comprehensive multi-parcel planning are realized.

Second, the Plan utililizes the concept of landscape corridors to link existing areas of preserved habitat. Habitat fragmentation has been identified as one of the greatest threats facing wildlife species today. In recent years, ecologists have placed increased emphasis on the role that preserved landscape corridors play in maintaining regional habitat values. Among other things, preserving landscape corridors between larger, fragmented habitat areas helps to prevent local extinctions of isolated populations, aids in the support of species that require more resources than can be supplied by single preserves, and increases the value of existing preserves as potential habitat by providing access points between larger habitat preserves.

In general, the greater the number of access points (e.g., corridors) between or among suitable habitat areas, the greater the chance of species persistence. This is particularly true when habitat areas are too small to support self-sustaining populations, or the species' history includes multiple episodes of extinction and recolonization, such as the California tiger salamander.

Habitat corridors should generally be as wide as possible to be fully functional. A fully functional corridor is one that can be readily occupied and traversed by all of the species associated with its community, and a less functional corridor is difficult or impossible for some

species to occupy or traverse. Width is best expressed relative to the length of the corridor: as a rule of thumb, fully functional corridors are typically at least as wide as the pinched area is long, and corridors that are many times longer than they are wide are typically less functional.

The adverse effects of development on habitat corridors can, as a general rule, only be effectively mitigated by minimizing or avoiding the impact. When avoidance is not practicable, minimizing the impact can be accomplished by ensuring that other corridors remain intact.

Wildlife populations usually experience stochastic (uncertain) extinctions for one of four reasons: 1) genetic (i.e., inbreeding depression); 2) demographic (e.g., one gender disappears from a small population); 3) environmental; or 4) catastrophic (e.g., fire). Landscape corridors minimize the potential for extinction events by reducing the likelihood that one of these scenarios will occur.

It is important to note that landscape corridors are used differently by different species. For instance, medium to large mammals (or some bird species) may traverse a corridor in a matter of hours, while smaller mammals or other species may take a longer period of time to move through the same corridor (e.g., measured in days, weeks and even years).

An example of a species moving more quickly through a corridor was demonstrated empirically by Paul Beier in Orange County. Dr. Beier was able to show that the immigration of one male cougar every 10 years was sufficient to reduce the probability of the Santa Ana cougar population from experiencing an extinction event. Demographic extinction was a possibility in this case because there was a relatively small area that supported cougars, a biased sex ratio among the species (1 males for every 4 or 5 females), and because males of the species typically experienced higher mortality rates. In this case, a narrow landscape linkage that connected habitat in the Santa Ana Range with larger areas of the Cleveland National Forest allowed for the necessary influx of males.

A local example of a species moving more slowly is the California ground squirrel. Concerted efforts by the Contra Costa County Department of Agricultural in the 1950's to the late 1970's extirpated the ground squirrel from the northern part of the County. Ground squirrels were found to be absent from all of the Focus Area in the mid-1990's and even as late as 1998. Ground squirrels have now recolonized the Focus Area and, as a result, there is an increased likelihood that other species that prey on the ground squirrel, such as the burrowing owl or the kit fox, may appear in the Focus Area. In addition, other special-status species, such as the California tiger salamander, may also benefit by the recolonization of the ground squirrel in the Focus Area. This gradual movement of ground squirrels into the Focus Area from suitable areas to the south is best described as incremental movement over several years.

These examples demonstrate that landscape linkages are not simply highways that animals use to move back and forth. While they serve this purpose, they also allow for slower or more infrequent movement; movement strategies that may be just as profound as a single movement event over just a couple of hours.

Third, the Plan utilizes the concept of "umbrella species." Umbrella species are those species that require large amounts of unfragmented habitats. As a result, preservation of lands that provide suitable habitat for specified umbrella species will result in the preservation of lands that are suitable habitat for other sensitive species that occupy the same types of habitat. Two grassland species, the San Joaquin kit fox and burrowing owl, and one woodland/scrub species,

the Alameda whipsnake, are considered umbrella species for the purpose of this Plan (these species will also be considered umbrella species for the Resource Management Plan that will be developed based on this Plan). The preservation of habitats regionally for these umbrella species will maintain or enhance the regions biodiversity by preserving habitats for many other sensitive and special-status species.

A number of sensitive species in addition to the umbrella species are either known to occur or are suspected to occur on the lands within the Sand Creek Focus Area. On a large scale, the Plan is designed to preserve large parcels of habitat lands based on the needs of the umbrella species. At the same time, however, the Plan contains provisions to ensure that the lands chosen for preservation will meet the habitat needs of the particular special-status species that are directly or indirectly impacted by development. For example, under the Plan, development of a parcel that impacts the breeding and/or estivation habitat for the California tiger salamander would be required to preserve grassland habitats that support conditions for the tiger salamander in an amount that is equal to or greater than the acreage of the impacted site. Conversely, if the tiger salamander was absent from that site, then the preservation lands would not need to contain the specific habitat values required by this species. This approach not only preserves habitats for umbrella species (i.e., large habitat requirements), but also those habitat parameters required by all the special-status species that occur within the Plan Area.

By its design, the Plan and resulting RMP will encourage the preservation of lands that will contribute to maintaining landscape linkages and corridors between larger areas of open space and preserved habitats primarily outside the Focus Area, and reduce future anthropogenic impacts that would fragment the landscape. In doing so, this approach will help maintain the region's biodiversity by preserving habitats for the specified umbrella species and the other special-status species that share these habitats, thereby preserving the habitat value of the entire region.

This natural, community-based approach offers several important benefits for the Focus Area, both at the General Plan level and at the Specific Plan level:

- The General Plan and Specific Plan are long-term documents that must remain functional from their approval through buildout of the last property in the Focus Area. To be effective, the Plan and RMP must be similarly long-term. A species-based approach, based on "snapshots" of species distribution generated by biological surveys, does not provide this longevity when the distribution of sensitive species changes over time. A plan based on "snapshots" will soon become obsolete when the subjects move, where a plan based on natural communities will work over the long-term as needed.
- Several of the special-status species that are known or suspected to occur in the Focus Area can be very difficult to detect, either because of their life history (*e.g.*, they spend much of their lives underground), their tendency to be present at very low densities, and their irregular presence over time (*i.e.*, they are absent one year, but present in another). Their irregular presence may especially confound planning efforts when build-out is expected to occur over a number of years.
- A natural, community-based approach offers a sound technique to deal with data deficiencies that arise when biological information has been unevenly and/or incompletely collected, such as when differing survey efforts have occurred on various parcels.

- A natural community-based approach also allows the planning effort to look beyond the present legal status of a species, which is important in this case because status of several species may change over the life of the General Plan and Specific Plan.
- The natural community-based approach is biologically appropriate if one or more of the natural communities present in the covered area is itself considered a key or sensitive resource (such as the oak woodland and savannah community), or if species of interest are closely tied to particular communities. Both of these conditions are met in the Focus Area.

KEY SENSITIVE RESOURCES AFFECTED

This section of the Plan identifies and describes the sensitive resources that would be most affected by the General and Specific Plans. It focuses on the natural communities that support the umbrella and other special-status species, placing them in a larger regional context that includes existing patterns of urban development, agricultural, already-preserved lands and open space. The significant natural communities in the Plan Area are grassland; stream and riparian; chaparral, scrub and rock outcrop; and oak savannah and woodland (see Figure 1). This section also identifies and describes the umbrella species, other special-status species, and other sensitive resources present in these natural communities, summarizes their current status, notes any status changes likely to occur during buildout of the General and Specific Plans, and notes the status of the resources on site.

GRASSLAND COMMUNITY

The grassland community includes areas vegetated by both annual and perennial grasses, with lesser amounts of forbs (broadleaved herbaceous plants), which are commonly used as rangeland. It includes areas that have been lightly cultivated for dryland farming in some years, which retain key ecological characteristics of grassland under this use. It excludes areas with significant woody vegetation and areas that have been intensively cultivated in most years.

At the broadest regional level, the Focus Area is part of a large swath of grasslands that historically extends from San Joaquin County in the northeastern San Joaquin Valley to Central Contra Costa County. These historical grasslands have been greatly reduced by agricultural and urban development. Existing grasslands are now confined to relatively narrow bands closer to the foothills.

In the region of east Contra Costa County immediately surrounding the Focus Area, grasslands extend west from the Altamont Pass area, located to the southeast of the Focus Area, through lands to the south of the cities of Brentwood and Antioch in the southeastern portion of the County, and along the north flank of Mt. Diablo and into East Bay Regional Park District lands to the west of the Focus Area. (See Figure 1)

The west end of the Focus Area is in a linkage between two regionally large blocks of grassland: one to the north of Mt. Diablo extending west to Concord, and a second on the west edge of the San Joaquin Valley extending to Altamont Pass and beyond. Historically, this linkage was broad, extending from the chaparral and oak woodland of the Diablo Range to the edge of Delta wetlands. Decades of urban and agricultural development have substantially reduced the width

of this linkage over the past several decades, thereby increasing the ecological importance of the remaining linkage.

Primary movement corridors in this region follow the flat valley floors of the northwest-trending valleys: Briones Valley, Deer Valley, Horse Valley, and Lone Tree Valley. Connectivity also occurs over ridges between the major valleys, but on a secondary basis because the steep habitat between the valleys is generally suboptimal. Briones Valley has the least function in this regard because it ends in oak woodland and chaparral, rather than connecting with the grassland to the north. Deer Valley and Horse Valley have intermediate function. Historically, the Lone Tree Valley had the highest function in this regard because it connected former grasslands in the Brentwood area to the grassland on EBRPD lands to the northwest, which land has been protected for its resource values. However, the function of the Lone Tree Valley corridor, and to a lesser extent the Deer Valley and Horse Valley corridors has been reduced by existing urban and agricultural development in Brentwood, which essentially blocks the east end of these linkages.

Secondary connectivity is likely more functional toward the east, where topography tends toward rolling hills rather than steep ridges. The importance of this secondary connectivity has been increased by the extent of development in Brentwood, which blocks the east end of the linkages.

Existing Preserved Lands in the Region

Significant areas of grassland have been set aside in regional parks and permanent open space in the region, primarily in extensive grassland habitats typical of the Central Valley to the immediate west and northwest of the Plan Area, but also south of the Plan Area (see Figure 1). Other preserved lands to the west and southwest, centered on Mt. Diablo, are largely in a mosaic of woodland, chaparral/ scrub, and grassland more typical of the Inner Coast Range. These preserved lands represent a significant investment of public resources, and are a valued public asset.

To maintain their full biotic function, the preserved grasslands in and around the Focus Area must remain connected to other blocks of grassland habitat. Significant reduction of connectivity would indirectly affect these existing preserved grassland habitats.

Vernal Pools and Associated Species

Vernal pools are a seasonal wetland type fairly closely associated with the grassland community, particularly the lower elevations with flatter slopes and older soils. Because their viability is dependent on hydrologic integrity, the sensitive area includes the pools themselves and their contributing watersheds. The watersheds are usually several times the area of the pools, but rarely many times the area of the pools.

When inhabited by any of several species of small freshwater shrimp listed as threatened or endangered, vernal pools are regulated under the federal Endangered Species Act (ESA). Vernal pool regulatory status under the federal Clean Water Act (CWA) is uncertain following the US Supreme Court's SWANCC decision, and is likely to be in flux during the life of the General and Specific Plans.

Vernal pools are found in the eastern part of the Focus Area in small numbers, typical of their distribution. A number of these pools are known to support vernal pool fairy shrimp (a listed

threatened species) (see Figure 2), but its status throughout the Plan Area has not been fully determined.

San Joaquin Kit Fox

For the purpose of this Plan and the resulting RMP, the kit fox is considered an umbrella species. The San Joaquin kit fox is a small carnivore closely associated with the grassland community.

This species is listed as endangered under the federal ESA, and as threatened under the state ESA.

The Focus Area is at the very northerly edge of this species' range, consequently its presence would be on only an irregular basis in very small numbers. It is clearly more numerous south of Marsh Creek Road toward Altamont Pass, but occasional sightings have been made both south and west of the Focus Area (see Figure 3). San Joaquin kit fox are difficult to detect because they are largely nocturnal, generally shy, and spend much of their time underground. Although parts of the Focus Area have been surveyed in some detail, the combination of poor detectability and irregular distribution from year to year means that the absence of detections in previous surveys in the Focus Area does not rule out the possibility that this animal could be found at some future time in grassland in the Focus Area.

California Tiger Salamander

The California tiger salamander is an amphibian very closely associated with the grassland community.

California tiger salamanders are not currently listed under state or federal ESAs. However, there is a high probability that this species will be proposed for federal ESA listing in 2003 and a considerable probability that it will then be listed in 2004.

The California tiger salamander requires both breeding pond habitat and terrestrial grassland habitat, with the latter extending well beyond breeding ponds when conditions allow (Figure 4 shows known breeding locations and maps terrestrial habitat). Although it may be fairly readily detected in the breeding ponds, the salamander is extremely difficult to detect in terrestrial habitat because it is underground more than 95% of the time. The Focus Area is solidly in the range of this species and contains quality habitat. California tiger salamanders are known to occur in a number of locations in and adjoining the Focus Area, but status throughout the Focus Area has not been fully determined.

Burrowing Owl

For the purposes of this Plan and the resulting RMP, the burrowing owl is considered an umbrella species. This small owl is very closely associated with the grassland community.

Although burrowing owls are not currently listed under state or federal ESAs, they are currently given some level of protection under the state Fish and Game Code and federal Migratory Bird Treaty Act. A petition has been submitted to the State Fish & Game Commission to add the burrowing owl to the state's list of endangered or threatened species, and there is some probability that it will be listed.

Burrowing owls are known to be present in and around the Focus Area (see Figure 5). The distribution of this species is somewhat variable over time, meaning that this owl may occur in

essentially any grassland location within the Focus Area in future years. In subsequent years, this species may re-use a nest found during a survey, or it may establish a nest in a new burrow. Because of its comparatively variable distribution, the "shelf life" of burrowing owl surveys is quite short and it is not practical to fully determine status of this species through the life of the General and Specific Plans.

STREAM AND RIPARIAN COMMUNITY

The stream and riparian community is found where water flows in discrete paths, ranging from small swales to substantial streams. This community occupies a comparatively small portion of the landscape (usually less than 2% of the landscape), but this small amount is typically distributed widely. In places, the stream and riparian community includes ponds formed by impoundments of watercourses. It excludes aquatic areas that are not part of tributary systems (see vernal pools above).

Regional Setting

The stream and riparian community in the Focus Area flows from west to east, and drains watersheds that extend a comparatively short ways outside the Focus Area. Nevertheless, because of high percolation losses in the area's alluvial soils, the stream and riparian community in the Focus Area has a greater affinity for the Diablo Range stream and riparian community than the downstream stream and riparian community of the Sacramento-San Joaquin Delta. Although this natural community does provide a key linkage and movement corridor for many species, this function is less pronounced in the Focus Area than in many other areas because of limited easterly linkage, which usage has been reduced by previous development in Brentwood.

Stream and Riparian Communities in the Focus Area

Sand Creek flows through the Focus Area from west to east, with a greater number of tributary watercourses in the west end of the Focus Area than in the east end. The tributaries in the west end tend to be smaller and associated with ponds, while the tributaries in the east end tend to be larger watercourses. The westerly tributaries are more typical of the Diablo Range stream and riparian community, while the eastern (downstream) stream and riparian community is more typical of the Sacramento-San Joaquin Delta edge. A portion of upper Horse Valley Creek (located on the Richland property), along with associated ponds, wetlands, and alkali grassland, occurs in the southern extension of the Focus Area. This portion of the creek is more typical of the Diablo Range stream and riparian community than the Sacramento-San Joaquin Delta stream and riparian community.

Key Associated Sensitive Resources

Because of its high biotic values and intrinsically limited distribution, the stream and riparian community is itself considered a sensitive resource. It is subject to a variety of regulatory programs at both state and federal levels. The extent of this community has been delineated and formally verified over much of the Focus Area, meaning that its location may be considered fixed through the remainder of 2003 (the formal verification expires in 2003, but may be renewed if no physical changes have occurred). Major changes in location and extent are not likely to occur through the buildout of the General and Specific Plans.

California Red-legged Frog

The key sensitive species associated with the stream and riparian community is the California red-legged frog. The California red-legged frog is an amphibian fairly closely associated with the stream and riparian community. It will disperse through adjoining communities, but otherwise makes limited use of adjoining communities.

The California red-legged frog is listed as a threatened species under the federal ESA.

The California red-legged frog is generally considered to be extirpated (extinct in a given area) from the Central Valley floor, but remains in the Inner Coast Range and foothills. In the Focus Area, the species is known to have been present in recent years in the western end of the Focus Area, and in the southernmost portion of the panhandle. (See Figure 6) For this reason, Horse Valley Creek, and that portion of Sand Creek and its tributaries in Zone 3 (west of Empire Mine Road) can be considered the most sensitive watercourses in the Focus Area overall, followed by that portion of Sand Creek in the center of the Focus Area. Distribution of this species is somewhat variable over time, however. As a result, it could be found in much of the stream and riparian community within the Focus Area, but is least likely to be present in the eastern end. Status throughout the Focus Area has not been fully determined.

CHAPARRAL, SCRUB AND ROCK OUTCROP COMMUNITY

The chaparral, scrub and rock outcrop community occurs on thin-soiled areas that may contain chaparral, grasses, and broadleaved herbs, or may support minimal vegetation. It is comparatively drought-adapted. The rock outcrop community is generally limited to ridgetops, where it may co-occur with grassland, oak savannah, chaparral, or scrub. This community excludes grassland and oak woodland or savannah on deeper soils.

Regional Setting

The chaparral, scrub and rock outcrop community is associated with the Inner Coast Range, rather than the Central Valley floor. Within the Focus Area it is found primarily in the western part of the Focus Area, and otherwise extends eastward only on the ridges on either side of the Sand Creek drainage.

Key Associated Sensitive Resources

Alameda Whipsnake

This snake is fairly closely associated with the chaparral, scrub and rock outcrop community, which is limited to the west end of the Focus Area. It may be found in other communities, especially the grassland community, where the other community is within several hundred feet of chaparral, scrub and rock outcrop elements.

The Alameda whipsnake is listed as a threatened species under both state and federal ESAs.

For the purposes of this Plan and the resulting RMP, the Alameda whipsnake is considered an umbrella species.

Alameda whipsnakes have not been documented in the Focus Area, but no formal protocol-based surveys have been undertaken. A herpetologist expert in this species has determined that habitat in the southwestern part of the Focus Area is suitable habitat for this snake (see Figure 7),

meaning that it could be found there by future formal surveys. The status of the Alameda whipsnake in the Focus Area has not been fully determined.

OAK WOODLAND AND SAVANNAH COMMUNITY

The oak woodland and savannah community is typified by one or more of several species of oaks, either widely spaced with a grassland understory (oak savannah) or more closely spaced with a brush or absent understory (oak woodland). This natural community is found in areas with more abundant moisture, such as north-facing slopes. It excludes non-native plantings such as eucalyptus and trees planted around farmsteads.

Regional Setting

The oak woodland and savannah community is more associated with the Inner Coast Range than the Central Valley floor (see Figure 1), but the association is not as strong as for the chaparral, scrub and rock outcrop community.

Key Associated Sensitive Resources

Because of its high wildlife value, the oak woodland and savannah community is itself considered a sensitive resource. However, it is not subject to any special regulatory programs at either state or federal levels of government. There are no sensitive species specifically associated with this natural community in the Focus Area.

RESOURCE MANAGEMENT FRAMEWORK FOR THE FOCUS AREA

This section of the Plan identifies the adverse effects the development contemplated by the General Plan and Specific Plan would have on the key resources discussed above, and identifies policies and measures to manage those resources in a way that minimizes and mitigates these potential impacts. As described above, the Plan takes a regional and natural community-based approach to this topic. Implementation of the management measures will result in impact avoidance and minimization, reducing the adverse effects that the General and Specific Plans may otherwise have on key resources. Figure 8 summarizes the effects of the resource management strategies on development within the Focus Area.

GRASSLAND COMMUNITY

Potential Effects of the General and Specific Plans on Existing Grassland Resources

The grassland community in the Focus Area is located where urban and agricultural development have squeezed the grassland into a fairly narrow band at the edge of the Inner Coast Range. (Figure 1) One sensitive habitat type (vernal pools) and three sensitive species (San Joaquin kit fox, California tiger salamander and burrowing owl) are closely associated with the grassland natural community. This close association suggests that management plans for the grassland sensitive resources (vernal pools and three species) should be based on management of the grassland community overall.

The distribution of two of these species is variable over time (San Joaquin kit fox and burrowing owl), and two are statically distributed but affect fairly large areas of grassland (vernal pools and California tiger salamander). These distribution patterns suggest that management plans for the grassland sensitive resources should be based on management of the grassland community overall.

Each of the grassland sensitive resources is trending downward due to continued habitat loss and fragmentation, but none has reached the point of severe endangerment where any further losses of individuals would jeopardize its continued existence. Rather, the conservation of the grassland sensitive resources can best be assured by strategic preservation of the grassland community. Preservation is strategic when it occurs in key locations and results in preservation of larger blocks of well-connected habitat. Grassland habitat may be preserved if it remains in rangeland use with widely scattered residences (ensured via a conservation easement), or it may be preserved as traditional parkland or natural open space.

The strategic preservation value of the grassland community in the Plan Area increases from east to west, due to the existing pattern of urban and agricultural lands and the existing pattern of preserved lands. Within the Plan Area, lands east of Deer Valley Road are least strategically important (where adjoining land uses are urban/agriculture on two sides), lands in the Lone Tree Valley between Deer Valley Road and Empire Mine Road have intermediate strategic value (where adjoining land uses are urban on one side), and lands west of Empire Mine Road and in Horse Valley have the highest strategic value (where adjoining land is parkland and open space preserved for natural values). (See Figure 1)

Outside the Plan Area, the strategic preservation value of the grassland community is greatest in the remainder of the Horse Valley and Deer Valley areas, along with lands between these two valleys that provide connectivity between them. Collectively, these areas are a gap between the preserved open space of the Cowell Ranch and the preserved natural parkland of EBRPD (Black Diamond Mines Regional Preserve). (See Figure 1)

Potential Effects on Existing Grassland Corridors in the Focus Area

The urban development contemplated by the General and Specific Plans would further degrade the habitat corridor in the Lone Tree Valley. The existing corridor in the Lone Tree Valley has already been adversely affected by previous development in Antioch and, in particular, by previous development in Brentwood, which entirely blocks the east end of the corridor. Although a narrow corridor along Sand Creek will be retained, this corridor will have minimal function for grassland species because: 1) the east end is blocked by development in Brentwood; 2) the remaining corridor will be many times longer than it will be wide; and 3) certain grassland species will either avoid the corridor or use it infrequently because it lacks the habitat elements important for these species. This adverse effect is unavoidable without major modifications to the General and Specific Plans that would be inconsistent with the City's goals and plans for the Focus Area.

Such development would also narrow the less important primary corridor in Horse Valley, by pinching that corridor in the vicinity of the existing golf course. This potential adverse effect would be minimized by making targeted modifications to the General Plan and Specific Plan. Such development would also eliminate an existing landscape linkage that crosses the ridge between Horse Valley and the Lone Tree Valley. This potential adverse effect also would be minimized by making targeted modifications to the General and Specific Plans.

Resource Management Strategies for Grassland Corridors in the Focus Area

- **Designate a portion of the lands in the Focus Area adjacent to the EBRPD preserved lands as natural open space**. (See Figure 8) Sufficient lands adjacent to the existing preserved lands to the west of the Focus Area should be preserved to maintain the integrity of the corridor connecting EBRPD lands to the west and northwest of the Focus Area with preserved grasslands to the south of the Focus Area.
- **Designate the Horse Creek watershed portion of the Focus Area as natural open space**. (See Figure 8) The Horse Creek watershed portion of the Focus Area should be preserved to provide additional linkages between preserved grasslands to the west and northwest of the Focus Area with grasslands to the south of the Focus Area.
- **Provide incentives to preserve linkages and corridors between EPRPD lands and existing open grasslands to the south of the Focus Area**. Strategic incentives should be provided that will encourage the preservation of lands deemed most important to maintain the linkages and corridors described above and grasslands in the Deer Valley.

The net result of these strategies will be to minimize to the greatest degree practicable the potential adverse effects of development on the existing corridors. These strategies recognize that loss of the primary Lone Tree Valley corridor is unavoidable, but they ensure that a viable grassland linkage will remain by using linkages in Horse Valley and on the ridge between Horse Valley and the Lone Tree Valley at the west end of the Focus Area. The preserved linkage will retain a grassland connection at the pinch point in the Focus Area, connecting grassland habitats south of the Focus Area to preserved grasslands to the west and northwest of the Focus Area. Rock outcrop and oak savannah may be included as parts of these grassland linkages and corridors, because these two natural communities support most grassland species when embedded in a grassland community.

Potential Effects on Key Grassland Sensitive Resources in the Focus Area

Development contemplated by the General and Specific Plans would eliminate most of the grassland community and associated species from the project site. Some small areas would be retained as natural open space on the Richland/Cowan property in the central part of the Plan Area and on the Ginochio/Nunn and Williamson property in the eastern part of the Plan Area. However, with the possible exception of one area on the Ginochio/Nunn property, all of the retained grassland would be isolated from other grassland and would retain minimal levels of function as part of a grassland community. This effect is unavoidable without major modifications to the General and Specific Plans that would be inconsistent with the City's goals and plans for the Focus Area.

The impacts on key grassland sensitive resources would parallel the impacts on grassland corridors described above. These resources (San Joaquin kit fox, California tiger salamander, burrowing owl, and vernal pools) would be largely or entirely eliminated from the Focus Area, and the remaining grassland community would have little or no ability to support these resources due to the small size and comparative isolation of the grassland community retained in the Focus Area. Because of the pattern of adjoining land uses, this effect would be most severe in the western end of the Focus Area, least severe in the eastern end of the Focus Area, and intermediate in the center of the Focus Area.

Resource Management Strategies for Key Grassland Sensitive Resources in the Focus Area

- **Require sufficient mitigation for impacts resulting from individual development proposals to adequately protect the habitat of key grassland sensitive resources.** Before any new development is permitted in the Focus Area, mitigation ratios applicable to all lands within the Focus Area should be developed which, when implemented according to the requirements of the RMP, will adequately compensate for the key sensitive resources located on the site proposed for development, and help ensure that a viable and functional grassland community remains on lands outside the Focus Area.
- **Mitigation requirements should be carefully tailored to reflect the relative importance of the specific lands proposed for development.** The level of mitigation required for impacts to key sensitive species and habitats should be greater where the lands to be developed are deemed to be of greater strategic importance to maintaining the integrity of the grassland resources in the region.
- **Provide incentives to encourage the purchase of mitigation lands in those areas deemed to be of greater strategic importance to maintaining the integrity of the grassland resources in the region.** Strategic incentives should be provided that will encourage the preservation of lands deemed most important to protecting the grassland resources in the region.
- **Require species and habitat surveys consistent with applicable published protocols no more than six months before issuing of grading permits.** Strategic incentives should be provided that will encourage the preservation of lands deemed most important to maintain the linkages and corridors described above and grasslands in the Deer Valley.

The net result of these strategies will be compensation for the impacts from development contemplated by the General and Specific Plans to the greatest degree practicable by ensuring strategic grassland preservation to offset the resulting loss of grassland. These strategies recognize that loss of functional grassland community is unavoidable within the Focus Area, but they help to ensure that a viable and functional grassland community remains on lands outside the Focus Area.

These strategies recognize that the relative strategic preservation importance of lands within the Focus Area and lands outside the Focus Area is non-uniform. This lack of uniformity requires that effective resource management strategies be tailored to reflect variations in both the severity

of potential impacts and the strategic importance of grassland areas selected for preservation. The Plan's and the resulting RMP's mitigation ratios and incentives, in the form of discounts on mitigation requirements in exchange for strategically located lands (see Figure 9 and 10), combine to form an approach that accurately reflects and accounts for those variations in impacts. This tailored approach, using incentives to encourage strategic location of mitigation lands, is superior to a blanket and formulaic approach. Together with other strategies in this Plan, they will ensure that projects within the Specific Plan area provide all feasible on-site mitigation and contribute a fair share to strategic grassland preservation in the region.

The level of mitigation for impacts to habitats will increase from east to west due to three factors: (1) the relative distribution of sensitive resources occurring more to the west; (2) the adjacency of the west end of the Focus Area to preserved open space lands (e.g., Black Diamond Mines, Roddy Ranch Open Space Area, etc.); and (3) the proximity to existing development that is greatest at the east end of the Focus Area (see Figure 9). The lands east of Deer Valley Road are classified as Impact Zone 1. Development of lands in Impact Zone 1 will require a lower mitigation ratio than development of lands in the two zones to the west. The lands between Deer Valley Road and Empire Mine Road are classified as Impact Zone 2, and will require a median mitigation ratio. The lands west of Empire Mine Road are classified as Impact Zone 3. The lands in Impact Zone 3 contain the largest portion of sensitive biological resources, and therefore require the highest mitigation ratio for land lost to development.

To encourage preservation of lands deemed to be the most strategically important to maintaining the integrity of the region's grassland resources, additional mitigation credit will be provided for purchasing such lands. This credit, which may be implemented in the form of a discount from the Impact Zone mitigation requirements imposed on individual development projects, would reduce the mitigation requirement for a given project if the requirement is met through the purchase of lands within the Focus Area, or lands outside the Focus Area deemed to be most crucial to preserving the biological integrity of the region's strategically important grasslands. (See Figure 10) By providing purchasers of mitigation lands with additional credit against their mitigation requirements for purchasing these strategically important grasslands, the Plan will minimize the impacts of the development contemplated by the General and Specific Plans.

Under this Plan and the resulting RMP, the final mitigation requirements on a given development proposal will depend on the location of the impact within the Focus Area (mitigation ratios decline from west to east), the location (i.e., mitigation value decreases from west to east) and amount of habitat preserved within the Focus Area that is not fragmented (i.e., connected to other habitats both within the Focus Area and adjacent to the Focus Area), habitat that is preserved on-site but isolated, and mitigation that preserves or enhances a landscape linkage. Thus, both the location of the impact and the location of the mitigation is needed to calculate the size of the areas that need to be preserved.

These resource management strategies would adequately protect the habitat of grassland sensitive species (San Joaquin kit fox, vernal pool shrimp, California tiger salamander, and burrowing owl) on a regional basis through strategic habitat preservation. In addition, by requiring completion of surveys consistent with applicable published protocols no more than six months before issuance of grading permits, the Plan will ensure that the impacts on each key sensitive species in the Focus Area are identified and addressed.

STREAM AND RIPARIAN COMMUNITY

Potential Effects on the Stream and Riparian Community

Although development contemplated by the General and Specific Plans would, overall, retain Sand Creek in its current location, the functional value of the stream and riparian community would be reduced if creek corridor does not provide foraging opportunities for species that breed/nest in the stream riparian community and feed in adjoining grassland, and if the stream and riparian community is not adequately buffered from urban spillover impacts (predation by dogs and cats, yard waste dumping, *etc*.). In addition, without adequate buffers, the golf course may introduce exotic grasses, nuisance runoff, and nutrients and pesticides into the stream and riparian community.

The General and Specific Plans provide for the creek to be retained within an open space corridor approximately 250 feet wide (roughly 125 feet on either side of the creek centerline). While this corridor generally includes all of the stream and riparian community, it provides minimal buffering capabilities between this sensitive community and adjoining residential and golf development.

The General and Specific Plans do not make any particular provisions for the Sand Creek tributary watercourses, suggesting that these watercourses may be channelized and/or placed in storm drain pipes. The same is true of various ponds associated with these tributaries, which, if filled, would require federal and state approvals.

The General and Specific Plans include an open space corridor allowing upper Horse Valley Creek to be retained in its current location. However, development plans indicate that associated ponds, wetlands, and alkali grassland would be eliminated. Federal and state approvals would be needed for these activities. Additionally, storm drainage infrastructure required downstream from the upper segment of Horse Valley may result in impacts to the stream and riparian community downstream from this portion of the Focus Area.

Impacts on California red-legged frog would correspond to those described above. Impacts to red-legged frogs in Sand Creek itself would be relatively limited, due to the extent of buffering. These impacts would result primarily from potential loss of shading and water quality changes from golf crossings. Red-legged frogs and their habitat in the Sand Creek tributaries, as well as the ponds, wetlands, and alkali grassland adjoining upper Horse Valley Creek, could be eliminated.

Resource Management Strategies for the Stream and Riparian Community

- An open space corridor should be established on both sides of Sand Creek, within which no grading, development or other site disturbance would be permitted. (See Figure 8.) A policy should be established requiring that all irrigated landscaping associated with the golf course drain away from Sand Creek, or drain to Sand Creek via a bioswale (vegetated water treatment swale) at least 200 feet long.
- Wherever practicable, a buffer should be established within which no grading, development or other site disturbance would be permitted to preserve in place the Sand

Creek tributaries and associated ponds. Where preserving and buffering tributaries and ponds is not practicable, compensatory mitigation off-site should be required. Federal regulatory requirements require use of alternative 1 on any watercourse where this alternative is practicable. Off-site pond preservation may occur on lands designated for grassland preservation, and preservation requirements may be discounted for strategic location as specified for the grassland community.

- Ponds, wetlands, and alkali grasslands associated with upper Horse Creek, along with associated buffers within which no grading, development or other site disturbance would be permitted, should be included in lands preserved as natural open space. (See Figure 8.) If impacts on the Horse Valley Creek stream and riparian community downstream to accommodate infrastructure are unavoidable, compensatory mitigation off-site should be required. Off-site pond preservation may occur on lands designated for grassland preservation, and preservation requirements may be discounted as specified for the grassland community.

The resource management strategies above, in conjunction with the Habitat Corridors and Linkages strategies, would adequately protect the habitat of California red-legged frogs in the Plan Area. To protect individual frogs and to minimize the risk of ESA violations, add a policy requiring red-legged frog surveys consistent with applicable published protocols no more than six months before issuance of grading permits.

The net result of these strategies will be minimization of General and Specific Plan impacts to the greatest degree practicable by ensuring that impacts are avoided to the greatest degree consistent with the objectives of the City's General and Specific Plans. These strategies recognize that the small portion of the Focus Area occupied by the stream and riparian community makes impact minimization more achievable than for widely-distributed communities, such as grassland. These strategies are compatible with requirements of federal and state approvals necessary for buildout of the General and Specific Plans.

CHAPARRAL, SCRUB AND ROCK OUTCROP COMMUNITY

The chaparral, scrub and rock outcrop community found in the Plan Area is an easterly outlier of a community that is more extensive to the west in the Diablo Range. This natural community could support one key associated sensitive resource, the Alameda whipsnake, however, Alameda whipsnake have not been detected in the Focus Area. This community also supports several other less sensitive associated resources (Mt. Diablo manzanita and Brewer's dwarf flax), and contributes to the biodiversity of the Focus Area, particularly the west end.

Potential Effects on the Chaparral, Scrub & Rock Outcrop Community

Development contemplated by the General and Specific Plans would result in some encroachment into this natural community by residential and golf course development in Impact Zone 2. A portion of this community would be retained in ungraded open space, but this area would be a small and isolated fragment, and as a result it would not remain a fully functional element of the chaparral, scrub and rock outcrop natural community.

The relationship of residential and infrastructure development to the chaparral, scrub and rock outcrop community has not yet been determined for Impact Zone 3. However, the proposed densities suggest a high likelihood that this community will be directly eliminated or isolated in less than fully functional fragments.

The effects of development on habitat of the key associated sensitive resource, Alameda whipsnake, would generally parallel the description above. Because this species is not strictly restricted to the chaparral, scrub and rock outcrop community, but may also use grasslands within several hundred feet, development in the some of the Focus Area grasslands may also affect this species. However, the chaparral, scrub and rock outcrop community is at the northeasternmost edge of this species' range, and the species may not actually use habitat in the Focus Area, especially the more easterly habitat in the southern portion of Impact Zone 3. In contrast to the grassland sensitive species, which are known to occur within and on multiple sides of the Focus Area, additional suitable Alameda whipsnake habitat occurs only to the southwest of the Focus Area. Thus, General and Specific Plan development may affect a small area on the margin of the snake's range, but would not block any habitat corridors or linkages important to this species.

Resource Management Strategies for the Chaparral, Scrub & Rock Outcrop Community

- Preserve the chaparral, scrub and rock outcrop community on the southern portion of Impact Zone 2 in natural open space contiguous with the open space required in conjunction with the habitat corridor and linkage strategies. (See Figure 8 and 10) This requirement will preserve the portion of the grassland habitat south of the chaparral, scrub and rock outcrop community, but not the portion north of it. It will result in on-site mitigation of the comparatively minor impact on the Richland property through this locally-strategic preservation.
- Preserve the chaparral, scrub and rock outcrop community and adjoining grassland potentially suitable for Alameda whipsnake on Impact Zone 3 in natural open space. This natural open space would be contiguous with or part of the open space required in conjunction with the habitat corridor and linkage strategies. (See Figure 8 and 10)
- Conduct Alameda whipsnake surveys consistent with applicable published protocols no more than six months before issuance of grading permits for lands containing potentially suitable Whipsnake habitat; or obtain written concurrence by the California Department of Fish and Game and the US Fish and Wildlife Service that take of whipsnakes is unlikely to occur.

These resource management strategies would adequately protect the habitat of the Alameda whipsnake in the Focus Area. The net result of these strategies will be to minimize the General and Specific Plans' effects on the chaparral, scrub and rock outcrop community, and compensate for unavoidable impacts through locally-strategic habitat preservation. These strategies recognize that the small portion of the Focus Area occupied by the chaparral, scrub and rock outcrop community makes impact minimization more achievable than for widely distributed communities, such as grassland. However, these strategies also recognize that, within the Focus Area, this community is an outlier, particularly at its eastern end.

OAK WOODLAND AND SAVANNAH COMMUNITY

The oak woodland and savannah community found in the Focus Area is an easterly outlier of a community that is more extensive to the south and west in the Inner Coast Range and Diablo Range. This community may itself be considered a sensitive resource, although it is not specifically protected by any resource protection laws or regulations. It contributes to the biodiversity of the Focus Area, particularly at its southwest end.

Potential Effects on the Oak Woodland and Savannah Community

Development contemplated by the General and the Specific Plans would result in some loss of low-density oak savannah on the southeastern portion of Impact Zone 2. A portion of this community overlaps with the chaparral, scrub and rock outcrop community, and would be retained in ungraded open space. However, this area would be a small and isolated fragment, and as a result it would not remain a fully functional element of the oak savannah natural community.

The relationship of residential and infrastructure development to the oak savannah and woodland natural community has not yet been determined on Impact Zone 3. However, the proposed densities suggest a high likelihood that this community will be directly eliminated or isolated in less than fully functional fragments.

Resource Management Strategies for the Oak Woodland and Savannah Community

The net result of these strategies will be to minimize the General and Specific Plans' effects on the oak savannah and woodland natural community and compensate for unavoidable impacts through locally strategic habitat preservation. These strategies recognize that the small portion of the Focus Area occupied by the oak savannah and woodland natural community makes impact minimization more achievable than for widely distributed communities, such as grassland. However, these strategies also recognize that, within the Focus Area, this community is an outlier.

- Preserve the oak savannah and woodland natural community where it overlaps the rock outcrop community on the southeastern portion of Impact Zone 2 (See Figure 8) This preservation shall be in natural open space contiguous with the open space required in conjunction with the habitat corridors and linkage strategies. This requirement will preserve the more important oak savannah community, but not the less important portion of it. It will result in on-site mitigation of the comparatively minor impact on the southeastern portion of Impact Zone 2 through this locally-strategic preservation.
- Preserve the oak savannah and woodland natural community in Impact Zone 3. This natural open space would be contiguous with or part of the open space required in conjunction with the habitat corridors and linkage strategies. (See Figure 8 and 10)

EXISTING PRESERVED LANDS

Land has been set aside in regional parks and permanent open space in the subregion, primarily in extensive grassland habitats. These preserved lands represent a significant investment of public resources, and are a valued public asset. To maintain their full biotic function, the preserved grasslands must remain connected to other blocks of grassland habitat.

Potential Effects on Existing Preserved Lands

General and Specific Plan development would significantly reduce connectivity between existing preserved lands. It would further degrade the habitat corridor in the Lone Tree Valley, which is already restricted at its east end by existing development in Brentwood. Such development would also further reduce the intermediately important linkage in Horse Valley already narrowed by the Roddy Ranch golf course. Only the intermediately important linkage in Deer Valley would remain available to connect blocks of grassland habitat northwest of and southeast of the Focus Area. The overall effect would be a significant narrowing of the pinch point that has developed between urban lands and the chaparral and oak habitats of the Diablo Range.

The relationship of residential and infrastructure development to the existing preserved lands surrounding three sides of Impact Zone 3 has not yet been determined. However, the proposed densities suggest a high likelihood of conflicts due to urban spillover impacts (predation by dogs and cats, spread of landscaping materials, conflicts with grazing, conflicts with wildfire, *etc.*). Reducing the function and values of these lands due to urban spillover effects would degrade a highly valued public asset.

Resource Management Strategies on Existing Preserved Lands

- Implement the habitat corridors and linkage strategies above and implement the Grassland Sensitive Species and Resources strategies above.
- Require a buffer between development and the boundary of existing preserved lands within which no grading, development or other site disturbance would be permitted. (See Figure 8)

The net result of these strategies will be to minimize the Specific Plan's effect on the existing preserved lands in the subregion. The Habitat Corridors and Linkages strategies and the Grassland Sensitive Species and Resources strategies offset the impact of the Specific Plan on connectivity between existing preserved lands to the north and west of the Plan area and existing preserved lands south of the Plan Area by: 1) ensuring that viable connections remain within the Plan Area to the greatest degree feasible in light of project objectives; and 2) provide incentives for compensatory mitigation to be located in the most strategic locations.

MANAGEMENT OF PRESERVED LANDS

Once lands have been identified for preservation a management plan should be developed that is specific to those lands and the key sensitive species being considered. This management plan should not only identify the restoration and/or enhancement efforts that are to take place, but should also identify those activities that are permitted to continue (e.g., cattle grazing) or new activities (e.g., establishment of regional trails) that need to be accommodated. If cattle grazing is to continue on these lands, then the management plan would need to describe stocking rate, timing, and other activities that would accompany this use.

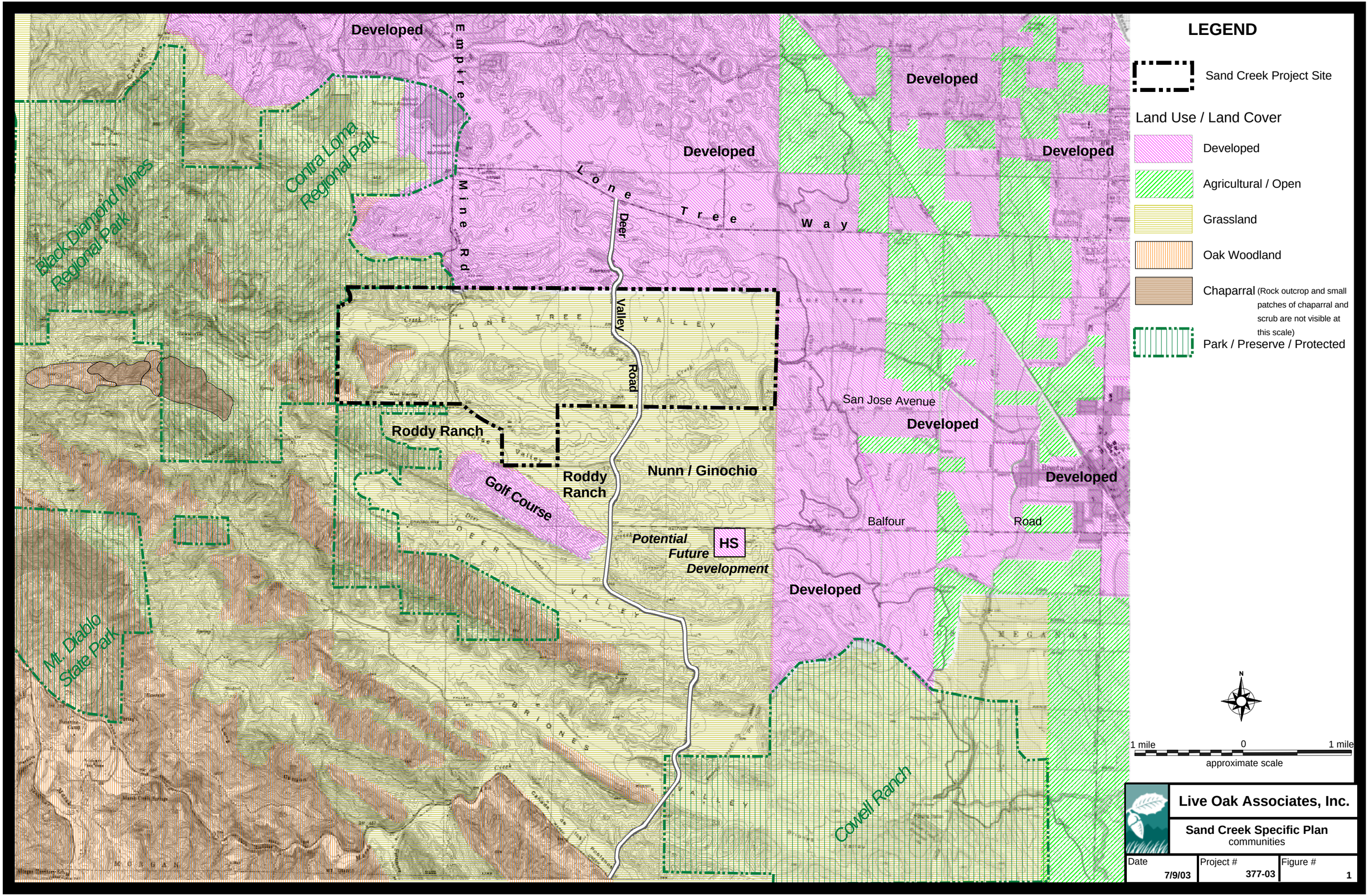
The management plan would also describe those activities that would be restricted or banned from the preserved lands. These could include, but not be limited to the use of rodenticides and herbicides, discing for fire abatement (use of mowing instead), and recreational activities that would require substantial alteration of the habitat (e.g., ball fields).

Management plans would be site specific as different key sensitive species would likely be the target for preservation. Thus, the establishment of an endowment for the management of these lands will also be specific to the lands set aside.

CONSISTENCY WITH DRAFT HABITAT CONSERVATON PLAN

While this Plan and the RMP are being developed independent of the Draft Habitat Conservation Plan that is currently being prepared by Contra Costa County (HCP), the general direction and approach of this Plan and the RMP is expected to be consistent with HCP. Therefore, these documents and the HCP will complement each other and provide measures that will aid in protecting the region's biodiversity.

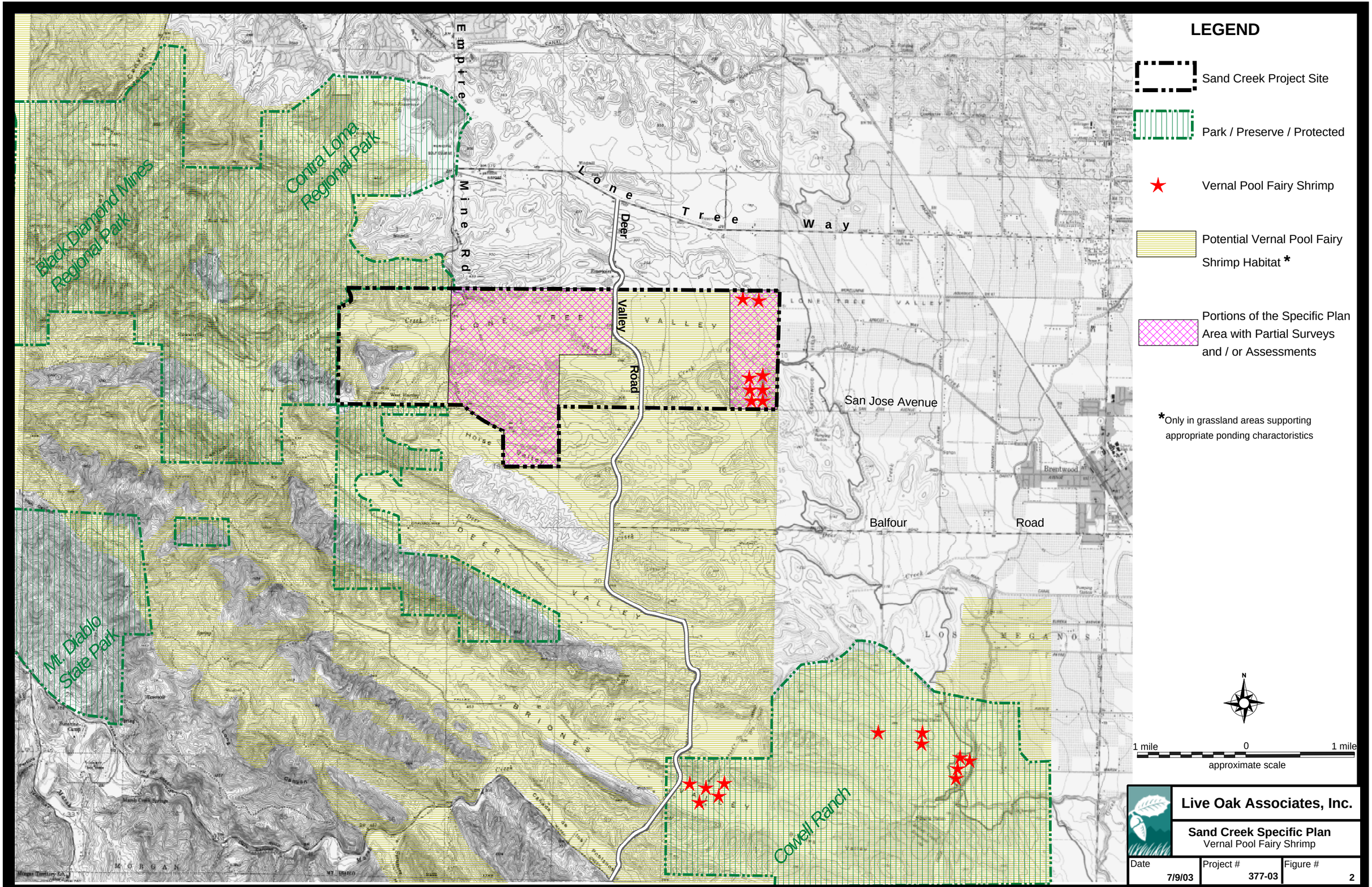
APPENDIX A



Live Oak Associates, Inc.

Sand Creek Specific Plan
communities

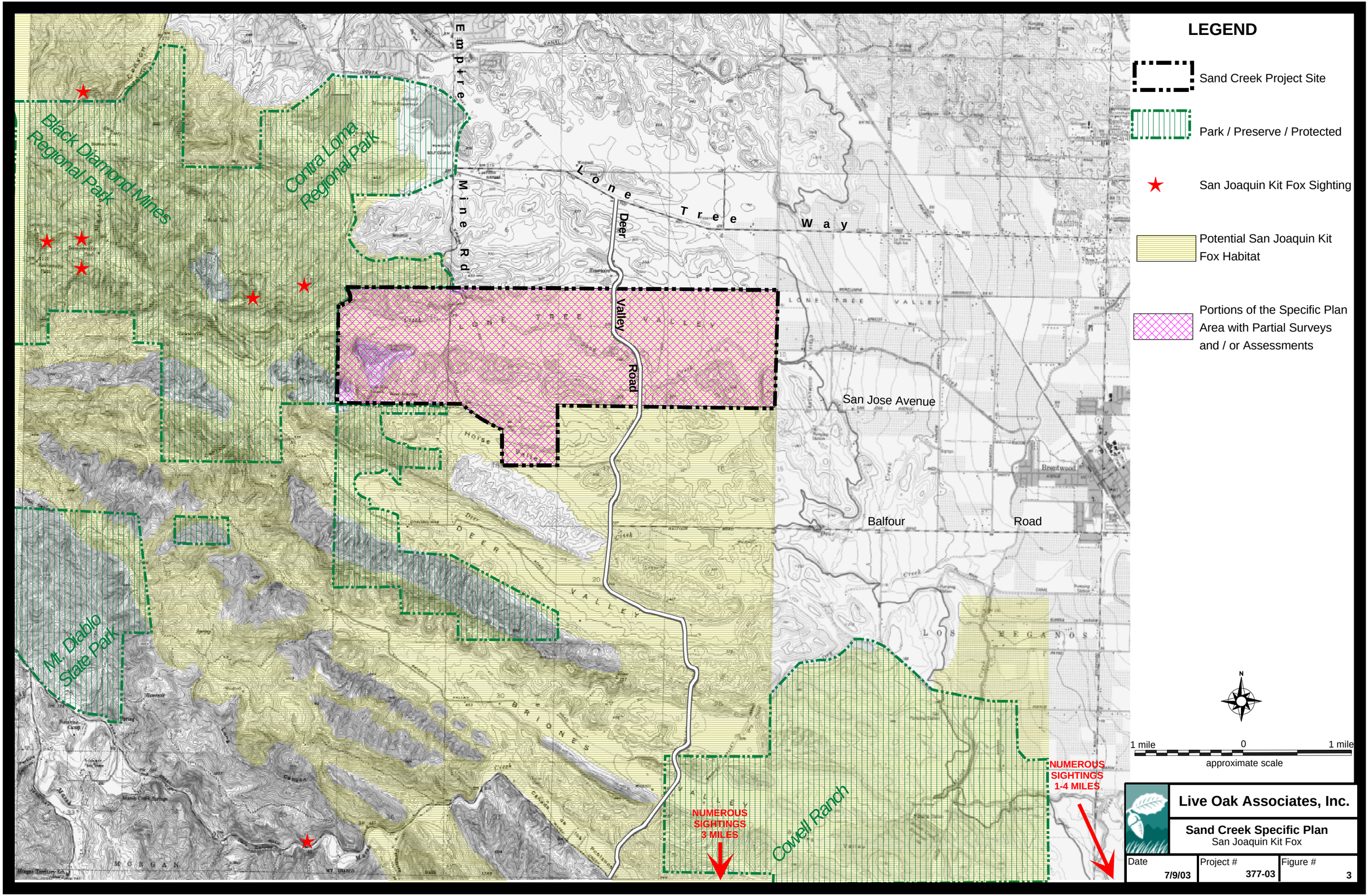
Date	Project #	Figure #
7/9/03	377-03	1



Live Oak Associates, Inc.

Sand Creek Specific Plan
Vernal Pool Fairy Shrimp

Date	Project #	Figure #
7/9/03	377-03	2


Black Diamond Mines Regional Park
Contra Loma Regional Park
Mt. Diablo State Park
Empire Mine Rd
Lone Tree Way
Deer Valley Road
San Jose Avenue
Balfour Road
Brentwood
Cowell Ranch
NUMEROUS SIGHTINGS 3 MILES
NUMEROUS SIGHTINGS 1-4 MILES
LEGEND
Sand Creek Project Site
Park / Preserve / Protected
San Joaquin Kit Fox Sighting
Potential San Joaquin Kit Fox Habitat
Portions of the Specific Plan Area with Partial Surveys and / or Assessments
N
1 mile
0
1 mile
approximate scale
Live Oak Associates, Inc.
Sand Creek Specific Plan
San Joaquin Kit Fox
Date 7/9/03
Project # 377-03
Figure # 3

Black Diamond Mines Regional Park

Contra Loma Regional Park

Mt. Diablo State Park

Empire Mine Rd

Lone Tree Way

Deer Valley Road

San Jose Avenue

Balfour Road

Brentwood

Cowell Ranch

LONE TREE VALLEY

DEER VALLEY

BRUSHY CREEK

MORGAN TERRITORY

LOS MEGANOS

LEGEND

- Sand Creek Project Site
- Park / Preserve / Protected
- California Tiger Salamander (plus 1,500 foot radius non-breeding terrestrial habitat)
- Potential Tiger Salamander Habitat
- Portions of the Specific Plan Area with Partial Surveys and / or Assessments

N

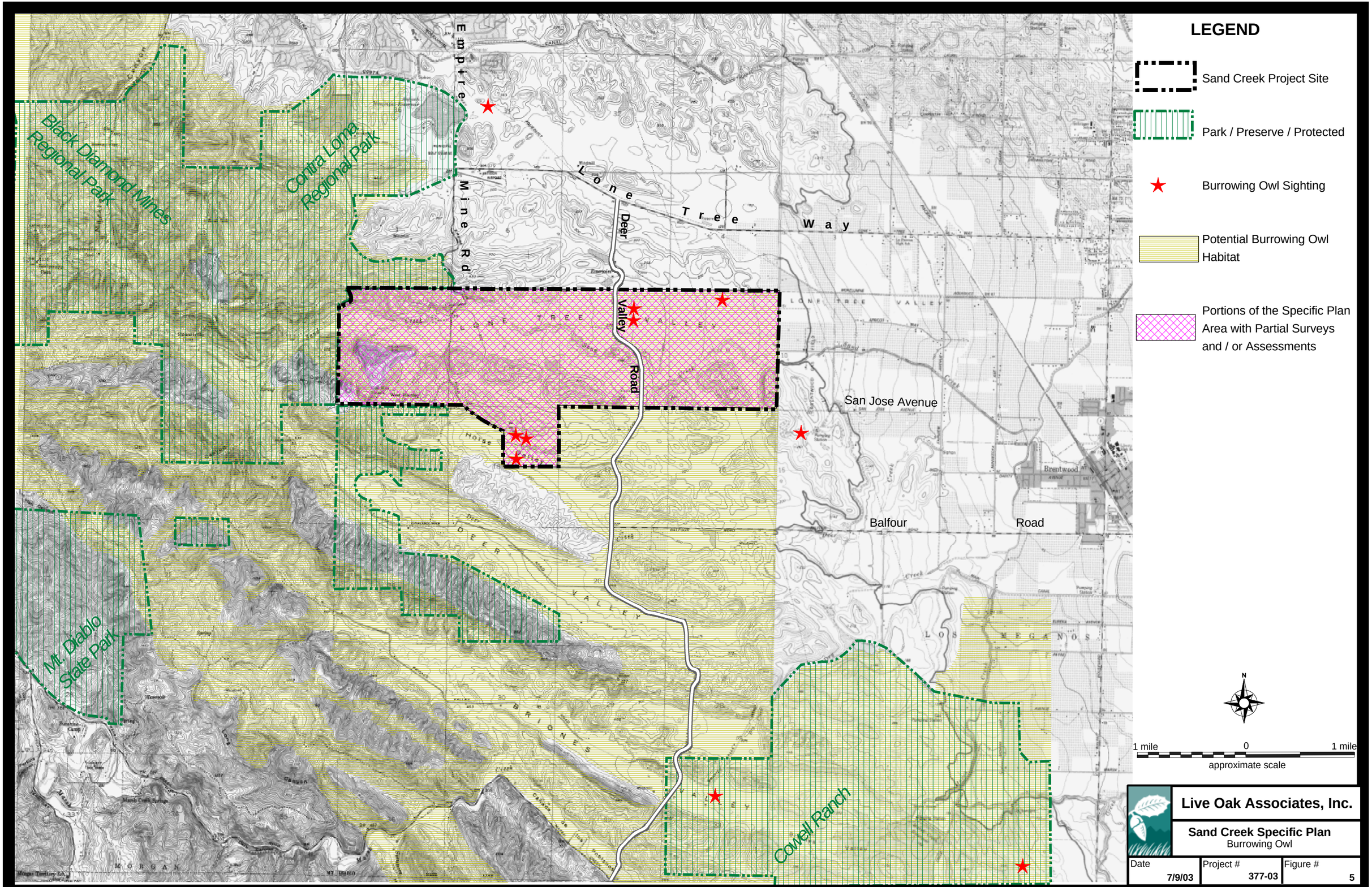
1 mile 0 1 mile

approximate scale

Live Oak Associates, Inc.

Sand Creek Specific Plan
California Tiger Salamander

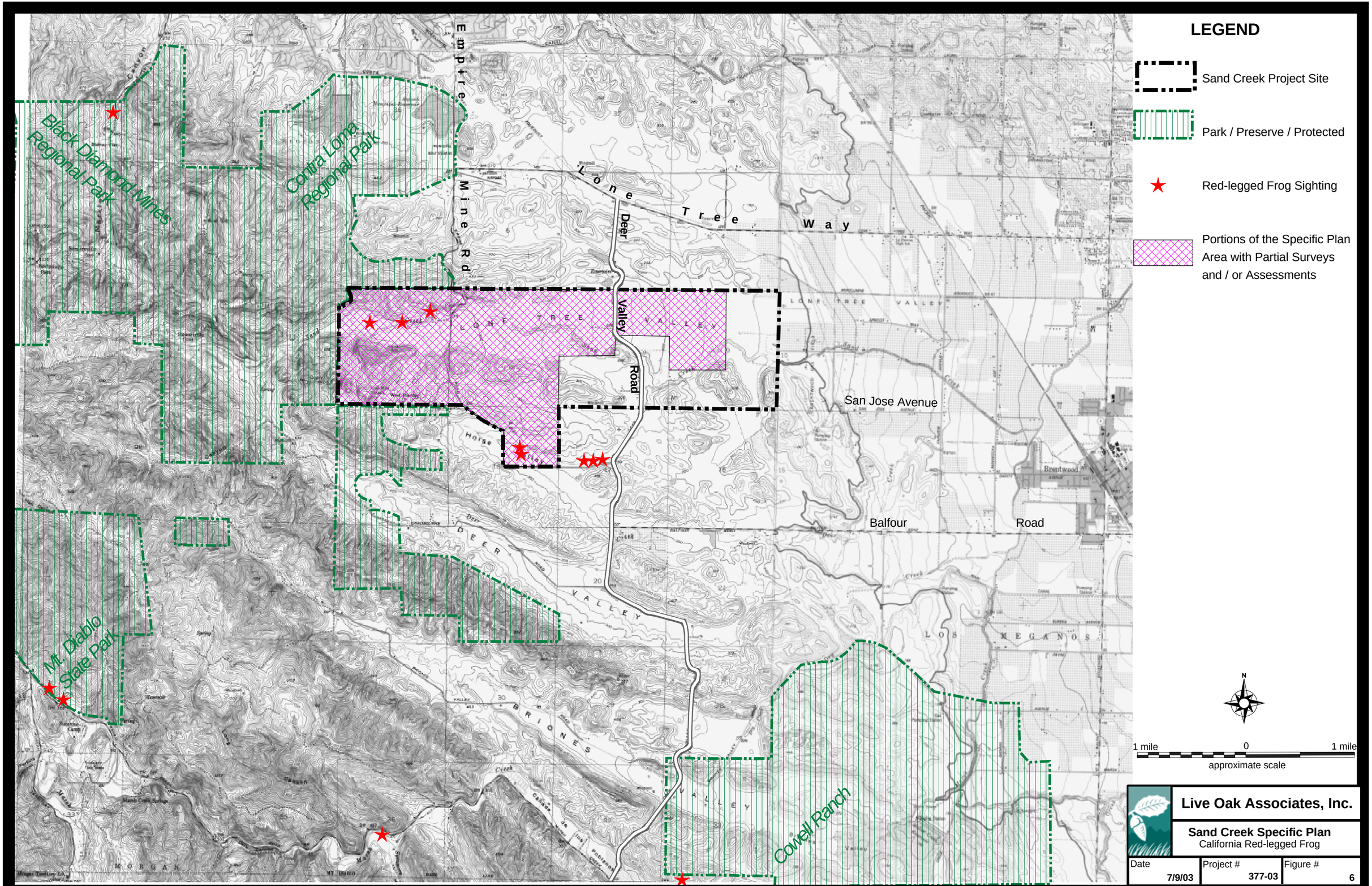
Date	Project #	Figure #
7/9/03	377-03	4



Live Oak Associates, Inc.

Sand Creek Specific Plan
Burrowing Owl

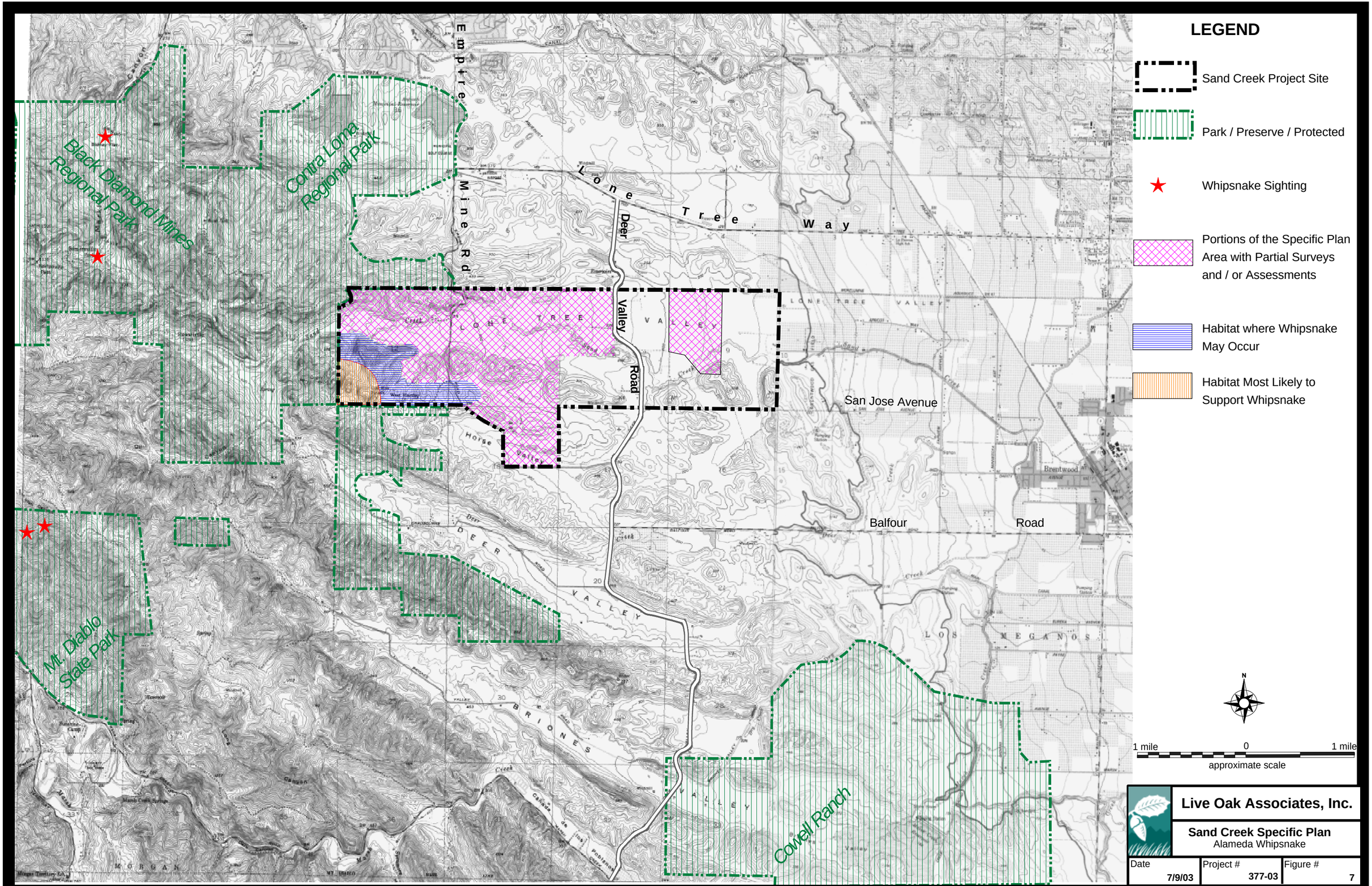
Date	Project #	Figure #
7/9/03	377-03	5



Live Oak Associates, Inc.

Sand Creek Specific Plan
California Red-legged Frog

Date	Project #	Figure #
7/9/03	377-03	6



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Sand Creek Specific Plan
Alameda Whipsnake

Date	Project #	Figure #
7/9/03	377-03	7

EBRPD

DEER VALLEY ROAD

HEIDORN RANCH ROAD

BALFOUR ROAD

LEGEND

- Proposed Habitat Linkages
- Proposed Sand Creek and Horse Valley Creek Corridors
- Potential Alameda Whipsnake Habitat
- Oak Woodland and Savannah
- Existing Park and Proposed Open Space Buffer

N

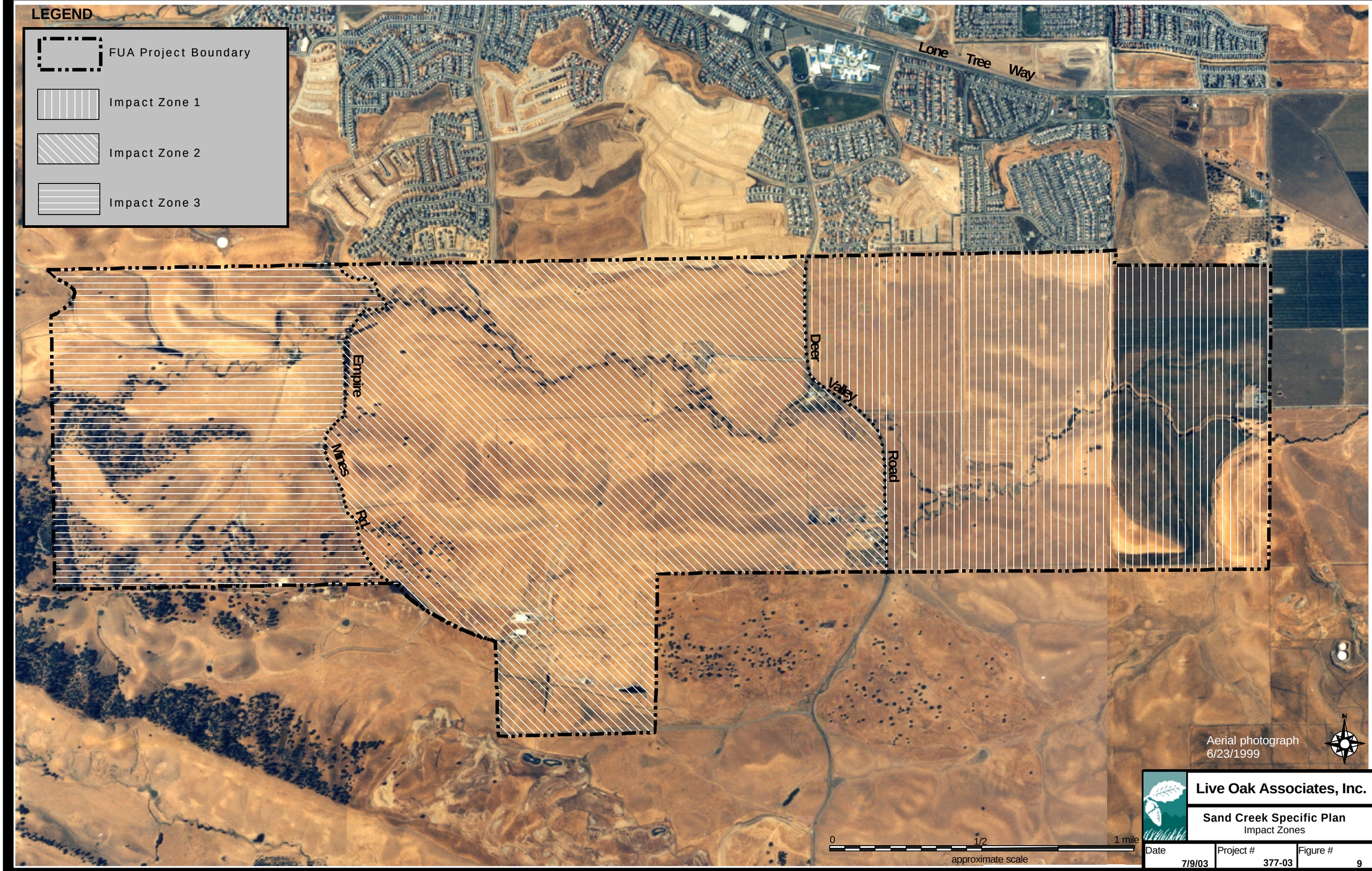
2,500' 0 2,500'

approximate scale

Live Oak Associates, Inc.

Sand Creek Specific Plan
Plan Area Constraints Summary

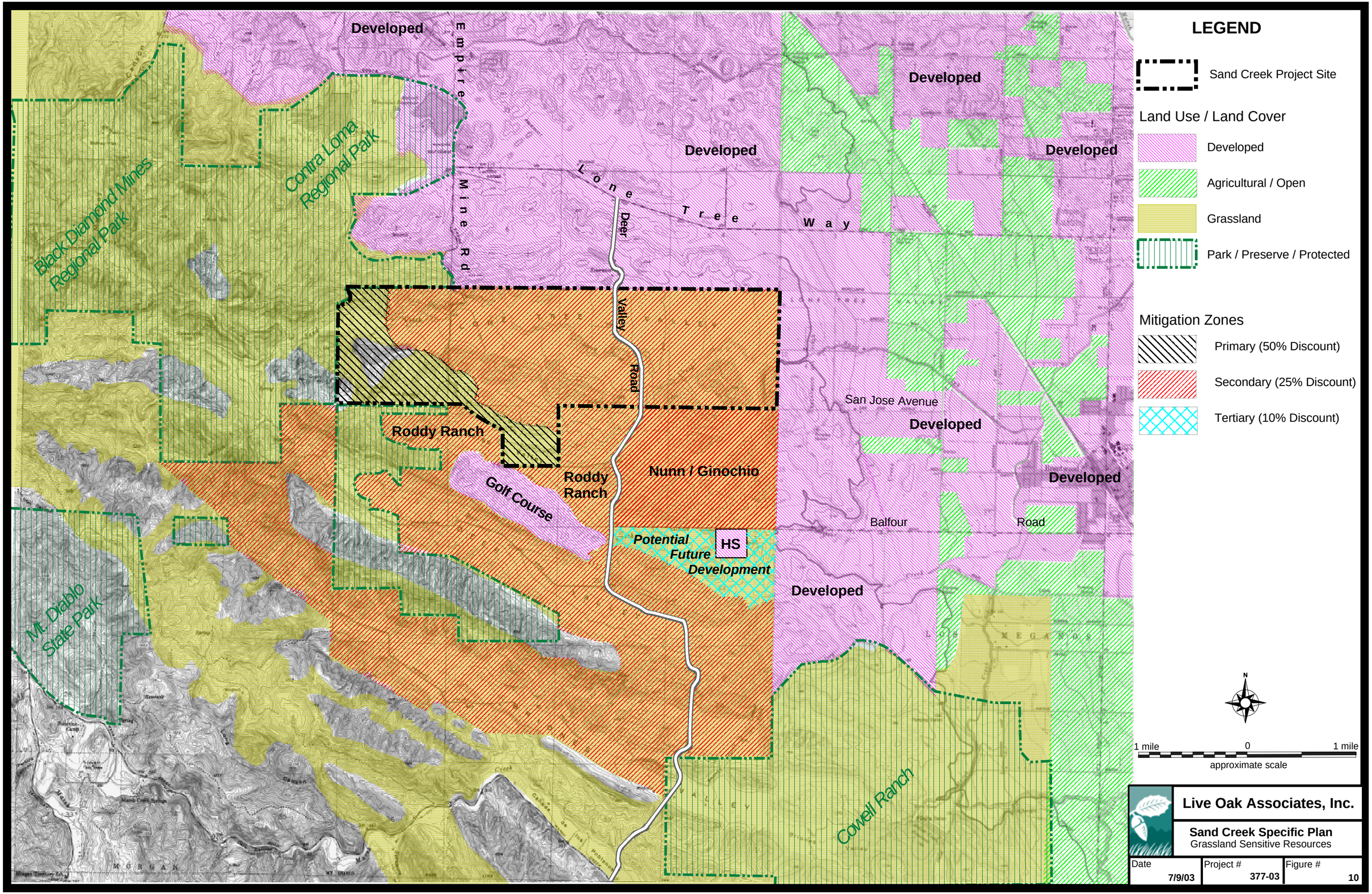
Date	Project #	Figure #
7/9/03	377-03	8



Live Oak Associates, Inc.

Sand Creek Specific Plan
Impact Zones

Date	Project #	Figure #
7/9/03	377-03	9



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Sand Creek Specific Plan
Grassland Sensitive Resources

Date	Project #	Figure #
7/9/03	377-03	10