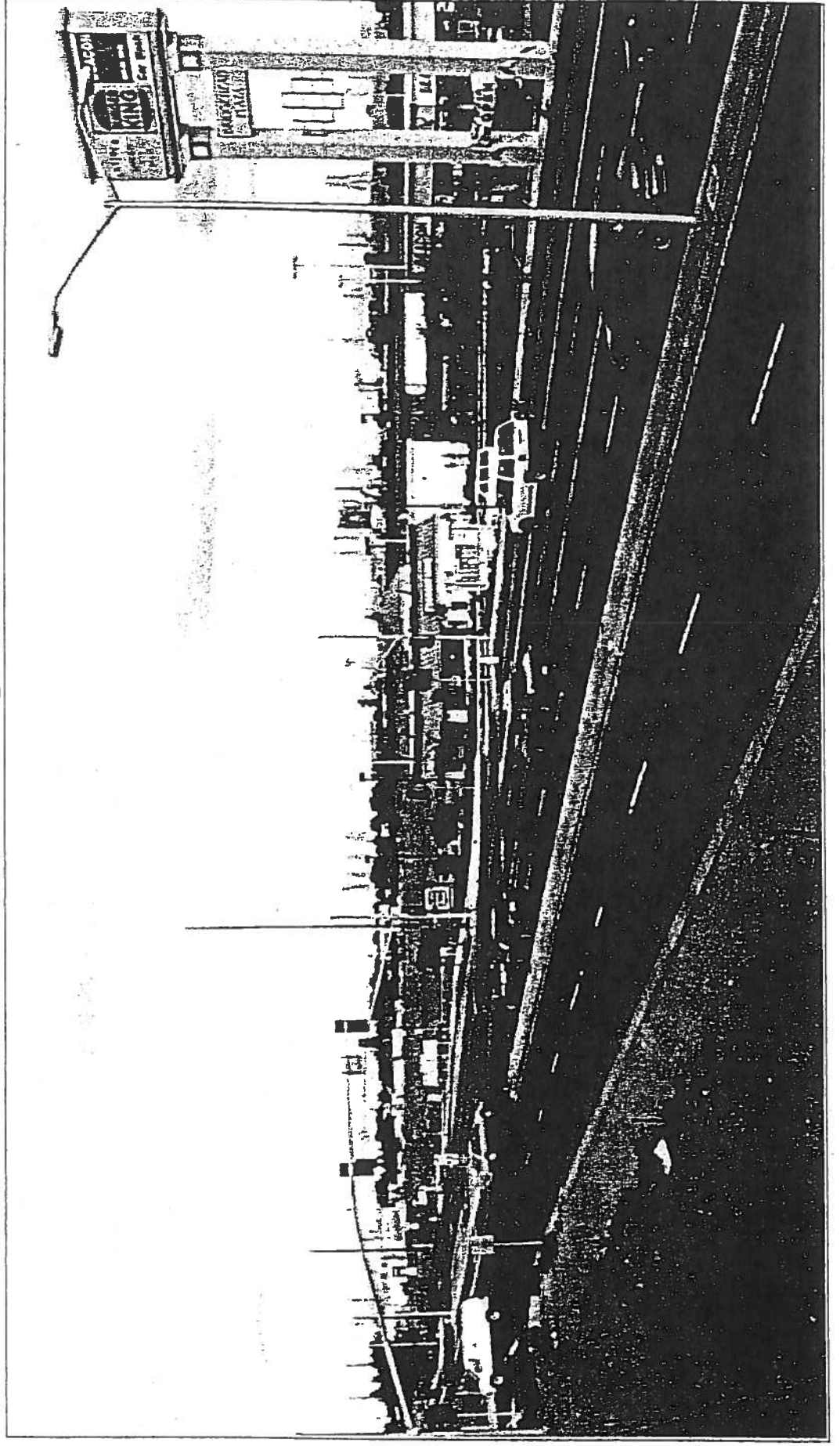


EAST EIGHTEENTH STREET

SPECIFIC PLAN



September 2001



EXECUTIVE SUMMARY

The Antioch General Plan identifies the area on the north side of East 18th Street, westerly of Drive-In Way as Focused Policy Area #6. Current General Plan policies call for resolution of a variety of circulation, utility service and other constraints within the planning area, in order to facilitate coordinated development of these 192 acres as a modern business park.

The Antioch City Council authorized preparation of this specific plan in December of 1999, with direction to work with area landowners and business interests to accomplish the following principal goals:

- (a) Resolve the current circulation, utility service and related development constraints.
- (b) Maximize opportunities for development of employment and revenue producing uses in a clean, attractive business park setting.
- (c) Incorporate sufficient incentives and flexibility in the plan to stimulate economic development, and retain the ability to adapt to changing market conditions.
- (d) Provide a program-level set of entitlements to address all major policy issues, as further incentive to stimulate development in the area.

The East 18th Street Specific Plan consists of two volumes presented as a single, integrated document. Volume I contains a summary of current conditions, development issues and policy direction to guide future development of the area, whereas Volume II provides the supporting program-level environmental analysis and

supporting technical studies. Following is a brief summary of the key findings and program objectives of this specific plan:

Land Use: The planning area currently consists of 28 separate legal parcels in 17 distinct ownerships of various sizes and configurations. Four-fifths of these properties are vacant or remain in agricultural production, despite a current light industrial zoning.

(1) Chapter 1 summarizes current conditions, existing zoning and General Plan policies. Chapter 2 establishes a new land use program for the planning area. The proposed Land Use Plan includes three new land use classifications: mixed office/light industrial (120 acres), regional commercial/ mixed use (35 acres), and open space/agriculture (26 acres).

(2) The PG&E utility corridors which cross the planning area are currently owned in fee by the utility and represent a significant constraint to efficient development. This plan calls for establishment of an agreement with the utility or its successor in interest to provide for the long-term use of portions of the utility corridors for public streets, parking, landscaping and related uses, in order to enhance building footprints outside the corridors.

(3) Chapter 2 also provides policy to: (a) preserve the economically viable commercial production of old-

growth grape vines as a feature element of the area; and (b) provide for the continued operation of all nonconforming business in the area, while controlling their expansion.

- (4) The optional annexation of 16 acres at the northeast corner of Viera and East 18th Street is recommended, subject to the consent of landowners within this portion of the planning area. This annexation would facilitate development of modern business park uses from Drive-In Way on the east to Viera on the west.

Infrastructure: Despite the availability of utility trunk lines at or adjoining the project boundaries, much of the planning area is currently without access to sewer, water or joint utility services.

- (1) Chapter 4 anticipates the timely improvement of 18th Street as a divided 4-lane arterial by the City, and summarizes its economic development benefits to area properties. It calls for careful coordination of final improvement plans with anticipated project improvements within the planning area. This street widening project will not place any direct financial burden on developing properties within the planning area; however, the improvements are critical to overall traffic mitigation for developing properties within the Specific Plan Area, as discussed in Volume II.

- (2) A sewer line is proposed between Vineyard Drive and Drive-In Way in advance of roadway construction, as a means of accelerating development of finished pads along Vineyard Drive. Internal area streets will complete the ultimate delivery of needed utility services on an as-needed basis.

Circulation: The 192-acre planning area is situated at a major gateway to the City of Antioch, in close proximity to Highway 160 on and off-ramps, and with frontage on a major arterial street. Despite these favorable conditions, access to the majority of properties in the area is presently insufficient to support the light industrial, office and commercial land uses proposed. Several key improvements are planned on a phased basis, and in conjunction with future development to the south of East 18th Street, in order to support the timely development of properties within the planning area, including the following:

- (1) Loop Street A: Phased improvement of a two-lane street providing access and utility services between existing Vineyard Drive and completed Drive-in Way.
- (2) New intersections at Phillips Lane and Willow Avenue: Newly planned street openings will be developed: (a) Along the frontage of the commercial center opposite Phillips Lane, at the east end of the site, and (b) Within a light industrial area at the west end opposite Willow Avenue. A short local service

street is planned as one of two optional methods of providing access to some 21 acres of O/LI land uses at the westerly end of the planning area. The expanded intersections at these locations will accommodate turn lanes and be fully signalized, in order to accommodate peak hour turn volumes consistent with build-out of the planning area.

(3) Signalization of existing intersections at Vineyard Drive and Drive-In Way. Both of these existing streets will be signalized and re-stripped to provide safe turning capacity for anticipated development within the planning area.

(4) Optional extension of Vineyard Drive to the north, and construction of a short cul-de-sac street north of loop street A, if necessary, to support efficient local development within these portions of the planning area.

(5) Future expansion of the intersection of Viera Avenue at East 18th Street, and extension of Viera Avenue south to connect with Sunset Drive to Hillcrest Drive, to be funded and completed as part of the planning and development of future industrial land uses south of East 18th Street.

Economic Incentives: Removal of physical constraints to development, alone, will not be sufficient to attract major employers and retailers to the area. Additional economic development incentives and implementation

tools are necessary to stimulate investment in development of planning area properties.

(1) Various incentives are built into the policies throughout each chapter with the intention of adding flexibility to future development while assuring a high level of overall project design and construction quality. Planned Development zoning will be applied to all planning area properties (including the westerly 16 acres upon annexation) in order to assure uniform review, while expediting processing.

Environmental Analysis: Despite the urbanized setting in which these 192 acres are situated, a number of potential environmental issues could affect future development. A complete program-level initial study was prepared to address and resolve those issues which could represent a constraint to the initiation of area-wide development. This document (incorporated as Volume II) has addressed all environmental issues identified in connection with phased development and ultimate build-out of the 192-acre planning area. Subject to implementation of a specific set of mitigation measures incorporated into the Plan (and summarized in Appendix C), no significant impacts are expected to occur.

(1) The Initial Study and draft Mitigated Negative Declaration appear in Volume II of this report. These documents address all potentially significant environmental impacts associated with changes in land use and related development policy for the

EXECUTIVE SUMMARY

planning area. Based on mitigation measures incorporated into the proposed specific plan, no significant impacts will result.

(2) Included in Volume II are three special reports focusing on potential biological constraints. These studies, contained in Appendix A include a thorough habitat assessment, and focused surveys for specific plants and insects / invertebrates. They show that no threatened or endangered plants or animals occur anywhere within the 192-acre planning area.

(3) Appendix B of Volume II contains the focused traffic impact analysis completed for the project. It analyzes current and future conditions with each of the planned project phases, and under ultimate build-out conditions. The recommendations of this study have been incorporated into the planned project capital improvements.

(4) Appendix C of Volume II contains a set of mitigation measures which are incorporated into the specific plan project, in order to assure the avoidance of potentially significant programmatic impacts. This analysis sets the stage for processing of individual development projects, which are consistent with the Specific plan, subject to supplemental environmental analysis which is limited to project-specific issues.

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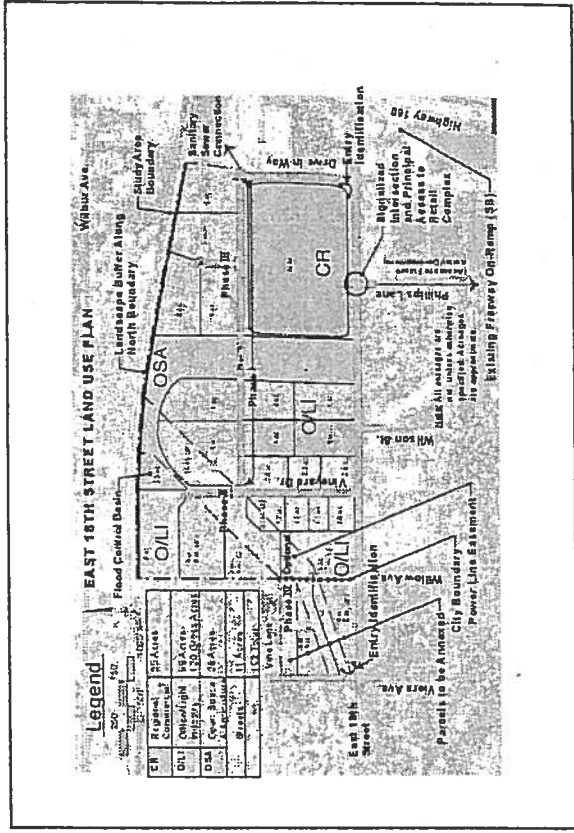
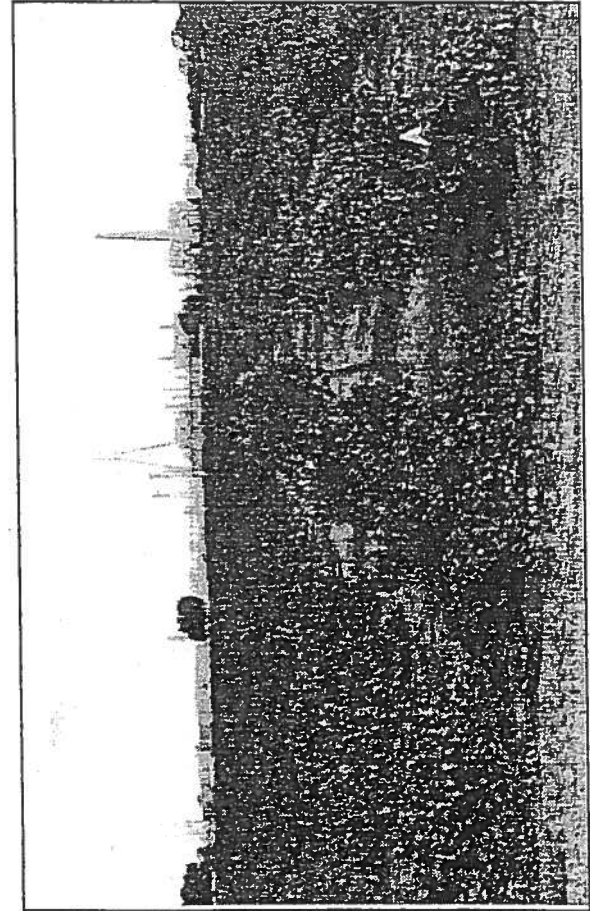
EAST EIGHTEENTH STREET

SPECIFIC PLAN

VOLUME 1: SPECIFIC PLAN

CITY OF ANTIOCH

JULY, 2001



1 INTRODUCTION

1.1 SITE DESCRIPTION & PARCEL CONFIGURATIONS

The East Eighteenth Street Planning Area includes approximately 192 gross acres located along the north side of Eighteenth Street, between Drive-In Way and Viera Avenue. Situated immediately west of the K-Mart retail complex with convenient access to State Route 160, this planning area is located along the City's major northeasterly gateway.

The A.T. & S.F. railroad line forms the northerly boundary of the Planning Area and the City's current incorporated boundary. Further to the north are a series of industrial manufacturing and processing plants within the unincorporated Antioch Planning Area. A portion of the westerly Planning Boundary is also coterminous with the City limit, and adjoins an older residential neighborhood. Parcels 22-28, however, are currently outside the City limit, and will be concurrently annexed prior to further development. Uses fronting along the south side of Eighteenth Street opposite the Planning Area include a cemetery, construction and material storage yards, and undeveloped industrial lands.

The Planning Area includes some 28 separate parcels, the vast majority of which are either vacant or underdeveloped. As shown in Figure 2, many of the larger parcels included within the Planning Area extend from East Eighteenth Street on the south to the railroad line on the north. Created at a time when rail access was a principal design consideration, these parcels were originally expected to accommodate manufacturing, processing and distribution uses dependent upon large shipments of raw materials.

Parcel sizes, current ownerships and current land uses are summarized in Table 1. The subdivision of properties along Vineyard Drive resulted in the recent creation of 8 finished

building sites of between 1 and 3 acres in size (Parcels 5-12), two of which have been partially developed (Parcels 6 and 8).

Table 1: Current Ownership & Use Summary

Parcel	Land Owner	Acres	Current Land Use
1.	McCullough	1.95	Contractor's equip. yard
2.	Smith	1.29	Residence/agricultural buildings
3.	Gonsalves	16.84	Vineyard
4.	McCullough	3.44	Contractor's equip. yard
5.	Cranmer	2.37	Vacant finished building pad
6.	Cranmer	2.28	Light Industrial building / vacant
7.	Cranmer	2.88	Vacant finished building pad
8.	CES	1.96	Engineering office
9.	Swisher	2.01	Vacant finished building pad
10.	Swisher	1.32	Vacant finished building pad
11.	Swisher	1.68	Vacant finished building pad
12.	Swisher	1.67	Vacant finished building pad
13.	CCCFCD	2.50	Detention basin
14.	Evangelho	10.73	Vineyard
15.	Gonsalves	20.18	Driving range & pro-shop
16.	PG&E	18.90	Vineyard / transmission lines
17.	Peckham	4.98	Auto repair, towing and storage
18.	Gaylord	24.79	Vineyard / vacant
19.	Cutino, et al.	17.36	Vineyard / vacant
20.	Cutino, et al.	15.93	Vacant
21.	PG&E	16.25	Vineyard / transmission lines
22.	Staats	4.00	Building material sales
23.	PG&E	4.34	Vineyard / transmission Lines
24.	Placial	0.42	Single-family residence
25.	Eisenman	0.29	Single-family residence
26.	Sigorney	0.27	Single-family residence
27.	Monfort	1.66	Single-family residence
28.	PG&E	3.88	Vineyard / transmission lines
	Antioch City	5.80	Existing street right-of-ways
	Total	191.97	

A series of partially enclosed retail and service commercial uses occupy roughly 45% of the East Eighteenth Street frontage, including an auto repair and towing/storage business (Parcel 17), a golf driving range and pro-shop (Parcel 15), a contractor's office and equipment yard (Parcels 1 & 4), and a building materials yard (Parcel 22).

Older residential dwellings remain on Parcels 2 and 24-27. Grapes are currently produced on Parcels 3, 14, 16, 21, 23, 28 and a portion of 18 & 19. Parcels 16, 21, 23 and 28 are all owned in fee by the Pacific Gas and Electric Company, which maintains high voltage transmission lines, towers and pipelines on this land. The remaining parcels shown in Figure 2 are predominantly vacant. Approximately 80% of the land within the Planning Area is underdeveloped (including the driving range property).

Individually, these properties are constrained from development by their awkward parcel configurations, limited access, lack of internal utility services, and poor visual exposure. Collectively, however, the Planning Area properties represent a significant land resource with the potential for convenient access to much of the East Contra Costa County Sub-Region. Several key factors combine to provide a high potential for development of these properties, including: (a) well-drained, relatively flat, sandy soils; (b) Access to major trunk utility lines along the perimeter of the site; (c) An opportunity for enhanced access to Highway 160; and (d) A high-profile position along the City's primary northeasterly gateway. This potential can be maximized by:

- (1) Resubdividing into more efficient parcels;
- (2) Developing internal roadway and infrastructure systems;
- (3) Establishing an agreement with PG&E, for purchase or long-term use of their utility corridors to accommodate

parking lots, roadways and other non-structural improvements to support adjoining businesses; and
(4) Adopting a comprehensive set of flexible land use entitlements.

This Specific Plan focuses on overcoming the current site limitations, by creating both the opportunity and incentive to pool land resources, extend needed infrastructure, and make use of the utility corridors on a phased basis. The Plan provides a series of flexible program-level entitlements designed to guide future development while minimizing risk and uncertainty in the permit process. These entitlements are designed to enhance the opportunity for development of new commercial office, light industrial and regionally oriented retail and business park facilities which can compete effectively in the market place.



Figure 1: Aerial View of Planning Area

1.2 RELATIONSHIP TO GENERAL PLAN

The East Eighteenth Street Planning Area is part of Antioch General Plan Focused Policy Area 6. The area is referenced in the current General Plan as being divided by overhead power lines, into "several distinct units of land for future development." Policies contained in the General Plan originally anticipated the formation of an assessment district to extend services into the planning area.

Current General Plan policies for this area recognize the need for compatibility with both heavy industrial uses to the north and residential uses to the west. Additional residential uses are discouraged, in favor of employment generating uses, capable of taking advantage of nearby freeway access and utilities. Parcel assemblage is encouraged, as is a means by which to provide internal circulation to facilitate the "equitable development of all parcels in the area." The General Plan land use classification for properties within the Planning Area is Light Industrial and Open Space. The assumed floor area ratio for compatible uses is 0.45, yielding a potential 3.6 million square feet of future floor area.

The proposed Specific Plan builds on the principles of internal circulation to serve employment-generating uses. Planned land uses, however, have been refined to include a mix of commercial office space and traditional light industrial uses, as well as a regional retail center. In addition, the PG&E utility corridors are treated as an integral part of the land use plan, rather than remaining as physical barriers, which would otherwise divide the Planning Area into a series of independent development sites. While consistent with the focus of the General Plan this new concept more closely resembles a planned business park, designed to offer a broader range of employment and shopping opportunities.

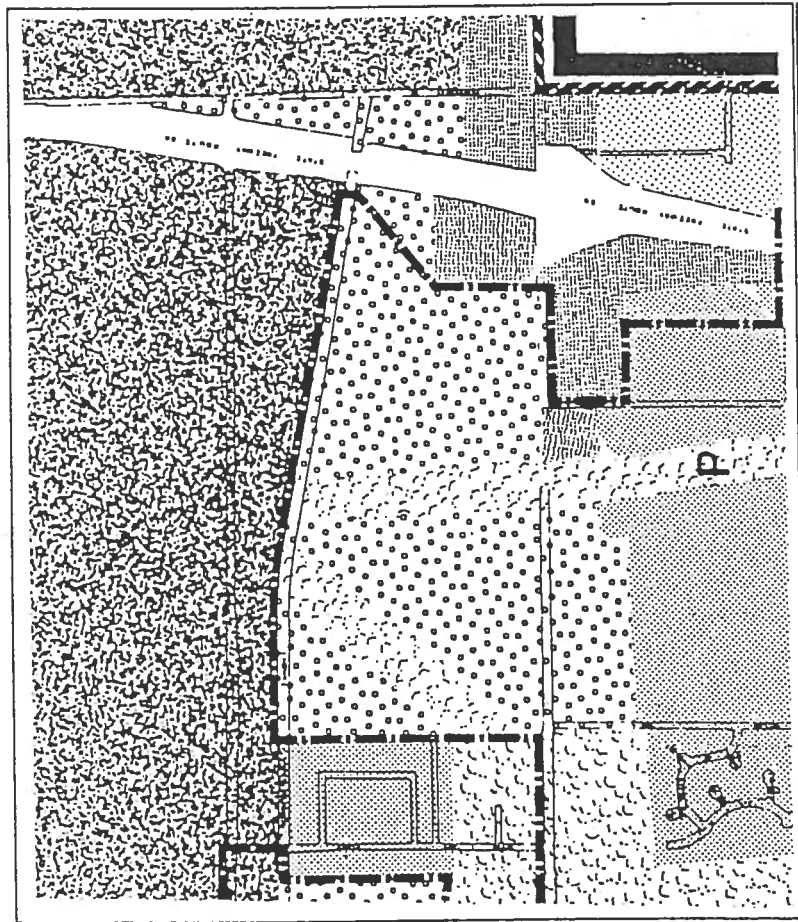


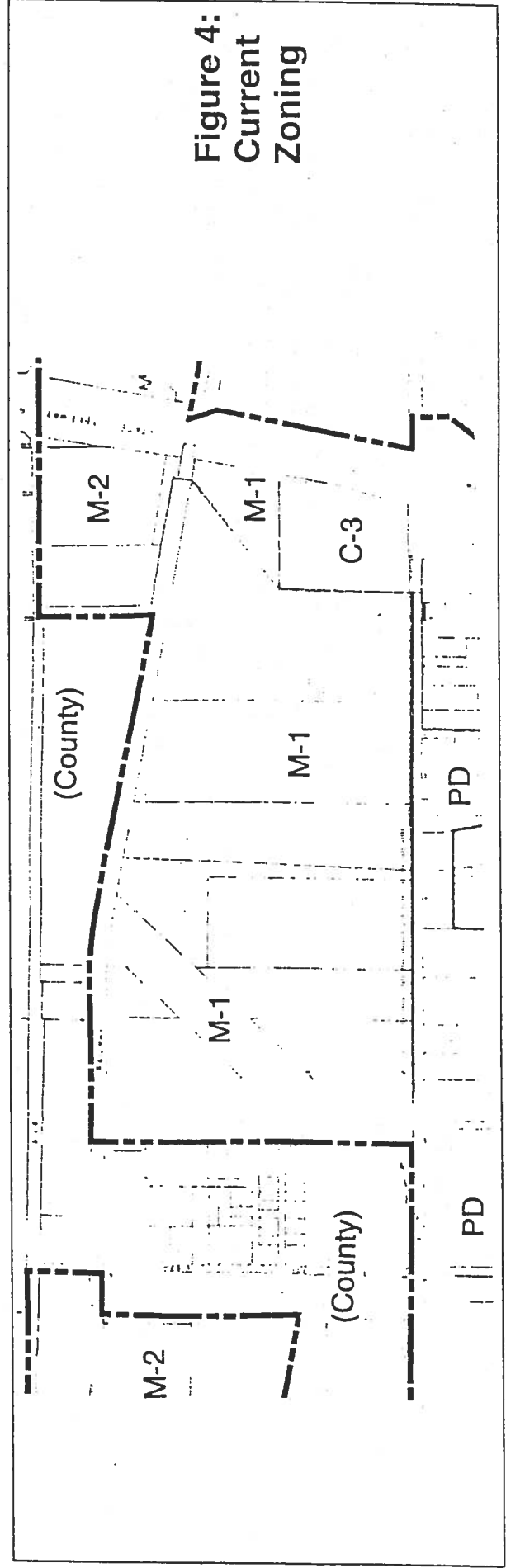
Figure 3: Current Antioch General Plan

COMMUNITY & PUBLIC SPACES		RESIDENTIAL USES	
	PUBLIC INSTITUTIONS		ESTATE RESIDENTIAL (2 du/acre max.)
	OPEN SPACE		RURAL RESIDENTIAL (2 du/acre max.)
	NEIGHBORHOOD PARK		LOW DENSITY RESIDENTIAL (4 du/acre max.)
	COMMUNITY PARK		MEDIUM LOW DENSITY RESIDENTIAL (6 du/acre max.)
INDUSTRIAL USES			CITY LIMITS
	LIGHT INDUSTRIAL		CITY SPHERE OF INFLUENCE
	HEAVY INDUSTRIAL		PLANNING AREA BOUNDARY
	BUSINESS PARK		

1.3 RELATIONSHIP TO ZONING

All incorporated properties within the Planning Area are presently zoned "M-1" Light Industrial. Unincorporated parcels 22, 23 and a portion of 27 are currently classified by County land use policy for use as Open Space, whereas parcels 24-28 are classified as Medium Density Residential. These parcels would be subject to City zoning upon annexation. The City's M-1 district is structured to accommodate manufacturing and material processing functions, allowing "fabrication, assembly, processing, treatment or packaging of finished parts or products from previously prepared materials typically within an enclosed building." However, a wide range of service commercial, commercial recreation, and outdoor storage uses are conditionally allowed. Development standards permit buildings of up to 45 feet in height with a requirement for design review of site improvement and architectural plans.

The M-1 district is the City's traditional zoning tool for accommodation of a light industrial land use. It provides little guidance as to the specific character and configuration of desired buildings and uses in different parts of the city. The resulting land use pattern within the incorporated planning area reflects a lack of identity and economic focus. The vast majority of current uses listed in Table 1 are principally unenclosed. Approximately 81% of the land within the Planning Area remains vacant or in agricultural production (grapes); 10% is currently occupied by service and or recreation commercial uses, and another 1% is occupied by residential uses. Only two small parcels along Vineyard Drive have been partially developed and occupied by light industrial uses, accounting for 2% of land resources. Existing and planned streets make up the remaining 6% of total land resources. Chapter 2 of the Specific Plan establishes new policy direction to guide further development and reuse of properties within the entire Planning Area.



**Figure 4:
Current
Zoning**

1.4 RELATIONSHIP TO MEASURE U

In September of 1999 the City approved formal policy for implementation of voter approved Measure U. This policy includes direction to limit the rate of new single-family residential development to a maximum of 500 units annually, while concurrently requiring the creation of 2 jobs for every new housing unit built in the City. In July of 2000 the City enacted an interim ordinance for the purpose of implementing the Measure U policies. This ordinance includes a procedure for evaluation of all new residential projects, and verification that such projects have either directly provided the required jobs, or paid a fee to be used by the City in helping to create an equivalent number of jobs.

Details of the Measure U policy implementation process are currently being refined as part of a City-wide General Plan update process. However, it is expected that a fund will be established using fees collected through the entitlement of housing projects, to provide economic assistance for key employment development projects. The East Eighteenth Street Specific Plan project may be eligible for receipt of funding through this process, to accelerate the installation of critical infrastructure systems, for the acquisition of necessary street rights-of-way, or for other purposes consistent with the Specific Plan. Advanced construction of the loop Street "A" connection between Vineyard Drive (shown in Figure 5) and Drive-In Way is an example of how such potential funding might be used. Any such expenditure would be linked to the timely initiation of major commercial or industrial development and would be reimbursable to the Measure U program fund over a period of years, as determined through agreements with the City.

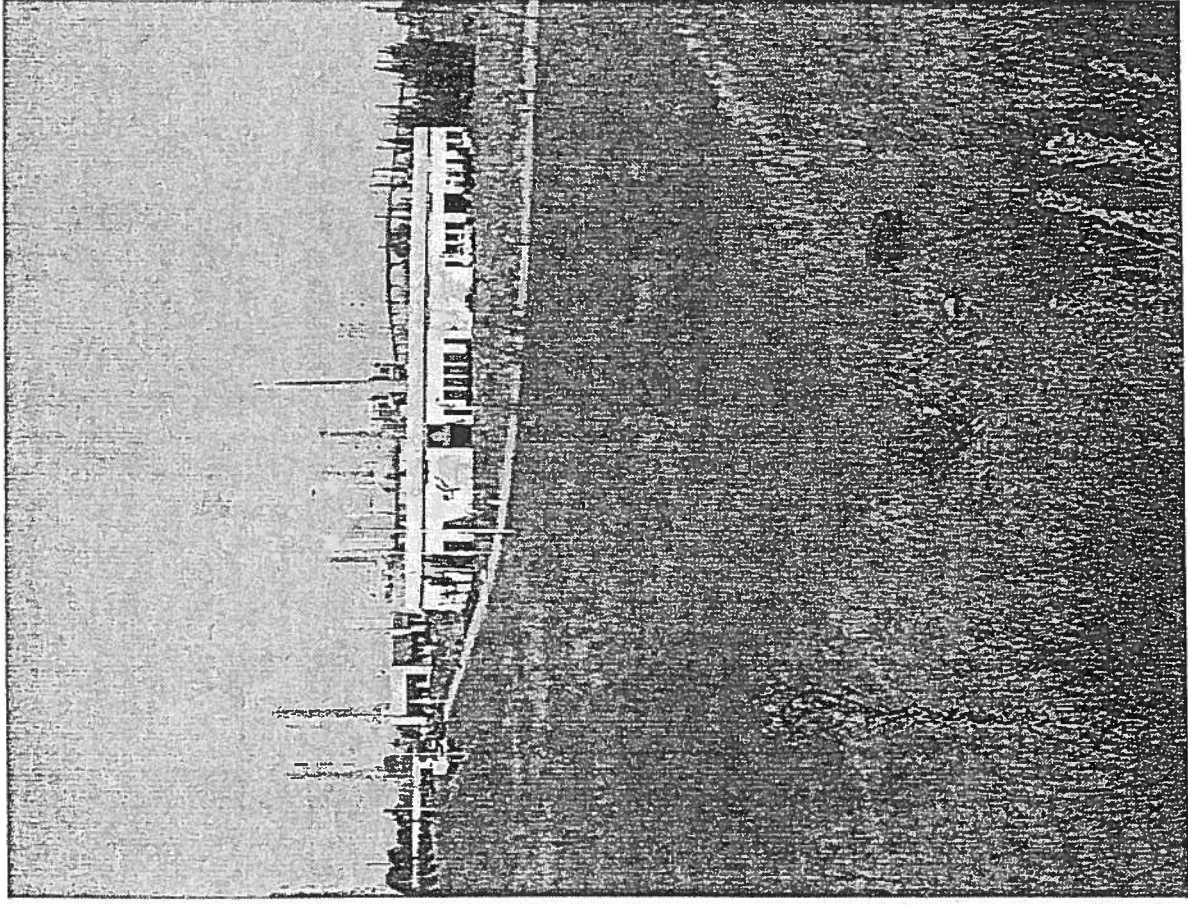


Figure 5: Vineyard Drive

2 LAND USE PLAN

2.1 LAND USE PLAN

The Plan, as shown in Figure 6, includes three distinct land use classifications: Regional Commercial / Mixed Use, Office / Light Industry, and Open Space & Agriculture. These classifications are discussed in greater detail in subsections 2.2 - 2.4. As a whole, the land use program is intended to attract a mix of compatible commercial office, research, light manufacturing and regionally oriented retail uses, along with supporting services in a business park setting.

A major design emphasis has been placed on utilizing the 4 PG&E utility corridor parcels as a non-building land resource to enhance the efficiency and economic viability of adjoining building sites. These parcels may either be: (a) purchased in fee, with PG&E retaining easements for continued overhead electrical and below grade pipeline operations; or (b) leased on a long-term basis. The municipal park site south of East 18th Street is an example of fee ownership retained by PG&E, with public use and maintenance of surface improvements facilitated by long-term lease. The acquired portion of the current utility parcels adjoining individual building sites may be planned and improved for parking, circulation, landscaping and other non-structural surface improvements.

Parcel sizes shown in the Land Use Plan are approximate, and include reference to both the gross area (inclusive of PG&E utility corridor) and net (buildable) areas. Parcel sizes may be adjusted to meet the needs of individual users. Typical O/LI parcels of 8 net acres, for example, are capable of supporting laboratory, production or office buildings of up to 3 stories and 156,800 square feet (based on a maximum FAR of .45). Adding a portion of the adjoining utility corridor to a parcel's gross site area (where feasible) may enhance individual building size and coverage.

Land Use	Acreage	Maximum FAR	Total Floor Area (s.f.)
Regional Com./ Mixed Use	35	.45	686,000
Office/Light Industry	99 (net) 120 (gross)	.45 (x gross acres)	2,352,000
Open Space & Agriculture	26	-	-
Street Right-of-Way	11	-	-
Total	192	N/A	3,038,000

Table 2: Development Potential

Maximum floor area calculations shown in Table 2 are based on maximum floor area ratios (FAR), and potential gross acreage figures (total building floor area divided by total gross site area). These maximums may not be achieved in all circumstances, depending on individual site conditions, and user needs. Development standards as outlined in Section 6.5 are designed to remain flexible, in order to respond to changes in market conditions.

All future development within the Planning Area will require approval of a Planned Development application. As discussed in Section 3.3, projects will need to demonstrate consistency with the policies and development standards contained in this Specific Plan. In order to achieve compatibility with adjoining residential land uses to the west, building heights are limited to two stories or 30 feet westerly of Street "C." Greater structure heights and building massing is encouraged easterly of Street "C", with the highest intensity of development encouraged in the area between Drive-In Way and the central open space system.

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CR/IM	Regional Com. /Mixed Use	35 Acres
O/LI	Office/Light Industry	99 Acres 120 Gross Acres
OSA	Open Space & Agriculture	26 Acres
	Streets	11 Acres
		192 Total

[illegible]

Identification

Signalized Intersection and Principal Access to Retail Complex

Highway 160

(Access to Future Kerley Development)

Phillips Lane

Note: All acreages are net, unless otherwise specified. Acreages are approximate.

Wilson St.

Note: Street 'D' Optional (See Section 4 and Appendix B)

Entry Identification

Willow Ave

Parcels to be Annexed

City Boundary

Power Line Easement

East 18th Street

Wilson Ave

Existing Freeway On-Ramp (SB)

2.2 REGIONAL COMMERCIAL / MIXED USE (CR/M)

A 35 net acre retail, office and services site is planned at the southeast corner of the planning area, across from the existing K-Mart / Bridgehead retail complex. This site occupies the prominent northeast corner of East 18th Street and Drive-in Way, and will have access from Drive-In Way, future Street "A" and a future signal-controlled intersection aligned opposite existing Phillips Lane. Inclusion of regionally oriented retailers (particularly those with a specialty focus), along with restaurants, business services high quality office uses at this corner will serve as an anchor for the Planning Area and enhance this important entrance to the community. Accessibility and visibility from Highway 160, and the planned Highway 4 / Bypass interchange provide a strong opportunity for specialty retail uses at this site. A well-designed mixed use complex can help to balance revenues, community services and employment within the Planning Area.

Projects proposed for the CR/M site must show a high level of design quality, with particular attention to the three street frontages and signal-controlled primary entrance on East 18th Street. Careful consideration must be given to coordination of project phasing, in relationship to current property ownerships (as discussed in Section 5.1). This land use classification provides for a broad mix of retail, service and selected industrial users, in accordance with Section 6.5. Consequently, it is important that the Planned Development provide for long-term spatial and parking needs, as well as for compatibility between the list of specified land uses. Planned parking facilities within mixed-use projects should take into consideration the peak hour needs of various businesses over time.

2.3 OFFICE & LIGHT INDUSTRIAL USES (O/LI)

The principal land use within the Planning Area is a mix of professional and administrative offices, and light manufacturing. A total of 99 net buildable acres, and 120 gross site acres (including leased PG&E utility corridor) have been allocated to this primary business park use. The Land Use Plan has shown an illustrative pattern of 5-8 net acre future building sites, designed to accommodate fully enclosed business operations. These parcel configurations are intended to remain flexible, in order to accommodate both mid-sized and large buildings. The Plan also reflects the delivery of improved access and utility services to several existing parcels along Vineyard Drive.

Land use intensities should be controlled on parcels directly adjoining existing residential uses along the west Planning Area boundary. Building height and mass should be limited in this area, in accordance with the performance standards outlined in Chapter 6. A greater intensity of land use and employment density should be encouraged easterly of Vineyard Drive. In particular, multi-floor office facilities are desirable as part of, or in proximity to the regional retail / mixed-use complex.

2.4 OPEN SPACE & AGRICULTURE

The open space network included in the Plan contains two primary components. The first is an existing Contra Costa County Flood Control District detention basin, located along the northerly project boundary at the end of Street "C." This basin is part of the master flood control system for Drainage Area 29J, and is of adequate size to serve the ultimate needs of the westerly portion of the Planning Area. The basin is connected to a 40-foot wide landscape / pathway corridor

which extends south through the residual PG&E utility corridor, along the east side of Street "C."

This landscape corridor transitions easterly of the flood control basin into an interim agricultural corridor, which serves to promote the continued cultivation of old-growth grape vines. The easterly leg of the PG&E utility corridor is currently used for the production of three special varieties of grapes: Zinfandel, Mourvedre and Carignan. Originally planted in the late 19th century, these vines are reported to be among the oldest in the State of California. The three varieties are shown in Figure 8. Together with the more recent plantings within the connecting corridor to the west, these vines also help to create a visual open space element with an historic and commercial value. It is recommended that special care be taken in the design and approval of projects adjoining this open space network, to: (1) orient buildings and public areas, where practical, to incorporate views of the vineyard; and (2) avoid placement of closed-off yard areas or other potential sources of litter or vandalism adjoining the vineyard.

Street "A" will ultimately cross through the open space network and vineyard. As discussed in Section 8.2, these improvements may be phased to facilitate an early sewer connection between Vineyard Drive and Drive-in Way, while minimizing disruption to the vines themselves. Special construction techniques may be required for this purpose.

At such time as the vines are no longer viable for commercial production, this segment of the PG&E right-of-way should be converted to a combination of low-maintenance landscaped trail corridor and supplemental parking for adjoining uses. Detailed plans for reuse of this area will be developed and funded concurrently with approval of the CR/M site.

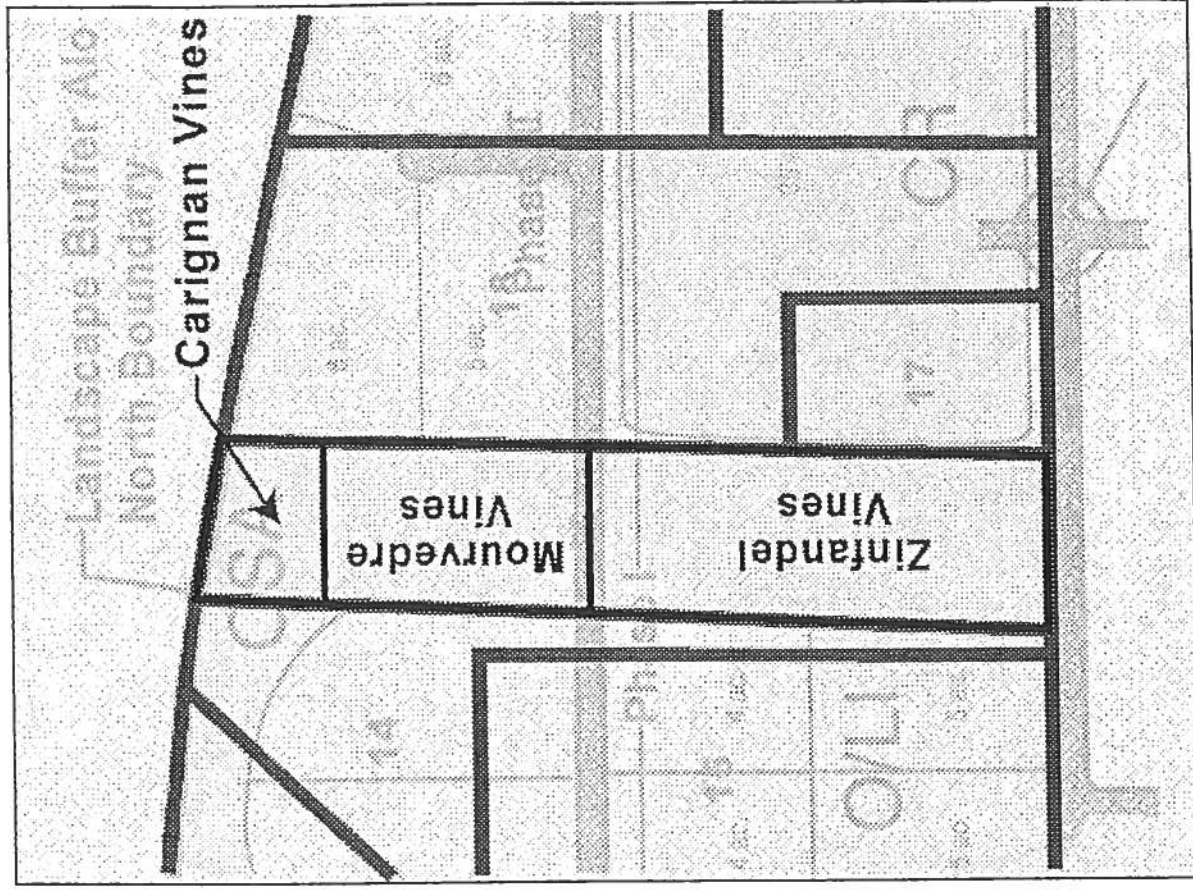


Figure 8: Old Growth Vines

2.5 PRE-EXISTING LAND USES

This Plan provides economic incentives and planning-level guidance to stimulate creation of employment and revenue generating uses within the Planning Area. Regulatory controls include specifications for compatibility of land uses (Chapter 2.1-2.4), performance-based design standards (Chapter 6), and Planned Development Zoning which will require concurrent land use and architectural plan approval. Changes to individual existing uses and buildings must be in compliance with these controls and standards.

A majority of the acreage within the planning area is currently vacant or used in commercial grape production. As noted in Chapter 1.1, however, several properties are currently occupied by lawful uses, which are not consistent with the new land use regulations. Such "nonconforming" uses may remain subject to the controls imposed by the City Zoning Ordinance. In particular, these uses may not be enlarged or expanded, and must be discontinued prior to initiation of new development in accordance with this Specific Plan. Following is a summary of the status of existing land uses:

- The existing farm residence located on Parcel 2 is nonconforming because residential uses are inconsistent with the Light Industrial / Office classification.
- The four other residences currently taking access from Viera Avenue (Parcels 24-27) currently conform to the County General Plan and zoning regulations. These uses will become nonconforming upon annexation, and concurrent application of the proposed "Office / Light Industry" land use classification. Existing residential structures within the Planning Area may not be enlarged

or relocated, but may be maintained and, if damaged, may be fully repaired subject to the appropriate permits.

- The existing building materials yard located on unincorporated Parcel 22 currently operates under the terms of a County Land Use Permit, and would become nonconforming upon annexation. This business could not be enlarged or expand under the provisions of the City zoning ordinance.
- The contractor's equipment and materials yard on Parcels 1 and 4, the driving range on Parcel 15, and the auto repair and storage use on Parcel 17 would each become nonconforming, based on the nature of these uses as commercial businesses, and the fact that they are principally unenclosed. Sanitary sewer and related utility services may be extended to such uses for public health and safety reasons, subject to the limitation that they not be expanded or relocated.
- Uses housed within the light industrial buildings along Vineyard conform with the new land use regulations; however their expansion would be subject to compliance with new development standards, and any change of tenancy would obligate connection to the gravity flow sewer, upon its connection through future Street "A".
- Grape production as an agricultural business is a nonconforming land use on all parcels except 16 and a portion of 14. The continued production of grapes may continue indefinitely (without expansion) on all properties classified as Regional Commercial or Office / Light Industry, and is allowed as a principal land use within those portions of Parcels 14 and 16 classified for Open Space / Agriculture uses.

3.1 EMPLOYMENT OPPORTUNITIES

Based on the acreage allocations reflected in Land Use Plan Figure 6 and the maximum floor area ratios shown in Table 2, the Planning Area has a potential for generation of up to 8,000 total jobs. Land use allocations specified in the Plan result in 80% office/industrial, and 20% retail/mixed use jobs.

Land Use	Max. Floor Area (s.f.)	Emp. Density (s.f./emp.)	Potential Max. Jobs
Office/Light Industry	2,352,000	350	6,720
Regional Com. /Mixed Use	686,000	500	1,372
Total	3,038,000		8,092

Table 3: Employment Estimates

The foregoing figures reflect a higher intensity of land use than currently found in the industrial buildings along Vineyard Drive or elsewhere in the vicinity. Existing facilities on Vineyard have been constrained by the absence of sanitary sewer service; connection of the public sewer will permit higher occupancy uses. Improved market demand may facilitate future development which approaches the maximum floor area ratios shown in Figure 2, and the total square footage figures shown in Table 3 above, including professional and administrative offices, light assembly, laboratory, retail and service uses.

3.2 EAST 18TH STREET IMPROVEMENTS

The City of Antioch will initiate work on its planned East 18th Street roadway improvement project in calendar year 2001.

The project will include construction of an additional travel lane in both directions between Drive In Way and Willow Avenue. The new 4-lane arterial will include a center median, with openings and controlled turn pockets at public street connections. Public sewer, water and related utility lines will be included as part of the project, as will overhead lighting and the under-grounding of electrical service lines. Current plans call for travel lane improvements to taper back down to two lanes entering the east leg of the Viera Avenue intersection. Modification of these plans to extend the 4-lane widening to a transition point westerly of Viera Avenue is recommended, subject to a property owner supported successful annexation of the 16 unincorporated acres at the northeast corner of Viera and East 18th Street.

All design and construction work included in the East 18th Street improvement project is to be funded through the City's capital improvement program, and will not become a reimbursable expense for developing properties within the planning area. This independent City-sponsored project provides necessary utility connections to facilitate independent development of Specific Plan Phase IV and certain other properties fronting on East 18th Street with future 'pad' elevations sufficiently higher than the corresponding sanitary sewer and storm drain flow lines.

The East 18th Street improvements also provide a significantly enhanced visibility and access potential for all properties within this important gateway to the City of Antioch. It is the City's expectation that this investment will both accelerate the timing of planned industrial and commercial development along this corridor, as well as elevate the quality and intensity of employment uses.

3.3 PROCESSING OF APPLICATIONS

All properties in the planning area are to be zoned PD (Planned Development) district to ensure the uniform application of policies contained in this plan. Properties which are currently unincorporated will be rezoned PD, in order that the new zoning regulations take effect concurrently with completion of their annexation. The PD regulations provide a single process for timely review of proposed land uses, as well as site and architectural plans, in order to assure compatibility of land uses and improvements. Those applications which are in conformance with Specific Plan policies and do not have a potential for project-level significant environmental impacts (as determined by the Planning Department), will be processing expeditiously. Based on the program-level Initial Study and Mitigated Negative Declaration which accompany this Specific Plan, it is anticipated that conforming development proposals will typically not have the potential to generate new or expanded environmental impacts, and will therefore not require further environmental review. A completed City Environmental Checklist form must accompany each such application, and may require the preparation of an Initial Study in order to determine the potential for significant impact.

3.4 OTHER INCENTIVE CONTRIBUTIONS

As noted in Section 1.4, the City is currently developing a set of final regulations for management of residential growth, with a focus on mitigation of traffic impacts and contributions to help stimulate the local job base. Funds collected from residential projects may be used to provide economic assistance for employment projects, including those within the East 18th Street planning area. As such funds become available, applicants may apply to the City's Office of

Economic Development for assistance. As discussed in Section 5, the planning area has been designed with the goal of maximizing flexibility for independent development of a various project "phases." A major current impediment to such independent phasing is the absence of a gravity flow sewer connection between Vineyard Drive and the existing truck line within Drive In Way. Because of the critical importance of this improvement as a prerequisite to further development on Vineyard Drive, Street C, and Street A, the City will proceed with its installation when needed, subject to acquisition of easements from affected land owners.

Advance funding of the new 8" sewer line will be provided from the City's Capital Improvement Program, subject to reimbursement on a per-acre basis from benefiting properties, as development occurs within the planning area (roughly a \$200,000 expenditure, based on \$35/lineal foot plus contingency). The new line will be contained, initially, within a 20-foot public utility easement to be acquired across six different properties, between Vineyard Drive and Drive-In Way (street right-of-way has already been offered for dedication over a portion of these properties). The sewer will have a depth of approximately 6-8 feet, and may therefore be carefully trenched through the old growth vines on Parcel 16 in order to minimize damage to root systems. A temporary all weather service access will be improved adjoining that portion of the sewer line outside of vineyard on Parcel 16. This line will eventually be contained within a dedicated public street extending through the vineyard on Parcel 16. Remaining street improvements may be deferred, however, until such time as properties along Street A develop. This approach minimizes front-end capital investment and disruptions to non-developing properties, while providing an interim solution for delivery of needed services.

4.1 EAST 18TH STREET IMPROVEMENT PROJECT

Section 3.2 describes the roadway widening and median improvements planned by the City of Antioch for the spring of 2001. This independent project will enhance volume capacity on East 18th Street, as well as improve visibility of planning area properties. Median openings will be provided with left turn pockets at the new Phillips Lane / Regional Commercial Mixed Use site entrance. Proposed Street "D" is shown on the Land Use Plan in alignment with Willow Avenue, allowing left-turn movements with an additional median opening and protective turn pockets. If Street "D" were not aligned with Willow (as alternatively shown in Figure 11 in Volume II), then no openings in the median would be allowed. Additional driveway openings on Parcels 1, 4 and 22 are discouraged. Completed 18th Street will consist of 80' of improvements (curb to curb) within an overall right-of-way of 100 feet.

The 18th Street widening improvements will transition back to two through lanes (one in each direction) easterly of Viera, unless annexation of the unincorporated land northeast of Viera and East 18th Street is completed in advance of construction. A total of 7 private parcels comprising approximately 16 acres are affected by this annexation. The new intersection at Phillips Lane and the private street entrance to the future Regional Commercial / Mixed Use site is planned to accommodate signalization and an interconnect to the adjacent Drive-In Way signal. Traffic control improvements will be required as a condition of future development on the Regional Commercial / Mixed Use site. This 35-acre site should be designed as one planned development, in order to maximize its development potential, and assure the safe movement of vehicles through the intersection. The site is currently comprised of portions of four separate parcels. Its coordinated planning does not

necessarily dictate merger into a single ownership, or development as a single-phased project.

4.2 INTERNAL CIRCULATION CONCEPT

The Land Use Plan reflects an internal loop street circulation pattern. Street A is aligned to form an efficient connection for both traffic and underground utilities, between Vineyard Drive and the improved end of Drive In Way. As noted in Section 3.4, surface improvements may be deferred until such time as fronting properties seek to develop. As an interim measure, the City will advance construction of an 8" sanitary sewer line within the alignment of the future street right-of-way, in order to facilitate early development of properties along Vineyard Drive and Street C.

Streets B and C may subsequently be constructed as dictated by local need, and independent project phasing. Street D, however, because of its potential for direct access to the trunk sewer and storm drain line in East 18th Street, may be developed independently (and in advance of) the internal loop street. Street "D" is designed as one of two access options to service both the McCollough properties to the east (5.4 acres), and the 7 annexed parcels to the west (16 acres). Consolidated access from this new public street is considered desirable because it would: (a) provide the opportunity for left turn movements in and out of the properties under the proposed circulation option (shown in Figure 10 of Volume II); (b) avoid the introduction of business traffic otherwise placed onto Viera Avenue (an unincorporated residential street); and (c) improve the efficiency of future development on both street frontages. The bulb on this new cul-de-sac, is to be placed within the PG&E utility corridor where it will not further reduce net buildable site areas, and facilitate access to rear parking on

these adjoining sites. The Street "D" access option is shown in Figure 10. This new street, and the intersection improvements it would entail (as further discussed in Appendix B) is one of two approved options. The second option calls for construction of a single common driveway along the property line between Parcels 1 and 22, designed to provide access only to Parcels 1, 4 and 22. Under access Option 2, a solid median would be required along East 18th Street to prohibit left-turn movements. Parcels 23-28 would take access from a single common driveway at the south end of Viera Avenue. This option requires that Parcels 23-28 would fund the frontage improvements to Viera Avenue, as well as the utility extension required from East 18th Street, between Parcels 1 and 4 (dedicated by underlying owners).

4.3 INTERNAL ROADWAY STANDARDS

Internal streets within the planning area are generally to be built to public industrial street standards. This includes a 48' improved section consisting of two travel lanes and parking aisles, along with curb, gutter and sidewalk within a 68' right-of-way. Expressed in terms of year 2000 preliminary engineering cost data, this represents approximately \$275 per lineal foot, including utilities, given the lack of major grading problems within the planning area.

A reduced street right-of-way may be considered for Street D aligned opposite Willow, subject to approval of a coordinated planned development application for the combined site. Recent excavation work within unincorporated Parcel 22 may complicate street work, and ultimately require regarding and/or import of fill to achieve positive sewer and storm drainage flows from finished building pads. Street "D" may also be used as access to Parcel 2, depending on a detailed analysis of grades and utility servicing needs.

4.4 VIERA AVENUE

Viera Avenue is a residential collector street which serves a single family residential neighborhood north of East 18th Street. In order to avoid potential impacts from business traffic, all access to future development on Parcels 22-28 shall come from internal Street D and East 18th Street. No improvements to Viera Avenue are planned, with the possible exception of intersection improvements at East 18th Street, subject to completion of the annexation of the 16 contiguous planning area acres. As shown in Figure 9, Street D will extend north to the utility corridor, in order to facilitate access to all properties in this area and eliminate the need for separate street openings on East 18th Street.

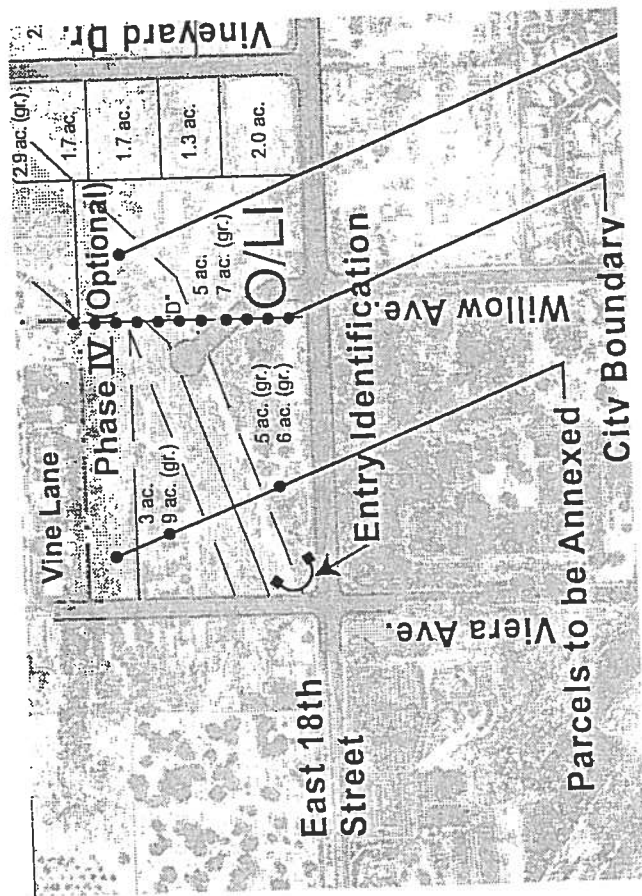


Figure 9 – Viera Avenue & Street D

4.5 DRIVE-IN WAY

Originally improved to serve the adjoining K-Mart commercial site to the east, Drive In Way currently lacks frontage improvements on the west (project) side of the street, and terminates at a barricade approximately 100 feet south of the planned Street A connection "knuddle." Development of the fronting property will require completion of these remaining improvements. Drive In Way connects to East 18th Street at a signalized intersection. This signal will need to be modified concurrently with installation of the new Phillips Lane / Regional Commercial site intersection, for purposes of coordinating signal phasing.

5.1 LAND ASSEMBLAGE / COORDINATION

The 192-acre planning area is comprised of some 28 separate parcels under 17 separate ownerships (as listed in Table 1). Current parcel sizes and configurations, as shown in Figure 2, may not facilitate efficient access or development of these properties for the uses outlined in this Specific Plan. Several optional methods of assembling, or coordinating the planning of these properties, in phases, are therefore encouraged. These options include: (a) Sale of properties to a common buyer (including existing owner/developers); (b) joint venture arrangements between contiguous owners through use of lot line adjustments and/or merger of parcels under common ownership; and (c) Coordinated site and architectural planning between contiguous owners, together with joint use easements, where appropriate. The specific arrangements will be subject to application and approval through the City's Planned Development process.

This Specific Plan has been developed as a mechanism to create new opportunities to encourage light industrial and commercial development. The decision to sell and/or cooperatively pursue development will be made on an individual owner basis. The City will take appropriate action, as required, to secure utility easements and new street right-of-ways in accordance with this Specific Plan, to serve the needs of developing properties.

5.2 PHASED DEVELOPMENT

The Specific Plan provides overall guidance for the design and processing of future development applications within the boundaries of the planning area. Future development projects will need to be phased in such a manner as to concurrently finance and construct needed utility and roadway improvements in accordance with this Plan. The Land Use Plan has been designed to maximize flexibility, for phasing of future development in several smaller units capable of independent development.

In order to create an opportunity for independent phasing and development throughout the planning area, the trunk sewer line within future Street A must first be constructed. According to preliminary engineering estimates, this facility must have a minimum 8-inch diameter, and be installed from Vineyard Drive/Street C easterly to tie into the current trunk line located in Drive-In Way. Once connected, this sewer line will serve development on Vineyard Drive and Street C.

Properties situated between Vineyard Drive and Drive-In Way must improve Street A (including a short connection south to current Drive In Way) in order to provide secondary access, adequate water supply for fire protection, as well as storm

drainage and joint trench utilities. This "Phase I" improvement will enable development of all fronting properties, and create the opportunity for subsequent development of Street B (if needed based on proposed parcel sizes and service requirements). Frontage improvements to Drive In Way will be undertaken concurrently with development of the Commercial Site.

Street C (Phase II) can be initiated in advance of full improvement to Street A, provided that the sewer line is first extended (as scheduled in 2001 as a City project, subject to reimbursement). Street D (Phase IV) may actually be initiated in advance of any other internal planning area improvements, provided that first: (a) annexation of all 7 private parcels is completed; (b) the East 18th Street improvement project is completed; and (c) an overall Planned Development program for these 16 acres has been approved, using the proposed Willow alignment. In particular, this Planned Development design must resolve detailed issues involving: (1) Previous excavation and grading work on Parcel 22; (2) Coordinated use of the two PG&E utility corridors and avoidance of remaining underground pipelines; (3) Establishment of proper street and pad elevations such that sewer and storm drain facilities gravity flow back to East 18th Street; and (4) Careful coordination of the phasing of improvements to avoid impact to residences remaining on an interim basis in the four existing residences on Parcels 24-27. The alignment which places Street "D" directly opposite Willow Avenue (Figure 10) is optional. Alternative common driveway Option #2 may be approved, subject to review of detailed plans as part of a coordinated Planned Development application.

5.3 FINISHED PARCELS ON VINEYARD DRIVE

A total of six (6) finished building sites currently exist along Vineyard Drive. As seen in Figure 5, two of the parcels on this street have been developed with light industrial facilities. Tenants of these buildings are low occupancy uses with small sewer demand. Upon connection of the new Street A sewer, these existing businesses will be required to connect to the existing Vineyard Drive sanitary sewer. The vacant parcels will then also be capable of accommodating intensive development in accordance with this Specific Plan. Each of the properties along existing Vineyard Drive and future Street C will be assigned a proportional per acre cost of the Street A sewer line, payable upon connection or further development.

The two corner parcels at Vineyard Drive and East 18th Street will be provided the option, on an interim basis, to install temporary pumping facilities and connect to the East 18th Street trunk line, if completed in advance of the Street A sewer. Any such temporary connection will need to meet both the capacity and safety the requirements of the City Public Works Department, and will be treated as a private project expense. These parcels will also be required to permanently connect to the Vineyard Drive sewer upon completion of the Street A trunk line connection (and pay a proportionate share of its cost).

6.1 NORTH BOUNDARY BUFFER

A strip of between 20 and 30 feet in width along the entire north boundary of the planning area is to be reserved and improved as a buffer between the new Specific Plan uses, and both the railroad line and heavy industrial facilities further to the north along Wilbur Avenue. As shown in Figure 6, this buffer will run parallel and contiguous to the A.T.&S.F. rail right-of-way, and is to consist of both earth mounding and a combination of dense shrubbery and trees.

The buffer is intended to serve two important functions. First, earth mounding of between 3 and 5 feet in height is intended to help absorb some of the noise from freight trains passing immediately to the north. Second, the mounding and supplemental dense shrubbery and trees will form a visual screen to block much of the unsightly factory and power plant facilities beyond. Together, these features will provide an attractive backdrop for a modern 192-acre business park development, and will complement the vineyards in helping to establish a separate and unique identity for the park.

6.2 RESIDENTIAL USES TO THE WEST

Single-family homes in the unincorporated neighborhood from Vine Lane to the north form a common boundary with planned light industrial uses ultimately taking access from Vineyard Drive, Street C, and Street D. A landscaped buffer of at least 15 feet in depth, along with a uniformly designed 6-foot masonry wall will be required along both planning area frontages of this neighborhood. In addition, future light industrial uses backing up to this neighborhood are to be designed in a manner as to minimize noise impacts by avoiding outdoor activities or placement of equipment in

proximity of the common boundary. Project designs shall be evaluated as part of the Planned Development process to confirm compliance with this objective.

6.3 EMPLOYMENT INTENSITY

Light Industrial developments located westerly of Vineyard Drive (with the exception of the four parcels currently fronting on Vineyard) should be designed with maximum two-story buildings having overall heights of not more than 30 feet. Building setbacks from the common boundary with adjoining residential uses should be a minimum of 30 feet for one-story buildings, and should increase to 40 feet for two-story buildings. All other zoning ordinance standards normally applicable to the M-1 District shall be applicable, subject to final approval of a Planned Development permit.

All other planning area properties are encouraged to develop at an employment intensity consistent with the floor area ratios outlined in Table 2. Zoning ordinance standards as outlined for the M-1 district shall apply throughout this area, subject to additional site-specific controls and flexibilities afforded through the Planned Development permit process.

6.4 USE OF PG&E UTILITY CORRIDORS

The four utility corridors which cross through the planning area are owned in fee by the Pacific Gas and Electric Company, and are used for the transmission of electric power via overhead lines and towers, as well as oil and fuel transmission through underground pipelines. This Specific Plan encourages use of the surface of these corridors, consistent with applicable safety prerequisites, for parking,

circulation and landscape improvements. Both public Streets and private project improvements may be placed within the corridors, pursuant to the provisions of long-term ground leases and subject to the provisions of Planned Development permits.

6.5 DEVELOPMENT STANDARDS

All land uses shall be established for individual projects through the Planned Development process, and shall generally be consistent with the standards established in the zoning ordinance for permitted and conditional uses in the C-O and M-1 districts (Office / Light Industrial classification) and C-4, C-O and M-1 district (Regional Commercial / Mixed Use classification). Land uses within the OSA classification shall be limited to commercial grape production, public access and recreational facilities. Reservations made be approved as part of project Planned Development permits, for future use of a portion of the OSA corridor for parking and landscape improvements, if it is demonstrated that commercial grape production is no longer viable.

7.1 PG&E UTILITY CORRIDORS

The four corridors described in the preceding sections are owned in fee by PG&E, and may be used for various non-structural site improvements, subject to the provisions of long-term leases and Planned Development permits. In order to provide uniformity in the process for use of these corridors and to accelerate the availability of portions of these corridors to individual developers and users, it is recommended that the City and utility work together to set the terms of a master lease. The master lease would address common factors applicable throughout the planning area, including the term, per acre cost, list of acceptable uses and procedure for obtaining approval to commence work. The master lease would be used as the starting point for finalizing the terms of individual leases entered into with individual owners. Such individual leases would cover site-specific issues of importance to the utility and individual owners.

7.2 STREET A & TRUNK SEWER

As discussed in Sections 3, 4 and 5, the 8-inch sanitary sewer connecting between Vineyard Drive and Drive In Way will be built by the City within a 20-foot easement acquired from the six affected property owners (a portion of which may already have been offered for dedication). It is expected that owners will dedicate this easement, as well as the ultimate street right-of-way, in order to facilitate economic development on their respective properties. The City may, however, use its power of eminent domain, if necessary, in order to carry out its responsibility assist in the implementation of this Specific Plan, and ultimately to stimulate the production of local jobs. The sewer will ultimately be part of the full Street A improvements, and is a

critical first step in facilitating development of finished building sites on Vineyard Drive and future building sites on Street C. The sewer line will have a shallow depth (6-8 feet) and may be trenched through the old growth vineyard (OSA designated lands) with a minimum of impact.

Street A will be improved based on the timing of development interest for those properties between Vineyard Drive and Drive In Way. This improvement may be built in phases, or as a single project advanced by the first local developer (subject to cost sharing through a reimbursement agreement). The City may also advance the cost for this improvement, if necessary, to accommodate development of approved projects. As in the case of planning costs to produce this Specific Plan, all City expenditures to advance infrastructure improvements will be subject to reimbursement upon application by the affected properties for development entitlement or utility connection.

7.3 MARKETING EFFORTS

Elements of this Specific Plan will be utilized as part of a City-sponsored marketing effort to expose economic development opportunities in the planning area on a local, regional and national basis. As noted in Sections 2 and 3, the planning area properties have a collective opportunity to accommodate up to 1.9 million square feet of total building floor area, and 5,000 employees. Based on existing freeway access, the availability of all necessary infrastructure along the perimeter of the planning area, and East 18th Street improvements scheduled for completion by mid-2001, the Specific Plan properties have a potential to attract major employers to the community. Marketing efforts will promote these attributes, along with the entitlements adopted by the City of Antioch.

7.4 OPEN SPACE & COMMON AMENITY MAINTENANCE

Several improvements are proposed within the planning area in order to enhance overall development potential and timing. These include: (a) A landscape buffer along the northerly project boundary; (b) Monument signage at the northwest corner of Drive in Way / East 18th Street and at the northeast corner of Viera Avenue / East 18th Street; (c) Public trail and low maintenance landscape improvements ultimately to be developed within the central OPA corridor (at such time as grape production ceases); and (d) potentially common identification signage at a nearby off-site location with visibility to Highway 160 (adjoining the southbound on-ramps).

These improvements will be funded on a proportional basis by development projects (with the potential for reimbursement agreements), and maintained through the formation of a special service district (LLD or similar mechanism). The timing of these facilities will be subject to further review as a function of City economic development efforts and development interest within the planning area.

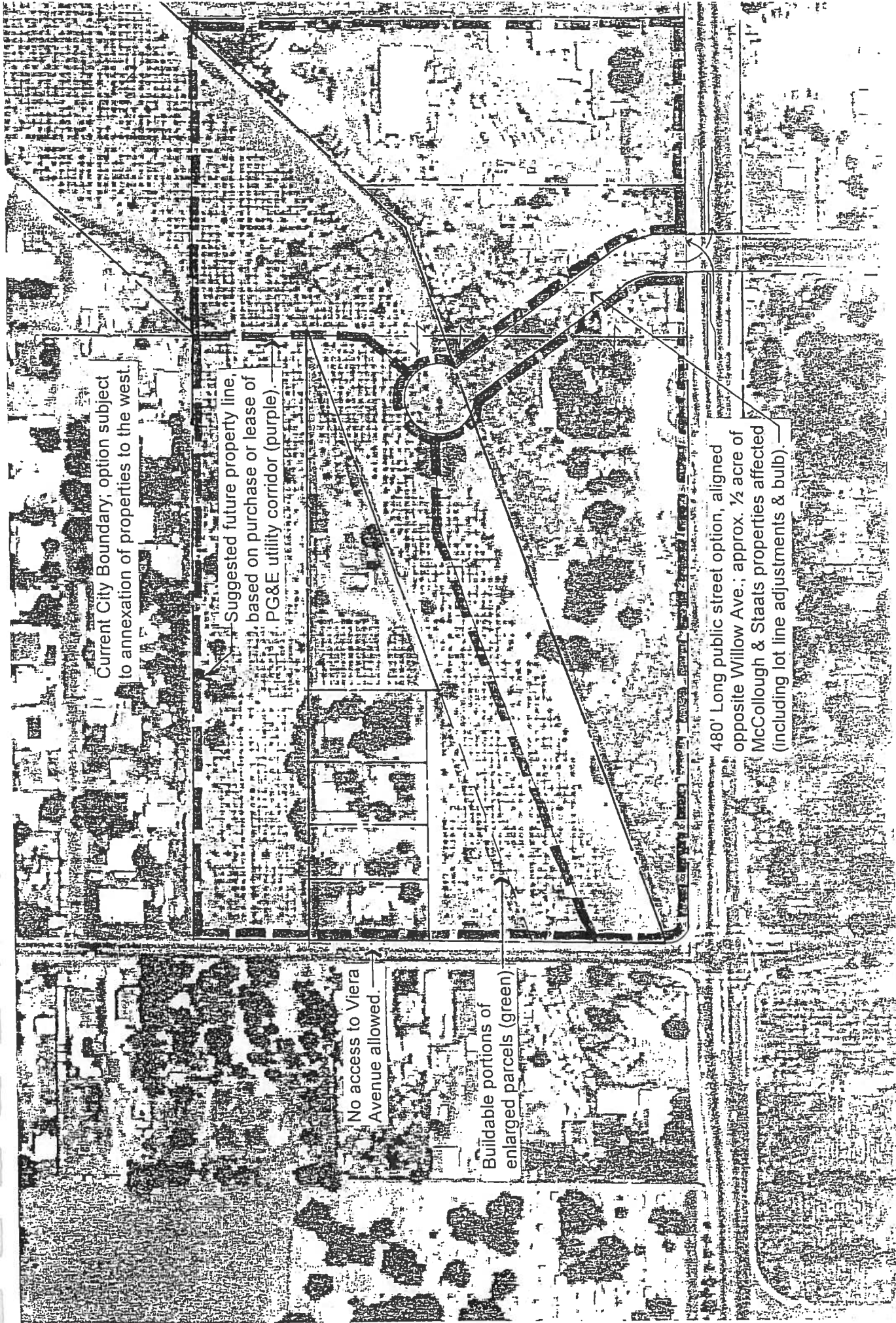
Current City Boundary; option subject to annexation of properties to the west.

Suggested future property line, based on purchase or lease of PG&E utility corridor (purple).

No access to Viera Avenue allowed.

Buildable portions of enlarged parcels (green).

480' Long public street option, aligned opposite Willow Ave.; approx. 1/2 acre of McCollough & Staats properties affected (including lot line adjustments & bulb).



EAST EIGHTEENTH STREET

SPECIFIC PLAN

VOLUME 2: ENVIRONMENTAL INITIAL STUDY

- DRAFT MITIGATED NEGATIVE DECLARATION
- INITIAL STUDY OF POTENTIAL ENVIRONMENTAL IMPACTS
- APPENDIX A: BIOLOGICAL RESOURCES ANALYSIS
 - A-1: Reconnaissance-Level Habitat Assessment
 - A-2: Focused Botanical Surveys
 - A-3: Focused Insect & Invertebrate Assessment
- APPENDIX B: TRAFFIC IMPACT ANALYSIS
- APPENDIX C: PROJECT SPONSORED MITIGATION

CITY OF ANTIOCH JULY, 2001

City of Antioch
Third & H Streets
Antioch, CA 94509

MITIGATED NEGATIVE DECLARATION

East 18th Street Specific Plan

This mitigated negative declaration was prepared pursuant to the California Environmental Quality Act and Guidelines (Public Resources Code, Division 13 and California Code of Regulations, Title 14, Chapter 3) for the project, which is described in the attached Initial Study and briefly described as follows:

PROJECT DESCRIPTION

The proposal is to adopt a new specific plan for the approximate 192-acre planning area located at the northwesterly corner of East 18th Street and Drive In Way, as further described below. The proposed East 18th Street Specific Plan modifies certain provisions of the current Antioch General Plan, and provides policy direction for future development within the planning area. These policies include direction for the following: (a) Adoption of new planned development zoning; (b) Public and private expenditures to construct necessary infrastructure improvements to serve the area; (c) Initiation of an overall economic development marketing effort to attract new businesses to the area; and (c) Initiation of annexation for approximately 16 acres located at the southwesterly corner of the planning area.

PROJECT LOCATION

The planning area occupies approximately 192 acres between East 18th Street and the A.T.&S.F. railroad right-of-way, from Viera Avenue on the west, to Drive In Way on the east (not including the unincorporated residential properties from Vine Lane to the north), as shown in the attached documentation.

PROJECT SPONSOR

This project is sponsored by the City of Antioch acting as lead agency for the project. The specific plan requires review and recommendation by the Antioch Planning Commission, and adoption by the Antioch City Council. The project contacts are: (1) Mr. Bill Gegg, Deputy City Manager, telephone (925) 779-7014; and (2) Mr. Eli Naffa, Director of Economic Development, telephone (925) 779.7012. Both contacts may be reached by mail via the City of Antioch, P.O. Box 5007 Antioch, CA 94531-5007.

MANDATORY FINDINGS OF SIGNIFICANCE

The project sponsor has made or agreed to various provisions in the Specific Plan before this Mitigated Negative Declaration and Initial Study were released for public review. These revisions avoid significant environmental effects or mitigate the effects to a point where clearly no significant effects would occur. These provisions are described in Appendix "C" of the Initial Study, attached.

Draft

ENVIRONMENTAL INITIAL STUDY

East Eighteenth Street Specific Plan Antioch, California

July 9, 2000

Prepared for:

City of Antioch
Community Development Department

RICHARD T. LOEWKE, AICP
P L A N N I N G C O N S U L T A N T

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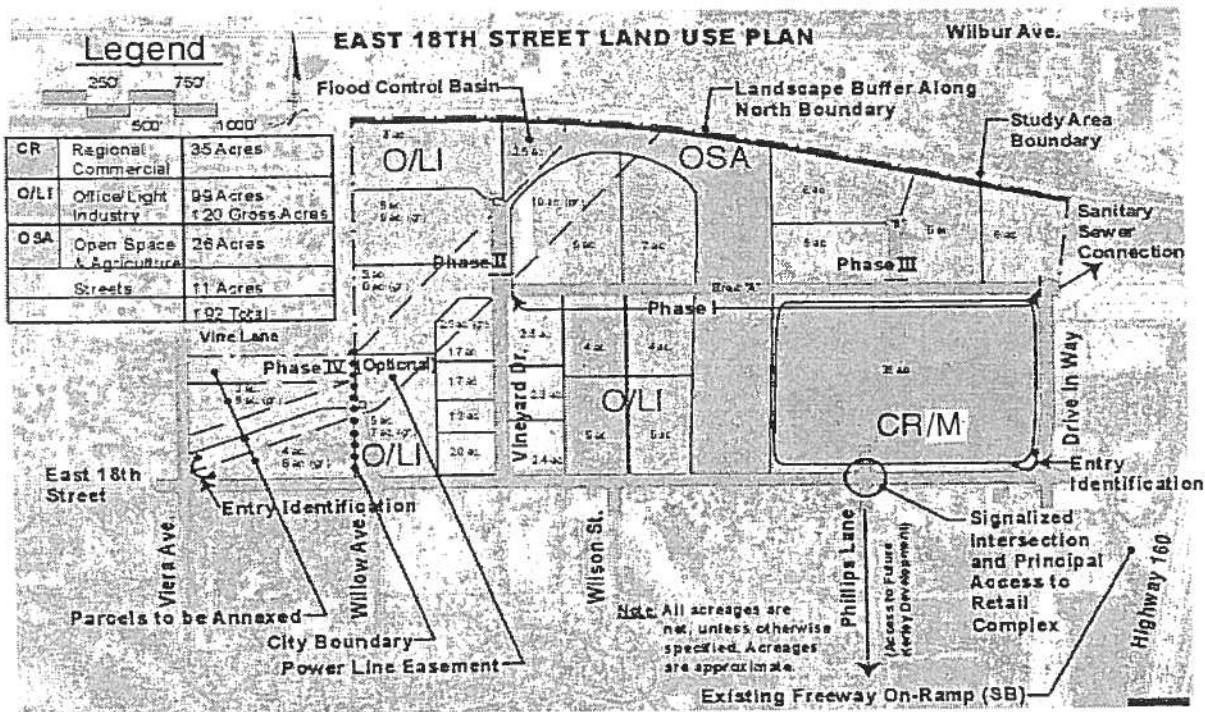
I. SUMMARY

The new East 18th Street Specific Plan provides overall guidance for future light industrial, office and regional commercial/business park land uses within a planning area which extends from East Eighteenth Street on the south to the A.T.&S.F. railroad right-of-way on the north, and from Viera Avenue on the west to Drive In Way on the East. The planning area consists of a total of approximately 192 acres, including roughly 16 acres of properties at the northeasterly corner of Viera Avenue and East 18th Street which are currently unincorporated. As discussed in Section III, the General Plan currently classifies properties in this area for light industrial uses, and designates this portion of the City as part of Focused Policy Area No. 6. Those properties currently within City boundaries are zoned "M-1" (Light Industrial). Policies contained in the Specific Plan expand the list of permissible land uses, to include a specially designated 35-acre regional commercial site at the easterly end of the planning area.

East Eighteenth Street currently serves as the major arterial street providing access and utilities to the properties in the planning area. The City of Antioch will be completing improvements to East Eighteenth Street in 2001, as part of a City-funded capital improvement program, to enhance its overall capacity and safety, consistent with current General Plan policies. The Specific Plan calls for completion of a looping circulation and utility system within the boundaries of the planning area, by connecting existing Vineyard Drive and Drive In Way. These improvements, along with several smaller stub street improvements will provide for the orderly development of the entire planning area.

The Specific Plan will be implemented primarily through application of a planned development zoning, requiring review of individual development plans and business license applications in order to assure consistency with Plan policies. Based on the submittal of a request of a majority of affected property owners, the City will initiate annexation of the 16 acres at the northeast corner of Viera Avenue and East Eighteenth Street. The City also anticipates advancing the cost of a sewer connection between Vineyard Drive and Drive in Way, as a means to avoid further use of septic systems along Vineyard Drive and to facilitate the orderly development of properties throughout the planning area. Advance City infrastructure and planning expenditures may be subject to reimbursement from planning area properties at the time of initial development.

Specific Plan Figure 6: Proposed Land Uses



The Specific Plan would classify existing residential, commercial and unenclosed industrial land uses as legal non-conforming, allowing their continued operation without expansion, until replaced by conforming uses. As discussed in Section II, the vast majority of land resources within the planning area are currently vacant or underutilized. Implementation of this new Specific Plan would therefore have four primary effects:

- Provide the flexibility to consider approval of up to 35 acres of regional commercial / business park land uses (in place of currently permitted light industrial uses) at the easterly end of the planning area.
- Include within the area over which the City of Antioch has regulatory control, approximately 16 additional acres at the southwesterly portion of the planning area.
- Provide incentives for timely development of employment generating land uses, consistent with existing City policies, in order to accelerate the process of balance jobs and housing within the community.
- Establish a more explicit set of land use policies and entitlements, including this program-level environmental assessment, as a means of eliminating uncertainty and risk in the development process.

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This Initial Study has been prepared in order to evaluate the effect of the foregoing changes in land use and development policy represented by the new Specific Plan. The analysis contained in this document covers the full range of potential environmental consequences from the proposed project. It leads to two primary conclusions:

- (1) First, that subject to adoption of the detailed mitigation measures as listed in Appendix C, and inclusion of these measures as formal policy in the final East 18th Street Specific Plan document, the project will not have a significant adverse impact on the environment; and
- (2) Second, that implementation of this new Specific Plan, as contemplated with mitigation, will add clarity in the development review process and help to lessen or avoid future impacts of contemplated individual development projects.

These conclusions are based on the comprehensive analysis presented in Section IV, as well as the documentation included in Appendices "A" (Biological Resources Analysis), "B" (Traffic Impact Analysis), and "C" (Project-Sponsored Mitigation Measures). The foregoing primary conclusions are also supported by the following key findings, as summarized in Sections II and III:

- **Changes in Land Use Policy:** Land use policy changes include: (a) substitution of 35 acres of regional commercial / mixed uses for a comparable amount of conventional light industrial uses, and (b) conversion of up to 16 acres of general commercial and residential uses, on property in an unincorporated area at the west end of the study area, for office and light industrial uses. On balance, these changes result in no significant change in potential future peak commute hour traffic generation (at build-out).
- **Circulation Policy:** The proposed project, with mitigation, reduces the number of uncontrolled access points on East 18th Street. All primary access points on East 18th Street will be signal-controlled, with the phasing coordination between proposed on-site and adjoining off-site signals. Individual driveway openings will only be permitted at locations where a solid median has been constructed, in order to avoid left-turn movements. As detailed in Section VI, planned intersection improvements will be constructed on as phased basis, resulting in improved efficiency of traffic flow and reducing the potential for conflicting traffic movements.

Parcels 23-28 currently take access to Viera Avenue. These properties will retain access to the southerly end of Viera Avenue via a common driveway if Street "D" is not built, subject to detailed site plan approval, and provided that frontage improvements are concurrently completed. Parcels 1, 4 and 22, located to the west of Vineyard Drive, will either construct a common driveway on East 18th Street at a centralized point of access, or fund construction of Street "D" jointly with those properties now taking access to Viera Avenue. Its location would be aligned with Willow Avenue on the south side of East 18th Street. As in the case of all other streets intersecting with East 18th Street within the planning area, Street "D" would be signalized.

- **Use of PG&E Utility Corridors:** Use of the existing utility corridors under fee-purchase or long-term lease for non-structural improvements has always been possible; the proposed policies encourage a coordinated approach to use of the corridors, thereby improving development efficiency.
- **Local Job Base:** The proposed policy changes do not result in any increase in total development potential, but are likely to improve the attractiveness of development in the near-term for uses capable of generating higher paying jobs. This will have a positive effect on the local economy, while reducing the number of commute trips on Highway 4.
- **Buffering of Adjoining Sensitive Uses:** The proposed plan includes policies limiting development directly adjoining existing residential uses north and west of the planning area. These new policies will help to reduce the potential for future impacts associated with adjoining industrial uses.
- **Biological Resources:** A complete reconnaissance-level habitat assessment was conducted in April of 2000 for all properties included in the 192-acre planning area. The results of this assessment showed that no impact to jurisdictional wetlands would result from future development of properties in the planning area. This assessment also produced no direct evidence of the presence of any special status animal or plant species, but recommended the completion of a focused plant survey, and focused habitat assessments for a number of insect and invertebrate species potentially associated with nearby Antioch dunes habitat. These detailed site surveys and assessments were subsequently completed in June and July of 2000 for the Antioch dunes evening-promise and 21 separate insect and invertebrate species. The results, as presented in Appendix A-2 and A-3 show that none of the special-status species are likely to occur on the site. Future development of these properties is therefore not expected to result in any special status species habitat or population impacts. Pre-construction surveys are included as project mitigation, in order to assure avoidance of impacts to migratory nesting birds.

II. PROJECT DESCRIPTION

A. Project Location

The Specific Plan area occupies approximately 192 acres between East 18th Street and the A.T.&S.F. railroad right-of-way, from Viera Avenue on the west to Drive In Way on the east. This planning area includes approximately 16 acres at the northeast corner of Viera Avenue and East 18th Street, but excludes those unincorporated residential properties from Vine Lane to the north. As shown in Specific Plan Figure 1, this area is situated proximate to the Highway 160 on and off-ramps, along a major gateway to the City of Antioch. As indicated in Figure 3 of the Specific Plan, the planning area is also contiguous to the City's current northerly boundary.

B. Site Characteristics and Surrounding Uses

The planning area slopes gently to the northeast and northwest, where existing drainage facilities collect storm waters for conveyance to the San Joaquin River. Approximately 80% of the land within the Planning Area is underdeveloped (including a golf driving range on Parcel 15), as shown in aerial photograph Figure 1 and Parcel Reference Map Figure 2. A series of partially enclosed retail and service commercial uses occupy roughly 45% of the East Eighteenth Street frontage, including an auto repair and towing/storage business (Parcel 17), a contractor's office and equipment yard (Parcels 1 & 4), and a building materials yard (Parcel 22).

Older residential dwellings remain on Parcels 2 and 24-27. Grapes are currently produced on Parcels 3, 14, 16, 21 and a portion of 18 & 19. Parcels 16, 21, 23 and 28 are all owned in fee by the Pacific Gas and Electric Company, which maintains high voltage transmission lines, towers and pipelines on this land. The remaining parcels shown in Figure 2 are predominantly vacant.

Individually, these properties are constrained from development by their awkward parcel configurations, limited access, lack of internal utility services, and poor visual exposure. Collectively, however, the Planning Area properties represent a significant land resource with the potential for convenient access to much of the East Contra Costa County Sub-Region. Several key factors combine to provide a high potential for development of these properties, including: (a) well-drained, relatively flat, sandy soils; (b) Access to major trunk utility lines along the perimeter of the site; (c) An opportunity for enhanced access to Highway 160; and (d) A high-profile position along the City's primary northeasterly gateway.

The planning area adjoins existing regional commercial uses to the east (K-Mart and other smaller free-standing fast food and gasoline sales uses). Properties north of the railroad right-of-way include heavy industrial plants producing building and packaging materials and electrical generation. The contiguous unincorporated area west and north of the planning area is part of an older residential neighborhood taking access from Viera Avenue. Properties fronting on the south side of East 18th Street include a cemetery, a contractors material and equipment yard, and vacant acreage planned for light industrial and/or business park uses.

C. Description of Project

1. Affected Properties and Improvements: The planning area includes 28 separate properties, as listed in Specific Plan Table 1. Parcels 5-12 front on an improved public street (Vineyard Drive) developed with full public utility improvements, but absent a trunk sewer connection to the City's collection system. As provided for in the Specific Plan, utilities in Vineyard Drive would connect to cross Street "A" and loop back to Drive In Way where the City maintains its major trunk sewer line. This connection is necessary to facilitate further development on Vineyard Drive, and would be facilitated by advance funding through the City's Capital Improvement Program. These funds would be reimbursed to the City on a proportionate basis as further development occurs.

Drive In Way is currently developed with full utilities, two travel lanes and frontage improvements on the easterly side of the street. Development of the adjoining properties within the planning area would provide funding for completion of this portion of the loop street system. Other important existing improvements include the storm drain detention basin on Parcel 13, and a series of overhead power lines and towers on the PG&E utility corridor parcels (16, 21, 22 And 28). Also present, but not readily visible, are a series of private oil and gas pipelines within the utility corridors, and two water wells on Parcel 18. Efficient future development of these properties may prompt the relocation and/or replacement of these facilities. Any such utility and service modifications would be considered as part of individual development plan review proposals, consistent with the proposed Planned Development zoning requirements.

A total of five single-family residences also exist at the westerly end of the planning area. One of these residences is on Parcel 2, to the west of Vineyard Drive. The remaining four are located off of Viera Avenue in the area proposed for annexation. Like other nonconforming uses, these homes could not be enlarged if the Specific Plan is adopted and Planned Development zoning is enacted (in part through annexation).

As discussed above, other unenclosed service and recreational commercial uses fronting along East 18th Street would become legal but non-conforming pursuant to the proposed Specific Plan regulations. These operations could remain until replaced by uses conforming to the new Land Use Plan, but would be prohibited from expansion or construction of further structural improvements.

2. Proposed Policies: The new Specific Plan allocates 35 acres of regional commercial / mixed land uses on a site situated at the northwest corner of Drive In Way and East 18th Street, with visibility to the Highway 160 access ramps, and access both from two internal streets and a proposed signalized intersection on East 18th Street. Accommodation of this use is considered an important tax base opportunity for the City of Antioch. This land use represents a change from current General Plan policy. However subject to access and design controls as presented in the Specific Plan, the use is considered to be compatible with other surrounding office and light industrial activities, and an important anchor at the easterly end of the planning area.

The Specific Plan encourages higher intensity development at the easterly end of the planning area and limits the placement and overall height of buildings at the west end proximity to existing residential uses. Visual and security buffers are called for in the Specific Plan as a means of protecting existing residents from noise, privacy and aesthetic impacts from adjoining light industrial / office uses. It also encourages use of the PG&E utility corridors for improvement concurrently with contiguous office and light industrial facilities, as a means of improving site efficiency and enhancing landscape and access opportunities. The Plan calls for interim retention of the older varieties of grape vines currently being cultivated on parcel 16. However, should these plants no longer be viable from a commercial point of view, the owners of contiguous parcels would be able to seek entitlements for use of a portion of the utility corridor for parking and landscape improvements. A public use trail or similar open space amenity would be retained through parcel 16 for use and enjoyment by planning area employees and visitors.

3. Annexation of Unincorporated Parcels: The 7 parcels comprising approximately 16 acres at the westerly end of the planning area are proposed for annexation to the City. It is expected that a majority of the owners of these properties will formally request annexation, subject to the provisions of this Specific Plan. While these properties contain 4 residences, they are home to fewer than 12 registered voters, and therefore constitute a legally uninhabited annexation. In order to avoid interim impacts to the current residents of 4 of the affected parcels, a mitigation measure has been introduced requiring that annexation of all properties occur simultaneously, and that no development be allowed on Parcels 23 and 28 (the utility corridors) until an overall preliminary development plan is approved for the entire annexed area, and the single family homes have been removed. Access to these properties will either be facilitated by a new public street extended north of East 18th Street in the vicinity of Willow Avenue, or through a consolidated common driveway at the south end of Viera Avenue.

4. Economic Development Efforts: The City's Economic Development Department will incorporate the new Specific Plan into marketing efforts to attract new industries and companies to Antioch. This effort is expected to promote private land-banking efforts and stimulate interest in development of the 192-acre project site on a phased basis. This effort may include other incentives designed to enhance the competitiveness of the planning area properties in a regional context, including use of special redevelopment agency funds, Measure U funds, or other sources to complete timely capital improvements or acquire rights-of-way.

5. Anticipated Timeline: The proposed East 18th Street Specific Plan is anticipated to receive final approval by late-2001, with implementation measures being initiated shortly thereafter. The loop sewer line in Street "A" could be completed shortly thereafter, facilitating concurrent development on the finished Vineyard Drive building pads. Full buildout of the planning area is subject to market forces and the relative competitiveness of the properties involved, including asking prices and market inventories.

III. RELATIONSHIP TO ANTIOCH GENERAL PLAN

A. Current Land Use District Policies

Existing General Plan Land Use Element classifications and policies are summarized in Specific Plan Section 1.2. The Specific Plan provides greater detail to guide future development, and includes several implementation measures not found in the General Plan. While substantially consistent with the policies currently in place for Focused Policy Area 6, the new document introduces three distinct, though subtle, changes to current policy. First, the Land Use Plan shown in Figure 6 introduces 35 acres of regional commercial and business park land uses, on a site at the northwest corner of Drive in Way and East 18th Street. This classification provides for major high-quality durable goods retailing and services, offices and related uses, at a location directly adjacent to similar uses. The introduction of this new use will not increase impacts to transportation systems or services, based on traffic mitigation measures included in the project, and will not substantially alter the pattern or extent of urban development ultimately to occur on the site as a whole.

Second, while not in direct conflict with current General Plan policy, the Specific Plan specifically calls for annexation of the 16 acres at the northeast corner of Viera Avenue and East 18th Street, in order to provide guidance for future development between Drive In Way and Viera Avenue. While implementation of the new Specific Plan policies will result in changes from current (existing) uses on these properties, the future land uses will, subject to appropriate mitigation as called for in Appendix C, be compatible with the adjoining neighborhood.

Third, the new Specific Plan assigns a compatible land use, and anticipates limited development of lands contained in the four PG&E utility corridors, whereas current policy classifies these properties as open space. While no building may be erected within the corridors, they have been planned for parking, street, landscape and related site improvements in conjunction with the adjoining parcels. This arrangement is to be implemented through purchase or long-term lease with the utility, or its successor in interest, and will not introduce any new environmental impacts. The utility corridors were a part of the biological assessment reported in Appendix A.

B. Development Standards for Affected Properties

The proposed Specific Plan calls for application of planned development zoning over the entire planning area. Policies contained in the document itself limit the overall height and intensity of light industrial or office development westerly of Vineyard Drive, in order to maintain compatibility with adjacent residential uses to the west. The Planned Development process requires submission and review of detailed plans for review and approval by the Planning Commission. This process is intended to provide flexibility to accommodate a range of building designs and compatible light industrial uses.

C. Implementation

Principal implementation tools proposed in the new Specific Plan include: (a) the Planned Development zoning referenced above; (b) City-initiated annexation of the 16 acres at Viera and East 18th Street; (c) Initiation of a marketing effort through the City's Office of Economic Development to promote the planning area to new businesses on a broad basis; and (d) Advance expenditure of City funds (subject to reimbursement) to complete the improvement of new infrastructure elements, including the sewer line within Street A. These measures do not, in themselves, result in environmental impacts. Collectively, they are expected to accelerate the process of development within the area. Individual projects will be subject to further CEQA review through the planned development process.

IV. INITIAL STUDY CHECKLIST

A. 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.

<input checked="" type="checkbox"/> Aesthetics	<input type="checkbox"/> Agricultural Resources	<input type="checkbox"/> Air Quality
<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural resources	<input type="checkbox"/> Geology / Soils
<input type="checkbox"/> Hazards & Hazardous Materials	<input type="checkbox"/> Hydrology / Water Quality	<input checked="" type="checkbox"/> Land Use / Planning
<input type="checkbox"/> Mineral resources	<input type="checkbox"/> Noise	<input type="checkbox"/> Population Housing
<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation	<input checked="" type="checkbox"/> Transportation / Traffic
<input type="checkbox"/> Utilities / Service Systems	<input type="checkbox"/> Mandatory Findings of Significance	

B. Determination:

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.	<input checked="" type="checkbox"/>
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 "potentially 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.	
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I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	
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C. Project Sponsored Mitigation:

The foregoing determination is based on the analysis contained in the following section of this Initial Study and is subject to implementation of all mitigation measures contained in Appendix "C".

Victor Carniglia, Deputy Director
Community Development Department
City of Antioch

Date

Initial Study Prepared by:

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D. Issues and Supporting Information:

Issue	Information Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Aesthetics – Would the project:					
a) Have a substantial adverse effect on a scenic vista?	A-L				✓
Discussion The proposed project will establish new policies to regulate future development of the planning area. These policies provide greater clarity and guidance for prospective developers, whose individual development projects will be subject to further review and approval through the Planned Development process. The planning area does not include any scenic vistas; to the contrary, tall smoke stacks and massive heavy industrial plants are visible to the north from East 18 th Street currently. These unsightly facilities will be partially screened by development within the planning area, including the proposed landscape buffer to be constructed along the project's northerly boundary.					
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	A-L				✓
Discussion No scenic highway resources affected. Visual exposure of new buildings and landscape improvements along East 18 th Street will serve to enhance this as a major gateway to the City of Antioch, consistent with existing General Plan policy.					
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	A-L		✓		
Discussion The visual quality of the site has the potential to be substantially improved, with the eventual elimination of unenclosed commercial uses. In order to establish a uniform standard of review and overall design quality, a Planned Development zoning has been proposed. This mechanism will provide for detailed review of individual development projects.					
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	A-L		✓		
Discussion All development within the planning area will be controlled to avoid off site glare through the PD review process. New street lights and parking lot lights adjoining sensitive adjoining uses to the west are to be shielded to control glare.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Dept. 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?	A-L				✓
Discussion No portion of the site, or any nearby property is classified or considered as farmland. Existing grape production is not impacted by new Specific Plan policies. Grape production is allowed to continue indefinitely; those old growth grapes located on Parcel 16 are encouraged to remain as a focal point within the overall business park.					
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	A-L				✓
Discussion No Williamson Act contracts apply to the subject property or any adjoining property.					
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?	A-L				✓
Discussion No change in pattern of land use is proposed; improvement of access through Loop Street A will have minimal impact to the existing grape vines on Parcel 16. As noted under item 2a above, these old growth grapes are set into a special land use classification, designed to encourage their continued cultivation.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	A-L				✓
Discussion Adoption of the new Specific Plan will not change the overall mix of employment and residential uses in the community. It will, however, create an opportunity for more rapid development of a key employment resource along East 18 th Street, thereby providing a short-term reduction in overall commute vehicle miles traveled, thereby reducing emissions.					
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	A-L				✓
Discussion No air quality standard would be violated by completion of the proposed street improvements. Incremental reductions in vehicle use associated with incremental development of properties in the planning area would occur without the new plan. Planned land uses, however, will be enclosed, and are more likely to produce fewer air emissions.					
c) Result in a cumulative 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 which exceed quantitative thresholds for ozone precursors)?	A-L				✓
Discussion As noted under b above, no long-term increase in criteria pollutants will result from the proposed new land use policies contained in the Specific Plan.					
d) Expose sensitive receptors to substantial pollutant concentrations?	A-L		✓		
Discussion Nearby residents may be exposed on a short-term basis to localized concentrations of pollutants associated with roadway and site construction.					
e) Create objectionable odors affecting a substantial number of people?	A-L				✓
Discussion Gasoline and diesel fumes may be noticeable to nearby residents on a short-term basis during construction periods. Limitations on hours of construction will help to limit exposure of people during sensitive periods.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. Biological Resources: Would the project:					
a) 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 California Department of Fish and Game or U.S. Fish and Wildlife Service?	A-L				✓
Discussion As documented in Appendix A, the project area contains no wetlands or habitat supportive of sensitive or special status species. Whereas the Specific Plan itself does not generate any new impacts in relation to current light industrial zoning, this analysis was completed in order to eliminate risk or uncertainty for subsequent development projects being encouraged through Specific Plan policies.					
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 U.S. Fish and Wildlife Service?	A-L				✓
Discussion No riparian habitats or sensitive natural communities exist within the planning area (see Appendix A).					
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?	A-L				✓
Discussion No jurisdictional wetlands exist within the boundaries of the planning area, as documented in Appendix A.					
d) 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 nursery sites?	A-L		✓		
Discussion No wildlife corridors, nurseries or streams would be affected by the proposed land use policies or subsequent development improvements.					
e) Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	A-L		✓		
Discussion No major trees or other natural vegetation would be affected by the proposed project. Several oak trees and are located near the middle of the site (Parcels 14-16). These trees will be the subject of review, at such time as future development plans for these properties are prepared and submitted for review.					
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?	A-L				✓
Discussion No such plan applies to properties within the project vicinity.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
5. Cultural Resources: Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	A-L				✓
Discussion No known historical resources are known to exist in the immediate vicinity of the planning area. Mitigation measures are included under item 5b below to address the protection of as yet unidentified resources.					
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	A-L		✓		
Discussion No known archaeological resources have been found through previous studies to exist within the 192-acre planning area. The analysis presented in an earlier EIR for the Antioch General Plan indicates no known artifact in the vicinity of this property. Nevertheless, grading operations will be monitored to determine whether any such resources are uncovered during site construction. If such resources are identified, construction in the vicinity of the find will be suspended until the appropriate authorities are consulted, identification is made and protective measures implemented.					
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	A-L		✓		
Discussion No. Refer to discussion under item b above.					
d) Disturb any human remains, including those interred outside of formal cemeteries?	A-L		✓		
Discussion No. Refer to discussion under item b above.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant 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 defined 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 Div. of Mines & Geology Special Pub. 42.	A-L				✓
Discussion: No known fault lines cross the subject property.					
ii) Strong seismic ground shaking?	A-L			✓	
Discussion: The Specific Plan project does not include construction buildings. All future buildings, roadway structures and improvements will be designed in accordance with current building codes to withstand damage from likely credible maximum earthquake magnitudes.					
iii) Seismic-related ground failure, including liquefaction?	A-L			✓	
Discussion: No. Soil and engineering investigations included in the General Plan EIR show a low probability for liquefaction or seismic-related ground failure on this site. Detailed soil and sub-soil investigations will be required as part of the individual project review process, in order to assure compliance with current building code requirements.					
iv) Landslides?	A-L				✓
Discussion: Landslide potential is minimal, due to relatively flat slope conditions over the entire site.					
b) Result in substantial soil erosion or loss of topsoil?	A-L			✓	
Discussion: Grading work necessary to accommodate future development will be controlled and contained in accordance with City ordinances. Full erosion control measures should be incorporated into the improvement plans.					
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?	A-L				✓
Discussion: No.					
d) Be located on expansive soil, as defined in Table 18-1-B of the UBC (1994), creating substantial risks to life or property?	A-L				✓
Discussion: Soils information contained in the General Plan EIR, as confirmed by field investigations, indicate sandy soil conditions. Plans for all future development will be subject to compliance with applicable building code requirements.					
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?	A-L				✓
Discussion: Overall site is served by public sewer; required sewer improvements will replace septic systems on several of the existing improved properties.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	A-L			✓	
Discussion No hazardous materials will be used in sufficient quantities or under circumstances which could result in a potential hazard to the public or the environment. All work is subject to state and federal standards providing for protection against any such hazard.					
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?	A-L			✓	
Discussion See Item a) above.					
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	A-L			✓	
Discussion See Item a) above. No existing or proposed schools are located within ¼ mile of the project site.					
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	A-L				✓
Discussion See Item a) above.					
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?	A-L				✓
Discussion See Item a) above. No public airport is located within 2 miles of the project site.					
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?	A-L				✓
Discussion See Item a) above. No private airport is located within the vicinity of the project site.					

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	A-L				✓
Discussion No. New street improvements will provide an opportunity for improved future access to all properties within the planning area. As planned, street circulation improvements substantially improve access into and out of the planning area.					
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?	A-L				✓
Discussion No potential for wildland fire.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
8. Hydrology and Water Quality: Would the project:					
a) Violate and water quality standards or waste requirements?	A-L			✓	
Discussion					
Project will comply with all applicable Regional Water Quality Control Board standards and EPA regulations.					
b) Substantially deplete 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 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)?	A-L				✓
Discussion					
Project will comply with all applicable Regional Water Quality Control Board standards and EPA regulations.					
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?	A-L				✓
Discussion					
No alteration of drainage pattern is proposed; erosion potential will be decreased through site improvements.					
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?	A-L				✓
Discussion					
No alteration of drainage pattern is proposed; erosion potential will be decreased through site improvements.					
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 water?	A-L			✓	
Discussion					
Proposed site improvements will properly contain and discharge all storm waters. A small increase in impervious surface area will result from future development; however, this is expected to be equal to or less than that anticipated under existing land use regulations. These improvements are distributed over a large area, resulting in small localized impacts.					

f) Otherwise substantially degrade water quality?	A-L			✓	
Discussion Water quality will be further protected through compliance with all local ordinances, as discussed under item a) above. Existing water wells on Parcel 18 must be properly closed and sealed, or otherwise protected at time of future development.					
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	A-L				✓
Discussion No new housing is involved in proposed project. Site is not within designated 100-year flood plain.					
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	A-L				✓
Discussion Site is not within designated 100-year flood plain. Public storm drainage facilities will be constructed as part of future development within the planning area to collect and convey storm waters to collection facilities which have already been sized to accommodate planned development within the area. Changes in land use policy reflected in the new Specific Plan will not increase impervious surface areas or otherwise result in any increase in flows.					
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?	A-L				✓
Discussion No impacts, as no levee or dam exists in vicinity which could affect the site.					
j) Inundation by seiche, tsunami, or mudflow?	A-L				✓
Discussion Site is protected from potential effects of seiche, tsunami, and mudflow.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. Land Use and Planning: Would the project:					
a) Physically divide an established community?	A-L				✓
Discussion See discussion under Sections II & III.					
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?	A-L				✓
Discussion See discussion under Sections II & III.					
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	A-L				✓
Discussion See discussion under Sections II & III. None existing with applicability to the project site.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
11. Noise: Would the project:					
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?	A-L		✓		
Discussion Project will not generate any noise in excess of state/local standards and as anticipated in the current General Plan analysis. Noise levels will be mitigated at the westerly project boundary (adjoining existing off-site residences) through proper setbacks and construction of a masonry buffer wall at the property line.					
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	A-L			✓	
Discussion Project will not generate any noise in excess of state/local standards. As noted under item 11a above, the proposed Specific Plan includes mitigation applicable to future development, which will reduce potential impacts to the adjoining residential neighborhood.					
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	A-L		✓		
Discussion See comment under items 11a and 11b above. Policies incorporated with the proposed project require that future development projects within the Planning Area be designed to avoid noisy outdoor operations within the rear of properties adjoining residential uses to the west. A masonry wall shall be constructed on the common boundary with all such uses.					
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	A-L			✓	
Discussion See comment under items 11a and 11b above.					
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?	A-L				✓
Discussion No applicable airport impacts.					
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working on the project area to excessive noise levels?	A-L				✓
Discussion No applicable private airstrip impacts.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant 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)?	A-L			✓	
Discussion No population growth will result directly or indirectly through implementation of this project. As discussed in Sections II and III, the Specific Plan will accelerate the delivery of local jobs for local residents, thereby reducing commute distances over time.					
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	A-L			✓	
Discussion None. A total of four existing residences will eventually be replaced with light industrial and/or office uses. This change will occur at the discretion of the respective owners, and is expected to occur over a period of years. Owners are expected to receive compensation for sale of their properties, based on enhanced office or light industrial value, which will assist in the purchase of replacement housing.					
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	A-L				✓
Discussion No. See item 12 b. above and discussion under Sections II and III.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
13. Public Services: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:					
a) Fire Protection?	A-L			✓	
Discussion No increase in demand for public services. Planned future street improvements will improve emergency access and response times to adjoining properties as discussed in Sections II and III.					
b) Police Protection?	A-L			✓	
Discussion See item 13a above.					
c) Schools?	A-L				✓
Discussion No school impacts.					
d) Parks?	A-L			✓	
Discussion No park impacts. Public access to internal recreational facilities is accommodated in the Specific Plan. The project will create no new demand for public parks.					
e) Other Public Facilities?	A-L			✓	
Discussion Public utilities will be extended within the internal planning area streets. These facilities will tie into existing facilities to the north and east.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
14. Recreation:					
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	A-L			✓	
Discussion Proposed policies contained in the Specific Plan will not generate demand for recreation facilities up and beyond that anticipated under the current General Plan. The Specific Plan includes an opportunity for minor internal recreational facilities as part of a common area improvement.					
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	A-L				✓
Discussion No. See item 14a. above.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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)?	A-L		✓		
<p>Discussion</p> <p>See discussion in Sections II, III and VI. All intersections within the Study Area and adjoining street systems have been analyzed with respect to current and future conditions, with and without the proposed Specific Plan policy changes. This analysis shown that subject to implementation of the following mitigation measures, the project will not cause any significant reduction in levels of service:</p> <p>(1) Widen East 18th Street to 4 lanes concurrently with the first major phase of development.</p> <p>(2) Install traffic signals and capacity enhancements in accordance with Measures 15B & C below.</p> <p>(3) Prior to initiation of additional off-site development south of East 18th Street (cumulative conditions), the City shall obligate developers to reconstruct the Viera Avenue/East 18th Street intersection to provide two westbound through lanes.</p> <p>(4) Concurrently with additional off-site development south of East 18th Street (cumulative conditions), the City shall obligate developers to connect Viera Avenue south to connect with Sunset Drive to Hillcrest Avenue (as shown in Figure 9 of Section VI and in the General Plan Circulation Element).</p>					
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	A-L		✓		
<p>Discussion</p> <p>Existing intersections on East 18th Street shall be signalized and improved in accordance with Section VI recommendations as follows:</p> <p>(1) Vineyard Drive: Signalize concurrently with first phase development contributing to a cumulative total of 125 peak hour trips (above current volumes - see Table 3 of Section VI). This represents any combination totaling 100,000 additional square feet of office or 145,000 square feet of light industrial uses.</p> <p>(2) Wilson Street: Signalize and add turn lanes concurrently with additional off-site development south of East 18th Street (cumulative conditions), the City shall obligate developers of future projects to fund these improvements.</p>					

c) Result in a change in traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	A-L		✓		
Discussion The planned intersection at Phillips at the retail center entrance will be served by a traffic signal with interconnect to Drive In Way. This intersection will be aligned directly opposite existing Phillips Lane, thereby improving capacity and safety of movements. A second new street opening is possible opposite existing Willow Avenue. If completed, this intersection will also align with the opposing street, and be both signalized and phase interconnected. These improvements will be completed as part of the proposed project as follows: (1) Phillips at Commercial Entrance: Concurrently with initiation of development contributing to a cumulative total of 150 new peak hour trips (above current volumes - see Table 3 of Section VI). This represents approximately 27% of the Commercial/Mixed Use site, or 125,000 square feet of future development. (2) Willow Avenue at Street D: Concurrently with initial development of Parcels 5, 6 or 7 (only if Access Option 1 is chosen - see Section VI). No air traffic impacts would result from the proposed project.					
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	A-L		✓		
Discussion See Sections II, III and VI. Access to all future development on Parcels 1, 4 & 22-28 shall be from East 18 th Street only, and shall be limited to right-in and out, unless a new street is provided opposite Willow Avenue with controlled median openings as shown in Figure 10.					
e) Result in inadequate emergency access?	A-L				✓
Discussion See Sections II and III.					
f) Result in inadequate parking capacity?	A-L				✓
Discussion No. Each future development project within the planning area will be subject to planned development review, and will be required to demonstrate the provision of ample parking.					
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	A-L				✓
Discussion None. See Sections II and III.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
16. Utilities and Service Systems: Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	A-L				✓
Discussion No. See discussion under Sections II and III.					
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?	A-L				✓
Discussion No new facilities required.					
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?	A-L				✓
Discussion No new facilities required. See discussion under Sections II and III.					
d) Have significant water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	A-L				✓
Discussion Adequate existing supplies available from current water sources.					
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?	A-L				✓
Discussion No.					
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	A-L			✓	
Discussion No additional demand to be created, up and beyond that anticipated under current zoning and General Plan policies. See discussion under Sections II and III.					
g) Comply with federal, state, and local statutes and regulations related to solid waste?	A-L				✓
Discussion All applicable requirements will be met.					

Issue	Sources (See Item #18 Below)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	A-L				✓
Discussion No significant impacts identified, subject to implementation of all mitigation measures summarized in Appendix B.					
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.)	A-L		✓		
Discussion No significant impacts identified, subject to implementation of all mitigation measures summarized in Appendix B.					
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	A-L				✓
Discussion No significant impacts identified, subject to implementation of all mitigation measures summarized in Appendix B.					

18. Source References

- A. City of Antioch Community Development Department, July 2000. *Antioch Zoning Ordinance*.
- B. City of Antioch, December, 1988. *Antioch General Plan*.
- C. EIP Associates, June, 1988. *Antioch General Plan Environmental Impact Report*.
- D. Elbasini & Logan Architects, ELS, May 1996. *East Lone Tree Specific Plan*. Prepared for the City of Antioch.
- E. Environmental Science Associates, 1996. *State Route 4 Environmental Impact Report, Volume 3*. Prepared for the Highway 4 Bypass Fee and Finance Authority.
- F. Jones & Stokes Associates, February 1992. *Los Vaqueros Stage 2 EIR/EIS Technical Report*. Prepared for the Contra Costa Water District and U.S. Bureau of Reclamation.
- G. Mundie & Associates, August 1995. *Future Urbanization Area #2 Specific Plan Environmental Impact Report*.
- H. Mundie & Associates, August 1994. *Kaiser Project Antioch Environmental Impact Report*.
- I. Mundie & Associates, 1992. *Antioch Infrastructure Plan Environmental Impact Report*.
- J. Richard T. Loewke, AICP, December 1998. *East Lone Tree Financial Plan*.
- K. Sycamore Associates, July 2000. *Burrowing Owl Preconstruction Survey for the McBail Property, East Antioch*.
- L. Sycamore Associates, March 2001. *Focused Surveys for Red-Legged Frog, East Antioch Creek Realignment Project, McBail Property*.

Appendix A: Biological Resources Analysis East 18th Street Specific Plan

A-1: Reconnaissance-Level Habitat Assessment for
 Special Status Wildlife & Plant Species, May 26, 2000

A-2: Focused Botanical Surveys, June 21, 2000

A-3: Focused Habitat Assessment and Survey for
 Special-Status Insects and Invertebrates, July 24, 2000

Appendix A-1

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May 26, 2000

**BIOLOGICAL CONSTRAINTS ANALYSIS FOR
EAST 18TH STREET PLANNING AREA, ANTIOCH
CONTRA COSTA COUNTY,
CALIFORNIA**

The information provided in this document is intended solely for the use and benefit of Richard T. Loewke, AICP.

No other person or entity shall be entitled to rely on the services, opinions, recommendations, plans or specifications provided herein, without the written consent of Richard T. Loewke, AICP.

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SUMMARY

This report presents the results from a reconnaissance-level habitat assessment for special-status wildlife and plant species for the 192-acre East 18th Street Planning Area in the City of Antioch, California. This report is intended to provide background and site-specific information pertaining to biological resources and to identify permitting issues and potential constraints to future implementation of the land uses as shown in the proposed Land Use Plan (Loewke, in preparation). It includes a discussion of the existing plant communities, wildlife associations, potentially-occurring special-status plant and wildlife species and natural communities including wetlands along with recommendations for a rare plant survey and nesting bird preconstruction survey.

Surveys were conducted by Sycamore biologists Dr. Susan Townsend and Mr. Christopher Thayer on April 3, 2000. This survey was intended only as a reconnaissance-level site visit to identify habitat types and to assess the potential for the presence of special-status species within the study area. Focused special-status plant or animal surveys were not conducted as part of this effort.

In order to determine if the proposed project would result in any impacts to the federally-listed Endangered plant, the Antioch Dunes evening primrose and the federally- and state-listed Langes' metalmark butterfly, Sycamore recommends that a botanical survey be conducted and findings included as part of the final CEQA document. To adequately assess the potential for impacts to these species, surveys should be conducted between March and July.

Although the likelihood of special-status invertebrate species endemic to the Antioch Dunes is considered low, further analysis is warranted due to the fact that several of these species have occurred in disturbed sand-based habitats including vineyards. While these species are not afforded any formal protection under the federal Endangered Species Act or the California Endangered Species Act (CESA), they frequently arise as potentially significant biological resources during CEQA review. Therefore, we recommend that a habitat assessment for special-status invertebrates be completed by a qualified entomologist.

In order to ensure that project implementation does not result in significant adverse effects to migratory birds, we also recommend that preconstruction surveys for nesting birds within the trees, scrub and ruderal non-native grasslands no more than 30 days prior to construction.

Although a formal wetland delineation was not performed as part of this study, it appears that the project would not result in impacts to habitats falling under the jurisdiction of the U.S. Army Corps of Engineers (USACE). However, the existing detention basin, which current plans show as being avoided, might fall under USACE jurisdiction. If project plans change and impacts to the basin would result, a wetland delineation and jurisdictional determination should be performed and verified by the USACE. Permits and mitigation pursuant to the Clean Water Act might be required.

1.0 INTRODUCTION

This report presents the results from a reconnaissance-level habitat assessment for special-status wildlife and plant species within the 183-acre East 18th Street Planning Area in the City of Antioch, California. This report is intended to provide background and site-specific information pertaining to biological resources and to identify permitting issues and potential constraints to future development of the Planning Area. It includes a discussion of the existing plant communities, wildlife associations, potentially-occurring special-status plant and wildlife species, and natural communities including wetlands, and recommendations for further biological surveys.

2.0 METHODS AND LIMITATIONS

The findings for this biological constraints report are based on the following: 1) a 1999 print-out for the Antioch North, Antioch South, Jersey Island and Brentwood 7.5 minute quadrangles from the California Natural Diversity Database (CNDDB), 2) assessment of habitat types and surrounding land use completed by reviewing recent aerial photographs, and 3) reconnaissance-level surveys by Sycamore biologists.

Surveys were conducted by Sycamore biologists Dr. Susan Townsend and Christopher Thayer on April 3, 2000. Surveys were conducted on foot and by car during daylight hours only; the entire perimeter of the study area, and all distinct habitats were visited and described. Dominant plant species for each plant community were recorded and the presence of any potential drainages or wetlands were noted. All wildlife species observed were also recorded. This survey was intended only as a reconnaissance-level site visit to identify habitat types and to assess the potential for the presence of special-status species within the study area. Focused special-status plant or animal surveys were not conducted as part of this effort.

Information on special-status plant species was compiled through a review of the California Natural Diversity Data Base (CNDDB 1999), the California Native Plant Society's (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1999), the California Department of Fish and Game's (CDFG) *Special Plants* (CDFG 2000a), *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFG 1999a), the U.S. Fish and Wildlife Service's (USFWS) *Endangered and Threatened Wildlife and Plants* (USFWS 1995) and *Endangered and Threatened Plant and Animal Taxa; Proposed Rule* (USFWS 1996). Also reviewed were *Status of Rare, Threatened and Endangered Vascular Plants in Alameda and Contra Costa Counties (and Some Adjacent Areas)* (Olson 1994) and *Unusual and Significant Plants of Alameda and Contra Costa Counties* (Lake 1999).

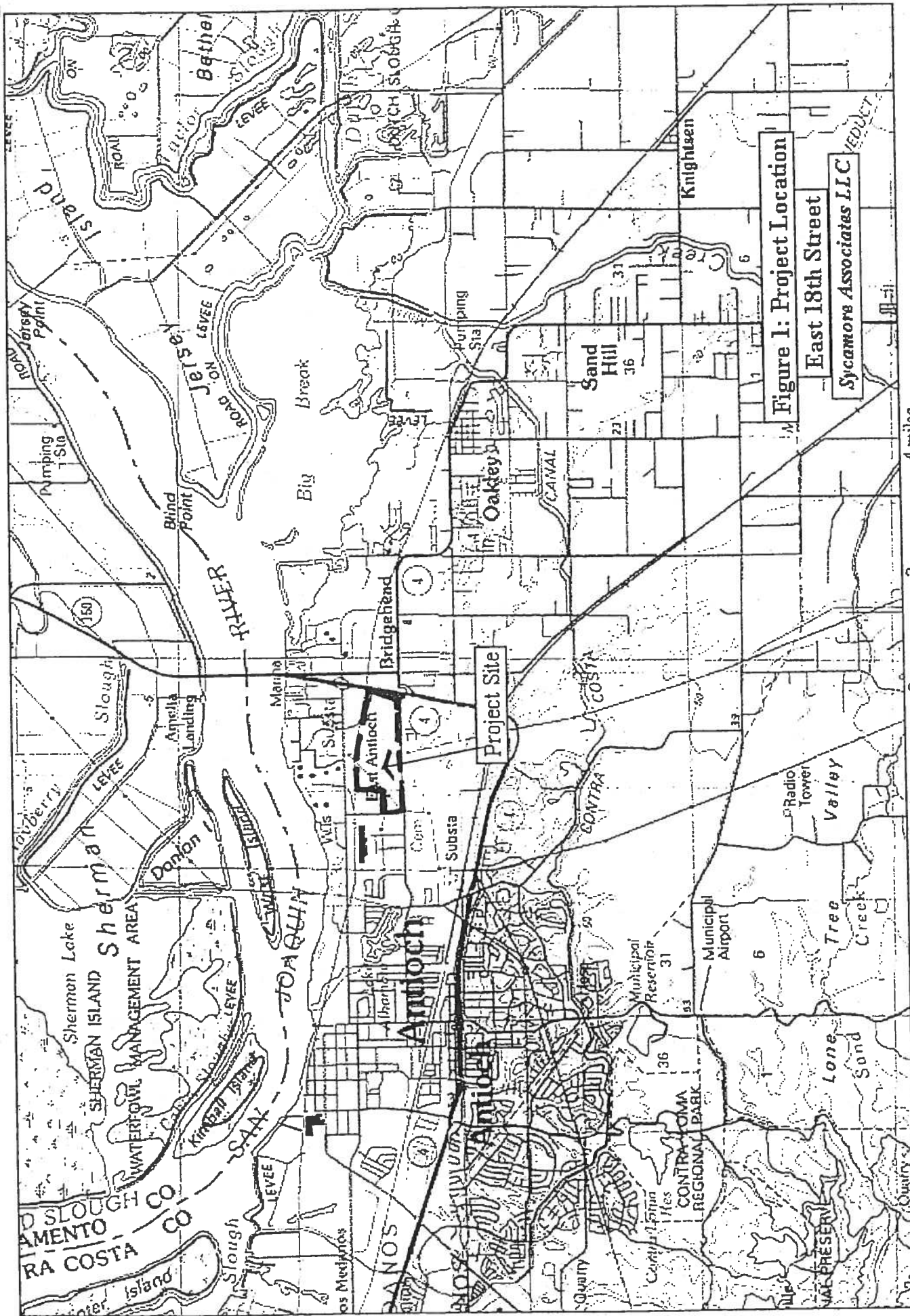


Figure 1: Project Location

East 18th Street

Sycamors Associates LLC

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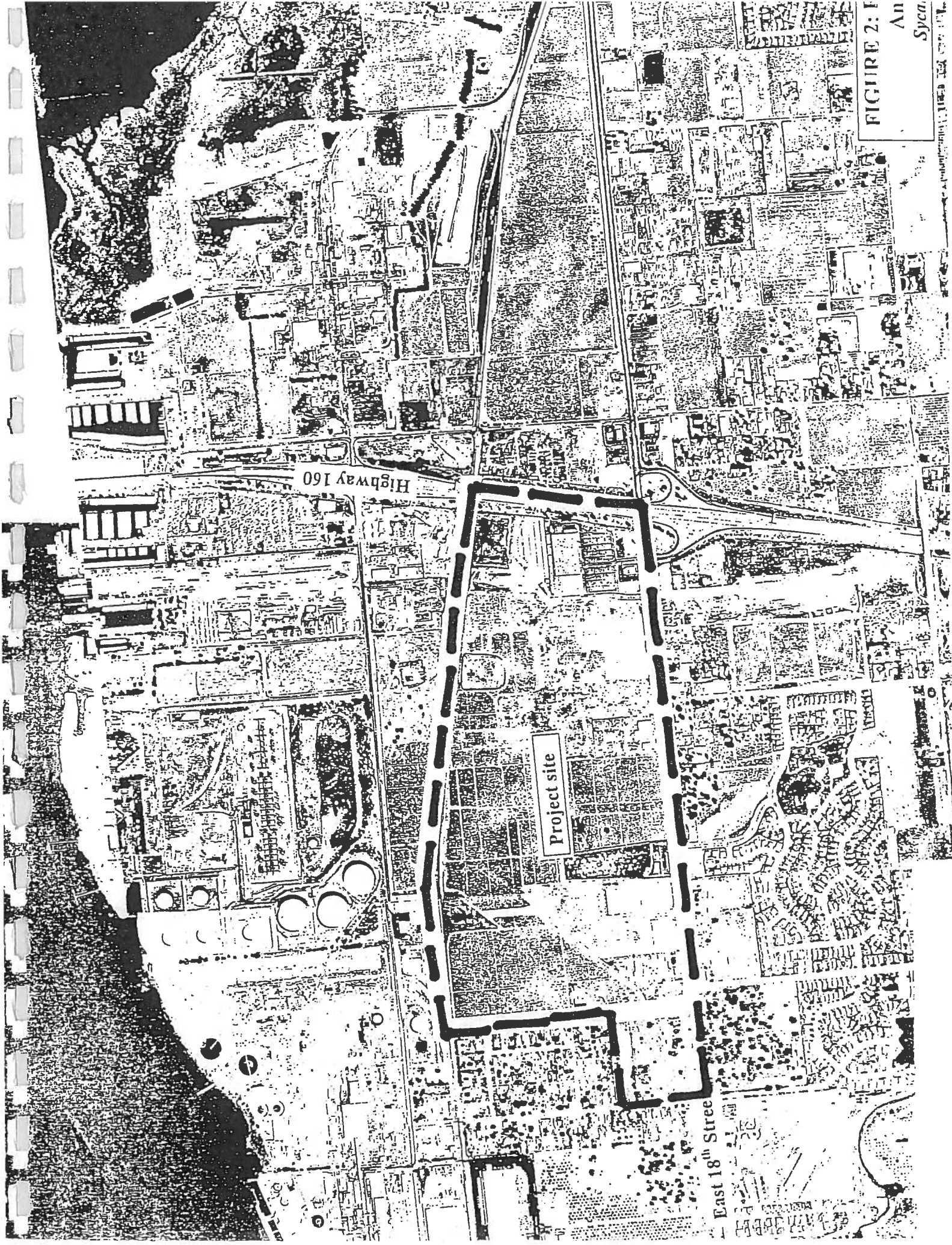


FIGURE 2: F
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Information on special-status animal species was compiled through a review of the CNDDDB (1999), CDFG's *Special Animals* (CDFG 2000b), *State and Federally Listed Endangered and Threatened Animals of California* (CDFG 1999b), and the USFWS (1995, 1996).

Nomenclature used in this report conforms to Hickman (1993) for plants. Plant community names conform to Holland (1986) and Sawyer and Keeler-Wolf (1995); wetland community names conforming to Cowardin, *et al.* (1979) are also given where appropriate.

3.0 SETTING

The study area covers approximately 192 -acres and is located north of East 18th Street and immediately west of Highway 160 in Antioch, California. The properties adjoining the east end of the site have been developed with retail businesses and a parking lot. Other development on the site includes a golf driving range, residence, several small office and industrial buildings, and a car repair and storage operation as well as a detention basin. Developed areas makes up about one sixth of the site. The remaining parcels of land support vineyards or ruderal non-native grasslands.

3.1 Plant Communities

The study area consists predominantly of disturbed lands on which the naturally-occurring vegetation has been entirely removed by development, grading, disking, filling, paving, equipment and materials storage, and cultivation. Outside of the developed portions, a majority of the study area consists of actively cultivated vineyards. The remainder of the site is generally sparsely vegetated with ruderal species and non-native annual grassland. One flood control detention basin located at the north edge of the planning area supports small patches of highly disturbed freshwater marsh vegetation. Vegetation communities are described in more detail below.

Disturbed and Cultivated Lands

Disturbed lands are those on which the native vegetation has been completely removed by grading, cultivation, development, and similar activities. Such areas include agricultural fields, orchards, developed areas, paved and unpaved roadways, parking areas, quarries, vacant lots, and storage yards. Such areas are not expected to support any natural vegetation, although invasive non-native and native species may become established where soil is present.

A large portion of the study area is actively cultivated as vineyards consisting of common grapes (*Vitis vinifera*). Between the rows of vines, vegetation is routinely cleared of weeds. Where the vineyards have not been weeded, a sparse cover of herbaceous, mostly non-native, ruderal grasses and forbs is present. Outside of the vineyards, undeveloped lands have been routinely disked.

Portions of the study area are commercially developed or paved and support no vegetation whatsoever. In landscaped areas associated with commercial businesses, a golf driving range, and a home site, the native vegetation has been replaced with horticultural species.

Ruderal Vegetation and Non-Native Annual Grassland

Ruderal vegetation and non-native annual grassland are intergrading plant communities from which the native vegetation has been completely removed by grading, cultivation, grazing, or other surface disturbances. Such areas, if left undeveloped, may become recolonized by invasive exotic species, as well as by certain native species. The native vegetation may ultimately become at least partially restored if the soils are left intact, and there is no continued disturbance.

Within the study area, a majority of the property has been subject to cultivation and grading, and the level of ground disturbance is high. Ruderal vegetation and non-native grassland are present in most of the study area outside of the portions under active cultivation, including roadsides, vacant lots, and the margins of vineyards. Characteristic non-native species occurring on site include grasses such as ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), annual ryegrass (*Lolium multiflorum*), and zorro grass (*Vulpia myuros*), among others. Non-native forbs include yellow star thistle (*Centaurea solstitialis*), cut-leaf geranium (*Geranium dissectum*), filaree (*Erodium cicutarium*, *E. botrys*), hoary mustard (*Hirschfeldia incana*), bur-clover (*Medicago polymorpha*), wild radish (*Raphanus sativa*), common vetch (*Vicia sativa*), and sow thistle (*Sonchus asper*), and many others. Native species detected on site include purple owl's clover (*Castilleja exserta*), common fiddleneck (*Amsinckia menzeisii* ssp. *intermedia*), and annual lupines (*Lupinus bicolor*, *L. succulentus*), all common in disturbed habitats.

Approximately 1.5 miles northwest of the study area, on the northern side of Wilbur Avenue, a stabilized interior dunes community occurs. Known as the Antioch Dunes, this area consists of extensive wind-blown deposits of sandy soils supporting at least two plant species endemic to the location. In the early part of the 20th century, the Antioch Dunes and much of their unique flora were largely destroyed by removal of sand for industrial purposes. Relictual portions of the dunes are now under management by the U.S. Fish and Wildlife Service as the Antioch Dunes National Wildlife Refuge.

Within the study area, soils are very sandy and probably represent remnants of interior dunes similar to the Antioch Dunes. However, based on the high degree of surface and soil disturbance within the study area, the potential for occurrence of sensitive plant species of the Antioch Dunes is considered to be low to none. Portions of the study area support small populations of silver bush lupine (*Lupinus albifrons*), as well as California broom (*Lotus scoparius*), and telegraph weed (*Heterotheca grandiflora*), three native species common in this region on highly disturbed sandy soils. In addition, a few scattered coast live oaks (*Quercus agrifolia*), also common at the Antioch Dunes, are present within the study area.

Ruderal habitat is not specifically described by Sawyer and Keeler-Wolf (1995), but portions of this habitat would correspond to the California annual grassland series. These habitats would be classified as upland following Cowardin, *et al.* (1979).

Valley Freshwater Marsh

Valley freshwater marsh typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. It is found on nutrient-rich mineral soils that are saturated for all or most of the year. This vegetation community is most extensive where surface flow is slow or stagnant or where the water table is so close to the surface as to saturate the soil from below. Valley freshwater marsh is distributed along the coast and in coastal valleys near river mouths and around the margins of lakes, springs, and streams (Holland 1986). This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots 1-15 feet high that reproduce by underground rhizomes.

Within the study area, vegetation characteristic of valley freshwater marsh was noted only in the existing flood control detention basin. This area is flooded or subject to prolonged saturation due to regular discharges of urban runoff. Because the detention basin is fenced and not accessible, vegetation within this site was not investigated during the present survey. However, based on observations made from the perimeter of the fence, characteristic species present within the study area include cattail (*Typha* spp.) and willows (*Salix* spp.), and may also include common tule (*Scirpus acutus* var. *occidentalis*) and bulrush (*Scirpus* sp.), among others.

Valley freshwater marsh within the study area most closely corresponds to the cattail series following Sawyer and Keeler-Wolf (1995). Following Cowardin, *et al.* (1979) this plant community is classified as palustrine semi-permanently flooded emergent wetland. The area dominated by willows would most closely conform to Central Coast riparian scrub as described by Holland (1986).

3.2 Wildlife Habitats

Wildlife species expected to utilize the site are those associated with cultivated lands, ruderal vegetation, and to a far more limited extent, valley freshwater marsh. The sandy soils are highly disturbed but present throughout the site. Little of the vegetation associated with the interior dunes of Antioch is present within the study area. The Antioch Dunes San Francisco Bay Wildlife Refuge is located about 1.5 miles northwest of the site representing what is left of Antioch Dunes ecosystem. A number of endemic wildlife species (all invertebrates) are associated with these dunes. Several of these species are known from just one occurrence.

Cultivated Lands

Generally, areas that are used for vineyards are subject to removal of existing vegetation and then replaced entirely with grape vines. Some rodent and herpetological species may become established. Some raptors such as the red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and white-tailed kite (*Elanus leucurus*) may be able to utilize these types of artificial open habitats. Other birds associated with cultivated lands such as these vineyards may include Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlarks (*Sturnella neglecta*), and various sparrows.

Ruderal Habitat

Ruderal habitat is that from which the native vegetation has been completely removed by grading, cultivation, or other surface disturbances.

Wildlife species that feed on seeds or other parts of the vegetation in ruderal habitats include finches, goldfinches, sparrows, and a variety of rodents. Insects in this habitat provide food for species such as western meadowlark, blackbirds, loggerhead shrike (*Lanius ludovicianus*) and western fence lizard (*Sceloporus occidentalis*). This community can support some predators, including snakes, various raptors, and red fox (*Vulpes vulpes*). Raptors likely to forage over ruderal habitat include red-tailed hawk and barn owl (*Tyto alba*). Killdeer (*Charadrius vociferus*) are also associated with open ruderal substrates. Opportunistic species generally associated with ruderal disturbed areas include raccoon (*Procyon lotor*), opossum (*Didelphus virginianus*), starlings (*Sturnus vulgaris*), and mourning doves (*Zenaida macroura*).

Within the study area, altered remnants of interior dune habitat have been highly modified by cultivation of vineyards and development. Due to the high level of disturbance and the isolated nature of the site, little, if any, of the dune fauna endemic to the Antioch Dunes is expected to be present. Wildlife species expected to utilize this habitat are primarily the same as those described for cultivated lands and ruderal habitat above.

Valley Freshwater Marsh

Valley freshwater marsh typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. Vertebrate species that may occur within the study area are Pacific chorus frog (*Pseudacris regilla*), western terrestrial garter snake (*Thamnophis elegans*), mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), great blue heron (*Ardea herodias*), common snipe (*Gallinago gallinago*), snowy egret (*Egretta thula*), and black phoebe (*Sayornis nigricans*). The California toad (*Bufo boreas halophilus*), and introduced bullfrog (*Rana catesbiana*) can be present. Aerial foraging species which hunt over marshy areas with open water include various bats and swallows.

The quality of the small patches on site for wildlife is considered to be extremely low

considering how little vegetation is present and the disturbed nature of the surrounding land use. Furthermore, the presence of open water specific to the detention basin and is assumed to be limited to only very wet times of the year.

4.0 SPECIAL-STATUS BIOLOGICAL RESOURCES

4.1 Special-status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare, or as Candidates for listing by the U.S. Fish and Wildlife Service (USFWS 1995, 1996), the CDFG (1998c, d), the CNPS (Skinner and Pavlik 1999). The CNPS listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species.

Based on a review of special-status plant species in Contra Costa County (CNDDDB 1999, Skinner and Pavlik 1999), a total of 22 special-status plant species were considered to have at least some potential to occur in the project region. Based on a reconnaissance-level survey of the study area and an assessment of the available habitats on site, none of the target special-status plant species is considered to have a high or moderate potential for occurrence within the study area. Five special-status plant species are considered to have a low potential for occurrence within the study area based on the presence of marginally suitable habitat and on the high degree of ground disturbance.

One species, the Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*), federally- and state-listed as Endangered, has been recorded from within the study area. According to a CNDDDB record from 1978, a single plant was noted within the corporation yard of the W. B. McCullough Construction Company. The site is in the southwest corner of the study area and is used for the storage of heavy construction equipment and materials. The level of ground disturbance is high, and very little vegetation is present within this portion of the site. Based on the current conditions of the reported location as observed during the present survey, the potential for the presence of the Antioch Dunes evening primrose at this site is considered to be very low.

The remaining 17 target species are considered to have no potential for occurrence within the study area because the site lacks suitable habitat. A summary of the status, habitat affinities, reported localities in the project area, blooming period, and potential for occurrence within the project area for each of the target plant species is presented in Appendix A. An explanation of all sensitivity status codes is provided in Appendix C.

4.2 Special-Status Animal Species

Special-status animal species include those listed as Endangered, Threatened, Rare, or as Candidates for listing by the USFWS (1995, 1996) and/or CDFG (2000b). Other species regarded as having special-status include special animals, as listed by the CDFG (2000b). Additional animal species receive protection under the Bald Eagle Protection Act and the Migratory Bird Treaty Act. The Fish & Game Code of California provides protection for

“fully protected birds” (§ 3511), “fully protected mammals” (§ 4700), “fully protected reptiles and amphibians” (§ 5050) and “fully protected fish” (§ 5515). The California Code of Federal Regulations (Title 14) prohibits the take of Protected amphibians (Chapter 5 §41), Protected reptiles (Chapter 5 §42) and Protected furbearers (Chapter 5 §460). Additional definitions are given in the California Environmental Quality Act Section 15380(d).

Several special-status wildlife species that are strictly associated with the northern coastal salt marsh habitat present in the Bay-Delta were not included as part of this assessment, because no salt marsh habitat is present on the study site. These species include California clapper rail (*Rallus longirostris obsoletus*), saltmarsh yellowthroat (*Geothlypis trichas sinuosa*), Suisun song sparrow (*Melospiza melodia maxillaris*), San Pablo song sparrow (*Melospiza melodia samuelis*), Suisun shrew (*Sorex ornatus sinuosus*), saltmarsh vagrant shrew (*Sorex vagrans halicoetes*), ornate saltmarsh shrew (*Sorex ornatus salicornicus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*).

Based on the California Natural Diversity Data Base (CNDDB 1999) and our understanding of the geographic range and habitat affinities of special-status animals, a total of 32 special-status animal species were considered for their potential to occur within the study area. None of these target species are considered to have a moderate to high potential to breed or forage within the study area due to lack of suitable habitat. Twelve are considered to have no likelihood to occur on site, but were included for the purposes of this report due to occurrence within the project vicinity. The remaining twenty species are considered to have low to no likelihood to occur on site.

The study area is located within 1.5 miles of the Antioch Dunes, a San Francisco Bay National Wildlife Refuge. The study area supports a sandy substrate that is presumably of similar origin to that of the Antioch Dunes complex. A number of endemic and unique invertebrates have been recorded from the Refuge. The current status of these invertebrates both in terms of abundance and geographic distribution is poorly understood.

The site is isolated from the Antioch Dunes NWR by surrounding residential and industrial development. As described in this report, the site itself has been highly disturbed. A portion has been paved and developed. A majority of the undeveloped portions are cultivated as vineyards. The remaining vegetation outside of these areas is largely ruderal, non-native grasslands. Due to the poor quality and highly disturbed nature of the site, the likelihood of these endemic special-status invertebrate species occurring on site is considered low. However, several of these species have occurred found in disturbed sand-based habitats including vineyards (D. Arnold, pers. comm.). Most of these insects were formerly federally-listed as Special Concern species. While no longer recognized at the federal level, these species are listed in CNDDB and may be considered rare under CEQA.

The Langes' metalmark butterfly (*Apodemia mormo langei*) is federally-listed as Endangered. This butterfly is associated with the host plant, naked-stem buckwheat (*Eriogonum nudum* var. *auriculatum*). This plant species was not detected during the site visit. Although the period of time that the survey was completed was not necessarily during

the blooming period for this plant, the species is perennial and would be detectable during any season of the year. However, the entire site was not surveyed as part of this reconnaissance-level study.

The local abundance and geographic distribution of the silvery legless lizard (*Anniella pulchra pulchra*) and California horned lizard (*Phrynosoma coronatum frontale*) is poorly understood for this region. Both these species are associated with sandy soils; however, the silvery legless lizard requires vegetative cover. Due to the lack of vegetative cover this species is therefore not considered to have a very low likelihood to occur on site.

The horned lizard is associated with the presence of sandy soils and native ant species; both of which occur on site. However, the site is isolated from other similar types of habitat due to surrounding land use, and the site has been subject to a large amount of disturbance. According to Jennings and Hayes (1994), this species is extinct in this area based on museum records. Therefore, we consider the likelihood for this species to occur on site to be extremely low. This species is a California Species of Special Concern and a Protected reptile (Chapter 5 §42) under the California Code of Federal Regulations (Title 14) which prohibits take.

There are a few widely scattered trees including a willow, some immature trees and several mature oaks. In addition, some scrub vegetation, such as large bush lupines, is present. These trees and scrub vegetation constitute nesting habitat for a limited number of species. The quality of this habitat is considered very low. Nonetheless, a preconstruction survey for nesting birds is recommended no more than 30 days prior to construction in order to detect any nesting birds that may be present (see Section 5.0 for recommendations).

There is a very low likelihood that certain bird species may nest within the limited patches of tules and cattails within the detention basin. Based on the current project plans, no disturbance to the detention basins is scheduled.

A summary of the formal status, habitat affinities, reported localities to the project vicinity, and potential for occurrence within the project area for each of the target animal species is presented in Appendix B. An explanation of all sensitivity status codes is provided in Appendix C.

4.3 Special-status Natural Communities

Special-status natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection (*i.e.*, §404 of the Clean Water Act and/or the CDFG §§1600, *et seq.* of the California Fish and Game Code). In addition, the CNDDDB has designated a number of communities as rare; these communities are given the highest inventory priority (Holland 1986, CDFG 1997).

Special-status natural communities that are regulated by state, federal or county legislation or policies include wetland communities such as valley freshwater marsh. However, the study

area supports very limited emergent freshwater marsh, restricted to a flood control detention basin. The artificial nature of this basin, as well as its lack of vegetative or hydrological connectivity to other similar habitats, may limit its value as a biologically functional natural community. As such, freshwater marsh habitat as it occurs on site may not fall under the jurisdiction of the regulatory agencies as a special-status natural community.

Stabilized interior dunes, including the Antioch Dunes complex, are considered by the CNDDB to be special-status natural communities (Holland 1986, CDFG 1997). Although the sandy soils at the study area may have similar origins to the Antioch Dunes to the northwest, a lack of connectivity, as well as the high level of ground disturbance within the study area diminish the value of the habitat available on site. As such, it is not expected that the study area would be classified as dune habitat.

5.0 RECOMMENDATIONS

As stated previously, the site is highly disturbed and is surrounded by land use that is generally incompatible with the presence of plants and wildlife endemic to the Antioch Dune complex. Therefore, the likelihood is extremely low that these plants are present. Nonetheless, because the Antioch Dunes evening primrose was detected on site at an earlier date and because the entire site was not visually inspected during our recent survey, Sycamore cannot rule out the presence of either the federally-listed and state-listed Endangered Antioch dunes evening primrose or the host plant for the federally-listed Endangered Langes' metalmark butterfly. In order to determine if the proposed project would result in any impacts to the federally- and state-listed Endangered plant, the Antioch Dunes evening primrose and the federally-listed and state-listed Endangered Langes' metalmark butterfly, Sycamore recommends that a botanical survey be conducted and findings included as part of the final CEQA document. To adequately assess the potential for impacts to these species, surveys should be conducted between March and July.

Although the likelihood of special-status invertebrate species endemic to the Antioch Dunes is considered low, further analysis is warranted due to the fact that several of these species have occurred in disturbed sand-based habitats including vineyards. While these species are not afforded any formal protection under the ESA or the California Endangered Species Act (CESA), they frequently arise as potentially significant biological resources during CEQA review. Therefore, we recommend that a habitat assessment for special-status invertebrates be completed by a qualified entomologist.

In order to ensure that project implementation does not result in significant adverse effects to migratory birds, we also recommend that preconstruction surveys for nesting birds within the trees, scrub and ruderal non-native grasslands no more than 30 days prior to construction.

Although a formal wetland delineation was not performed as part of this study, it appears that the project would not result in impacts to habitats falling under the jurisdiction of the

U.S. Army Corps of Engineers (USACE). However, the existing detention basin, which current plans show as being avoided, might fall under USACE jurisdiction. If project plans change and impacts to the basin would result, a wetland delineation and jurisdictional determination should be performed and verified by the USACE. Permits and mitigation pursuant to the Clean Water Act might be required.

In summary, the following surveys are warranted in order to address potential impacts to special-status species that have some likelihood to occur on the project site:

- One rare plant survey be conducted between March and July.
- A special-status invertebrate species' habitat assessment.
- Preconstruction surveys for nesting migratory birds within the trees, scrub and ruderal non-native grasslands no more than 30 days prior to construction.

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APPENDIX A-1 (A)
POTENTIALLY-OCCURRING SPECIAL-STATUS
PLANT SPECIES

Appendix A

POTENTIALLY-OCCURRING SPECIAL-STATUS PLANT SPECIES AT THE EAST 18TH STREET PROJECT SITE

Family Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Blooming Period/ Life Form	Potential for Occurrence On Site
Apiaceae <i>Lilaeopsis masonii</i> Mason's lilaeopsis	Federal SC State CR CNPS 1B:2-2-3	Intertidal brackish and freshwater marshes along streambanks. Recorded in the San Joaquin and Sacramento River Delta and lower Napa River channel.	April-Oct Perennial herb	None: no suitable habitat present.
Asteraceae <i>Aster lentus</i> Suisun Marsh aster	Federal SC State CEQA CNPS 1B:2-2-3	Freshwater and brackish marshes. Known from the Napa River and San Joaquin/Sacramento River Delta.	May-Nov Perennial herb	None: no suitable habitat present.
<i>Cirsium crassicaule</i> Slough thistle	Federal SC State CEQA CNPS 1B:2-2-3	Freshwater and brackish marshes. Known from the Napa River and San Joaquin/Sacramento River Delta.	May-Nov Perennial herb	None: no suitable habitat present.
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> Suisun thistle	Federal FE State CEQA CNPS 1B:3-3-3	Salt marshes. Known from only one location on Grizzly Island in Suisun Marsh, Solano County.	July-Sept Perennial herb	None: no suitable habitat present.
<i>Lasthenia conjugens</i> Contra Costa goldfields	Federal FE State CEQA CNPS 1B:3-3-3	Mesic sites in Valley/foothill grassland, vernal pools. Restricted to Napa and Solano counties; presumed extirpated in Alameda, Contra Costa, Mendocino, Santa Barbara and Santa Clara counties.	Mar-June Annual herb	None: no suitable habitat present.
<i>Psilocarphus brevissimus</i> var. <i>multiflorus</i> Delta woolly-marbles	Federal None State None CNPS 4:1-2-3	Vernal pools. Recorded from Alameda, Napa, Santa Clara, San Joaquin, Solano, Stanislaus and Yolo counties.	May-June Annual herb	None: no suitable habitat present.
<i>Psilocarphus tenellus</i> var. <i>globiferus</i> round woolly-marbles	Federal None State None CNPS 4:1-2-1	Coastal dunes and vernal pools. Known from the San Joaquin Valley, Central Coast, Sierra foothills and the San Francisco Bay area.	April-May Annual herb	Low: marginally suitable habitat present.

Family Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Blooming Period/ Life Form	Potential for Occurrence On Site
Boraginaceae <i>Cryptantha hooveri</i> Hoover's cryptantha	Federal State CNPS None None 4:1-2-3	Valley/ foothill grassland in sandy soils. Historically recorded from the Antioch Dunes. Distributed from the East Bay counties to the northern San Joaquin Valley.	April-May Annual herb	Low: marginally suitable habitat present.
<i>Plagiobothrys hystericulus</i> bearded popcorn-flower	Federal State CNPS None CEQA 1A	Vernal pools and mesic Valley/foothill grassland. Presumed extinct. Endemic to Solano County.	April-May Annual herb	None: no suitable habitat present.
Brassicaceae <i>Erysimum capitatum</i> ssp. <i>angustatum</i> Contra Costa wallflower	Federal State CNPS FE CE 1B:3-3-3	Stabilized interior dunes. Known from only two occurrences on the dunes east of Antioch, along the San Joaquin River.	Mar-July Perennial herb	Low: marginally suitable habitat present.
Campanulaceae <i>Downingia pusilla</i> dwarf downingia	Federal State CNPS None CEQA 2:1-2-1	Mesic sites in Valley/foothill grassland and vernal pools. Occurs from Sonoma and Napa counties through the Sacramento Valley and Sierra foothills.	Mar-May Annual herb	None: no suitable habitat present.
<i>Legenere limosa</i> legenere	Federal State CNPS SC CEQA 1B:2-3-3	Vernal pools. Recorded from Lake and Napa counties and the Sacramento Valley. Believed extirpated in Sonoma and Stanislaus counties.	May-June Annual herb	None: no suitable habitat present.
Chenopodiaceae <i>Atriplex cordulata</i> heartscale	Federal State CNPS SC CEQA 1B:2-2-3	Chenopod scrub, Valley/foothill grassland, on somewhat alkaline or saline hard packed soils. Recorded from Alameda County throughout the Central Valley from Glenn to Kern counties.	May-Oct Annual herb	None: no suitable habitat present.
<i>Atriplex coronata</i> var. <i>coronata</i> crownscale	Federal State CNPS None None 4:1-2-3	Chenopod scrub, Valley/foothill grassland on alkaline soils. Known from the northern San Joaquin Valley, Central Coast, and eastern San Francisco Bay.	Apr-Oct Annual herb	None: no suitable habitat present.
<i>Atriplex depressa</i> brittlescale	Federal State CNPS None CEQA 1B:2-2-3	Chenopod scrub, playas and Valley/foothill grassland on alkaline and clay soils. Occurs from Solano County throughout the Sacramento and San Joaquin Valleys. Presumed extirpated in Stanislaus County.	May-Oct Annual herb	None: no suitable habitat present.

Appendix A (continued)

Family Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Blooming Period/ Life Form	Potential for Occurrence On Site
<i>Atriplex joaquiniana</i> San Joaquin spearscale	Federal SC State CEQA CNPS 1B:2-2-3	Chenopod scrub, Valley/foothill grassland and alkali meadows. Occurs from Solano County throughout the Sacramento and San Joaquin valleys. Presumed extirpated in Santa Clara, San Joaquin and Tulare counties.	April-Sept. Annual herb	None: no suitable habitat present.
Fabaceae <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tulle pea	Federal SC State CEQA CNPS 1B:2-2-3	Freshwater and brackish marshes. Occurs throughout the Sacramento-San Joaquin River delta, San Francisco Bay and Central Valley.	May-Sept. Perennial herb	None: no suitable habitat present.
Malvaceae <i>Hibiscus lasiocarpus</i> rose-mallow	Federal None State CEQA CNPS 2:2-2-1	Freshwater marshes. Restricted to the Sacramento-San Joaquin River Delta.	June-Sept Perennial herb (rhizomatous)	None: no suitable habitat present.
Onagraceae <i>Oenothera deltoidea</i> ssp. <i>howellii</i> Antioch Dunes evening-primrose	Federal FE State CE CNPS 1B:3-3-3	Remnant river bluffs and interior sand dunes. Known from seven occurrences among the dunes east of Antioch.	Mar-Sept Perennial herb	Low: CNDDDB record from McCullough property in 1978. Site is highly disturbed.
Ranunculaceae <i>Ranunculus lobbii</i> Lobb's aquatic buttercup	Federal None State CEQA? CNPS 4:1-2-3	Mesic sites in cismontane woodland, Valley/foothill grassland, North Coast coniferous forest and vernal pools. Known from the San Francisco Bay Area to Mendocino and Napa counties.	March-May Annual herb (aquatic)	Low: marginally suitable habitat present in flood control basin.
Scrophulariaceae <i>Cordylanthus mollis</i> ssp. <i>mollis</i> soft bird's-beak	Federal FPE State CR CNPS 1B:3-2-3	Coastal saltmarsh. Known from fewer than 10 locations in Contra Costa, Napa, and Solano counties. Extirpated in Marin and Sonoma counties.	July-Sept Annual herb (hemiparasitic)	None: no suitable habitat present.
Scrophulariaceae <i>Limosella subulata</i> Delta mudwort	Federal: none State: CEQA CNPS 2:2-3-1	Marshes and swamps, muddy or sandy intertidal flats in the Sacramento and San Joaquin river deltas.	May-Aug Perennial herb (stoloniferous)	None: no suitable habitat present.

¹Explanation of sensitivity status codes provided in Appendix C.

APPENDIX A-1 (B)

**POTENTIALLY-OCCURRING SPECIAL-STATUS
WILDLIFE SPECIES**

Appendix B

POTENTIALLY-OCCURRING SPECIAL-STATUS WILDLIFE SPECIES AT THE EAST 18TH STREET PROJECT SITE

Scientific Name Common Name	Status'	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence Onsite
Invertebrates			
<i>Anthicus antiochensis</i> Antioch dunes anthicid beetle	Federal SC State none	Formerly inhabited sandy substrate at the Antioch Dunes. Last seen in the early 1950's before industrialization of surrounding area.	Low. marginally suitable habitat present.
<i>Apodemia morno langei</i> Langes' metalmark butterfly	Federal FE State SE	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is <i>Eriogonum nudum</i> var. <i>auriculatum</i> ; feeds on nectar of other wildflowers as well.	Very low: Marginally suitable habitat present.
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	Federal FT State none	Inhabits vernal pools in grasslands in the Central Valley, Coast Ranges and South Coast mountains. Active between December and May.	None: no suitable habitat present on site.
<i>Coelus gracilis</i> San Joaquin dune beetle	Federal SC State none	Inhabits foredunes and sand hummocks, burrowing beneath the sand surface, frequent among vegetation. Known to occur from Bodega Head, Mendocino Co. to Ensenada, Mexico.	Low: Marginally suitable habitat present.
<i>Cophura lurdi</i> Antioch Cophuran robberfly	Federal SC State none	Habitat not well understood. Recorded only from Antioch in 1939.	Low: Marginally suitable habitat present.
<i>Desmocerius californicus demorphus</i> Valley elderberry longhorn beetle	Federal FT State none	Riparian and oak savanna habitats. Requires elderberry (<i>Sambucus</i> spp.) as host plants. Inhabits streambanks in the Central Valley below 3,000 feet.	None: no elderberry bushes detected on site.

Appendix B (cont'd)

Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence Onsite
Invertebrates (cont'd)			
<i>Efferia antiochii</i> Antioch efferian robberfly	Federal SC State none	Habitat not well understood. Recorded only from Antioch Dunes in Contra Costa County in 1959.	Low: marginally suitable habitat present.
<i>Idiostatus middlekaufi</i> Middlekaufs shieldback katydid	Federal SC State none	Inhabits sandy dunes. Recorded only from Antioch Dunes, Contra Costa County in 1965.	Low: marginally suitable habitat present.
<i>Myrmosula pacifica</i> Antioch multilid wasp	Federal SC State none	Inhabits sandy dunes. Recorded only from Antioch Dunes, Contra Costa County, in 1952.	Low: marginally suitable habitat present.
<i>Perdita hirticeps luteocincta</i> Yellow-banded andrenid bee	Federal SC State none	Inhabits sandy dunes. Recorded only from Antioch Dunes, Contra Costa County, in 1936. Observed visiting flowers of <i>Gutierrezia californica</i> .	Low: marginally suitable habitat present.
<i>Perdita scituta antiochensis</i> Antioch andrenid bee	Federal SC State none	Inhabits sandy dunes. Recorded only from Antioch Dunes, Contra Costa County in 1977. Observed visiting flowers of <i>Eriogonum</i> , <i>Gutierrezia californica</i> , <i>Heterotheca grandiflora</i> , and <i>Lessingia glandulifera</i> .	Low: marginally suitable habitat present.
<i>Philanthus nasalis</i> Antioch spicid wasp	Federal SC State none	Inhabits sandy dunes. Recorded only from Antioch Dunes in 1965. Not recorded from project vicinity.	Low: marginally suitable habitat present.
Amphibians <i>Ambystoma californiense</i> California tiger salamander	Federal C State SSC	Breeds in temporary or semi-permanent pools. Seeks cover in rodent burrows in grasslands and oak woodlands. Inhabits the Coast Ranges from Santa Barbara to Sonoma counties along the coast and inland to Colusa, Yolo and Tulare counties.	None: No hydrology to support breeding. Marginally suitable estivation habitat present within study area.

Appendix B (cont'd)

Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence Onsite
Amphibians (Cont'd) <i>Rana aurora draytonii</i> California red-legged frog	Federal State FT SSC	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation.	None: no suitable habitat present within study area.
Reptiles <i>Anniella pulchra pulchra</i> silvery legless lizard	Federal State SC none	Inhabits sparsely vegetated areas on beaches and in chaparral, oak woodlands and riparian. Needs loose soils for burrowing (sand, loam or humus), moisture, warmth and plant cover. Burrows in washes, dune sand and loose soils at the base of slopes or in intermittent streams. Forages in leaf litter during the day, but may emerge on the surface at dusk or night.	Low: No leaf litter or cover present. Marginally suitable habitat present.
<i>Clemmys marmorata</i> western pond turtle	Federal State SC SSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Needs upland sites for egg-laying. Occurs from the Oregon border to the San Francisco Bay, inland throughout the Sacramento Valley and south along the coastal zone to San Diego County.	None: no suitable habitat present.
<i>Masticophis lateralis</i> <i>euryxanthus</i> Alameda whipsnake	Federal State FT ST	Restricted to chaparral and coastal scrub of the Coast Ranges, inhabits appropriate habitat on south, southwest- and southeast-facing slopes and ravines where the shrubs form a vegetative mosaic with grasses. Uses rodent burrows. Feeds on a number of items including <i>Sceloporus</i> .	None: No appropriate habitat on site or nearby.
<i>Phrynosoma coronatum</i> <i>frontale</i> California horned lizard	Federal State SC SSC	Occurs in scrub and grassland on sandy soils; active above ground between April and October. Preys primarily on native ant species.	Low: marginally suitable habitat present.
<i>Thamnophis gigas</i> giant garter snake	Federal State FT CT	Inhabits sloughs, canals and small water courses with grassy banks and emergent vegetation. Requires high ground for basking and escape during winter flooding. Known from the Central Valley from Fresno north to the Sutter Buttes. Recently recorded from Sherman Island. Nearest sighting is 1.7 miles north. Distribution in Contra Costa County unknown.	None: no suitable habitat present on sight, nearest slough or watercourse one mile away.

Appendix B (cont'd)

Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence Onsite
Birds			
<i>Agelaius tricolor</i> tricolored blackbird	Federal State Audubon SC, MB SSC None	Nests primarily in dense freshwater marshes with cattail or tules. Forages in grasslands. Largely endemic to California. Permanent resident in the Central Valley and along the coast from Marin to San Diego counties. Also known from Lake, Sonoma and Solano counties. Grasslands provide suitable foraging habitat only.	None to low: No adequate nesting habitat. Marginally suitable foraging habitat present.
<i>Asio flammeus</i> short-eared owl (nesting only)	Federal State Audubon MB SSC Blue List	Found in salt and freshwater swamps, lowland meadows, irrigated alfalfa fields. Nests in tules and tall grasslands. Needs daytime seclusion. Nests on dry ground in depressions concealed by vegetation.	None to low: some marginally suitable nesting and foraging habitat present in detention basins.
<i>Speotyto cunicularia</i> <i>hypugea</i> burrowing owl	Federal State Audubon SC, MB SSC SC	Open, dry grasslands, deserts, prairies, farmland and scrublands with abundant active and abandoned mammal burrows. Occurs in lowlands throughout California.	Very low: small patches of suitable nesting and foraging habitat present.
<i>Buteo jaimaicensis</i> red-tailed hawk (nesting only)	Federal State Audubon MB CT SC	Nests in woodlands, feeds in open country. Often perches on poles or treetops. Widespread distribution in North America.	None: limited, marginal nesting habitat. Marginal foraging habitat present.
<i>Charadrius montanus</i> mountain plover (wintering only)	Federal State Audubon C SSC None	Nests on arid plains and short-grass prairies in Western Great Plains and Great Basin; winters in open, arid habitats, as well as fallow fields.	Low: marginally suitable wintering habitat present.
<i>Circus cyaneus</i> northern harrier (nesting/wintering)	Federal State MB SSC	Nests and forages in grasslands ranging from salt grass in desert sinks to mountain cienegas. Nests on ground in shrubby vegetation or dense grass, usually at the edge of marshes.	Low: marginal foraging habitat present.
<i>Elanus leucurus</i> white-tailed kite (nesting sites only)	Federal State Audubon MB CFP None	Inhabits low rolling foothills and valley margins with scattered oaks and river bottom-lands or marshes adjacent to deciduous woodlands. Prefers open grasslands, meadows and marshes for foraging close to isolated, dense-topped trees for nesting and perching.	None: limited marginal nesting habitat present, may occasionally forage on site.

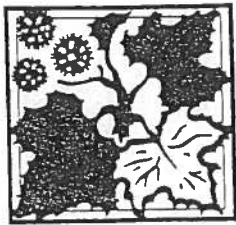
Appendix B (cont'd)

Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence Onsite
Birds (cont'd) <i>Falco peregrinus anatum</i> American peregrine falcon	Federal MB State CE,CF Audubon None	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers or marshes. Permanent resident in the North and South Coast Ranges. Winters in the Central Valley southward through the Transverse and Peninsular Ranges. Nest recorded at the Antioch bridge.	Low: may occasionally forage on site. No nesting habitat present.
<i>Lanius ludovicianus</i> loggerhead shrike	Federal SC, MB State SSC Audubon Blue List	Nests in woodland and scrub habitats at margins of open grasslands. Often uses lookout perches such as fence posts. Resident and winter visitor in lowlands and foothills throughout California.	Low: limited, marginal nesting habitat present. Marginal foraging habitat present.
<i>Phalacrocorax auritus</i> Double-crested cormorant (rookery site)	Federal MB State SSC Audubon None	Nests in colonies on coastal cliffs and offshore islands and on lake margins in the interior of the state.	None: no suitable nesting or foraging habitat.
Mammals <i>Perognathus inornatus</i> San Joaquin pocket mouse	Federal SC State SSC	Inhabits grassland and scrub habitats in Central and San Joaquin Valleys. Associated with friable soils. Known from 7.0 miles southwest from site.	Low to none: marginally suitable habitat present.
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	Federal FE State CT	Range includes annual grassland and saltbush scrub. Requires burrows for refugia and denning. Project site north of recognized geographic range.	None: little to no denning habitat.

¹ Explanation of sensitivity status codes provided in Appendix C.

APPENDIX A-1 (C)

EXPLANATION OF SENSITIVITY CODE STATUS



Appendix A-2

SYCAMORE ASSOCIATES LLC

1220 Oakland Blvd., Ste. 100 • Walnut Creek, California 94596 • 925-279-0580 • fax: 925-279-0581 • e-mail: syc@pacbell.net

June 21, 2000

Mr. Richard T. Loewke, AICP
55 Oak Trail Court
Alamo, CA 94507

RE: Focused Botanical Surveys, East 18th St. Study Area, Antioch, Contra Costa County, California.

Dear Dick:

At your request, Sycamore performed a focused botanical survey of the East 18th Street study area in Antioch, California. The objective of this survey was to determine if any late-flowering special-status plants occur within the study areas. The location consists of 29 contiguous parcels bordered by East 18th Street to the south, Highway 160 to the east, and a railway to the north. A residential subdivision is located to the west.

Methods

A reconnaissance-level biological assessment of the study area was conducted by Sycamore biologists Dr. Susan Townsend and Christopher Thayer on April 3, 2000. The results of this study were presented in a separate report (Sycamore Associates 2000). Detailed descriptions of the location, including topography, onsite and surrounding land uses and habitats, and the potential for occurrence of special-status plant and wildlife species, were included in this document. A focused botanical survey was performed on June 9, 2000 by Sycamore botanists Christopher Thayer and Isabelle de Geofroy. The entire study area was surveyed on foot. All habitats within and adjacent to the study areas were visited and described, and all plant species were noted. The methods employed for this assessment conform to the survey protocol outlined by the California Department of Fish and Game (CDFG 1997; USFWS 1996b).

Special-Status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare, or as candidates for listing by the U.S. Fish and Wildlife Service (USFWS 1995, 1996a), the CDFG (1999, 2000) the California Native Plant Society (CNPS) (Skinner and Pavlik 1999). The CNPS listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species.

Ten plant species were targeted during the present survey. Five are special-status plant species that were considered in the biological assessment to have a low potential for occurrence within

APPENDIX C EXPLANATION OF SENSITIVITY STATUS CODES

AGENCIES

USFWS = U.S. Fish and Wildlife Service
 CDFG = California Department of Fish and Game
 CNPS = California Native Plant Society
 BLM = Bureau of Land Management
 USFS = U.S. Forest Service

CALIFORNIA NATIVE PLANT SOCIETY DESIGNATIONS

List 1: Plants of highest priority
 List 1A: Plants presumed extinct in California
 List 1B: Plants rare and endangered in California and elsewhere
 List 2: Plants rare and endangered in California but more common elsewhere
 List 3: Plants about which additional data are needed
 List 4: Plants of limited distribution

CNPS R-E-D Codes

R (Rarity)

- 1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
- 2 = Occurrence confined to several populations or to one extended population.
- 3 = Occurrence limited to one or a few highly restricted populations, or present in such low numbers that it is seldom reported.
- ? = More data are needed

E (Endangerment)

- 1 = Not endangered
- 2 = Endangered in a portion of its range
- 3 = Endangered throughout its range
- ? = More data are needed

D (Distribution)

- 1 = More or less widespread outside California
- 2 = Rare outside California
- 3 = Endemic to California
- ? = More data are needed

note: currently, all CNPS list 1B and 2 taxa are considered "Special Plants" by the CDFG.

FEDERAL DESIGNATIONS

FE = listed as Endangered by the Federal Government
 FT = listed as Threatened by the Federal Government
 FPE = proposed as Endangered by the Federal Government
 FPT = proposed as Threatened by the Federal Government
 FSS = federal sensitive species, as listed by BLM and USFS
 C¹ = Candidate; taxa for which USFWS has sufficient biological information to support a proposal to list as Endangered or Threatened).
 SC¹ = Species of Concern
 MB = migratory non-game birds of management concern to the USFWS; protected under the Migratory Bird Treaty Act.

¹As of Feb. 28, 1996, all Category 1 candidate taxa are now regarded merely as Candidates. The USFWS ceased to maintain lists of Category 2 and Category 3 candidate taxa; Category 2 taxa are now regarded as Species of Concern.

CALIFORNIA DEPT. OF FISH AND GAME DESIGNATIONS

CE = Listed as Endangered by the State of California
 CR = Listed as Rare by the State of California
 CT = Listed as Threatened by the State of California
 CPE = Proposed for listing as Endangered
 SSC = California Species of Special Concern
 * = taxa that are restricted in distribution, declining throughout their range, or associated with habitats that are declining in California.
 CFP = Fully protected under the Cal. Fish and Game Code.
 CP = Protected Species under Cal. Code of Regulations.
 CEQA = taxa which are considered to meet the criteria for listing as Endangered, Threatened or Rare by the CDFG; impacts to such taxa must be addressed in CEQA documents.
 CEQA? = Taxa that might be locally significant; should be evaluated for consideration during preparation of CEQA documents, as recommended by the CDFG.

AUDOBON

Cal WL = The Audobon's WatchList for California

the study area, based on the presence of at least marginally suitable habitat (Sycamore 2000). These include the federally- and state-listed Endangered Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*) and the Contra Costa wallflower (*Erysimum capitatum* ssp. *angustatum*), as well as the CNPS List 4 species round woolly-marbles (*Psilocarphus tenellus* var. *globiferus*), Hoover's cryptantha (*Cryptantha hooveri*), and Lobb's aquatic buttercup (*Ranunculus lobbii*).

One of these species, the Antioch Dunes evening primrose, has been historically recorded from within the study area. According to a CNDDDB record from 1978, a single plant of this species was noted within the corporation yard of the W. B. McCullough Construction Company. The site is in the southwest corner of the study area and is currently used for the storage of heavy construction equipment and materials.

The five remaining plant species targeted during the survey are known to be used by the Lange's metalmark butterfly (*Apodemia mormo langei*), which is federally-listed as Endangered. These include naked-stem buckwheat (*Eriogonum nudum* var. *auriculatum*), the larval host plant for the butterfly, as well as creek senecio (*Senecio flaccidus* var. *douglasii*), California broom (*Lotus scoparius*), California matchweed (*Gutierrezia californica*) and California croton (*Croton californicus*).

Results

The entire study area has been severely altered by development and agricultural activities. Agricultural lands occupy approximately fifty percent of the site. These areas are highly disturbed lands from which the native vegetation has been completely removed by cultivation. On the site, agricultural lands consist of actively cultivated vineyards, consisting of cultivated grapes (*Vitis vinifera*). Between the rows of vines, vegetation is routinely cleared of weeds. Invasive exotic species such as puncture vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), lamb's quarters (*Chenopodium album*) and amaranthus (*Amaranthus* sp.) are among the few species that persist in the vineyards.

Approximately thirty percent of the site is occupied by ruderal (weedy) vegetation. Ruderal vegetation develops where the native vegetation has been completely removed, typically by grading, scraping, filling, compacting, cultivation, or other surface disturbances. Such areas, if left undeveloped or fallow, may become recolonized by invasive exotic species, including annual grasses, as well as certain native species. Common non-native grass species detected on site include brome grasses (*Bromus hordeaceus*, *B. diandrus*), wild oats (*Avena fatua*, *A. barbata*), Italian ryegrass (*Lolium multiflorum*), and wild barley (*Hordeum murinum* ssp. *leporinum*), among others. Weedy non-native forbs encountered include Russian thistle, yellow star thistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), curly dock (*Rumex crispus*), filaree (*Erodium* spp.), hoary mustard (*Hirschfeldia incana*), wild radish (*Raphanus sativus*), and horseweed (*Conyza canadensis*), among others. Native species detected within the study area include Spanish clover (*Lotus purshianus* var. *purshianus*) and doveweed (*Eremocarpus setigeris*), both common in disturbed habitats.

Two man-made flood control basins, maintained by the Contra Costa County Flood Control District, are present along the northern boundary of the study site. Both support patches of valley

freshwater marsh and Central Coast riparian scrub vegetation. Valley freshwater marsh typically occurs in low-lying sites that are permanently flooded and lack significant current. This vegetation community is most extensive where surface flow is slow or stagnant or where the water table is so close to the surface as to saturate the soil from below. Valley freshwater marsh vegetation characteristically forms a dense cover dominated by perennial, emergent monocots 1-15 feet high that reproduce by underground rhizomes. Characteristic native species occurring on site include cattails (*Typha* spp.) and umbrella sedge (*Cyperus eragrostis*). Riparian trees characteristic of Central Coast riparian scrub, including such species as narrow-leaved willow (*Salix exigua*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), are also present in the flood control basins.

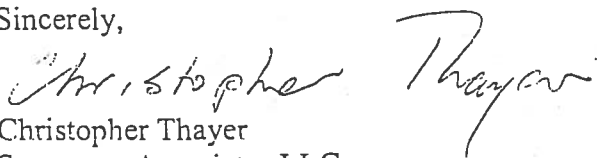
During a reconnaissance-level biological assessment and a single focused rare plant survey, no special-status plant species were detected in the study area. Based on the present surveys, there is no potential for the presence of the federally-listed Endangered Antioch Dunes evening primrose and Contra Costa wallflower, and the CNPS list 4 species round woolly-marbles. Two special-status species, Hoover's cryptantha, and Lobb's aquatic buttercup, cannot be ruled out, due to the timing of the present surveys. However these species are on CNPS list 4, and as such have no formal protection under the state or federal Endangered Species Acts. List 4 plants are not considered rare from a statewide perspective, but are uncommon enough that their status should be monitored regularly. Impacts to list 4 plants would not be considered significant under CEQA.

Of the five plant species associated with the Lange's metalmark butterfly, only California broom, a common member of the pea family, was detected. Locations of California broom have been forwarded to Richard Arnold to be used with a special-status invertebrate survey on the site.

No further botanical studies are warranted pertaining to special-status plants.

If you have any questions, please don't hesitate to contact me.

Sincerely,


Christopher Thayer
Sycamore Associates LLC

Enclosures: Literature Cited

Literature Cited

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- California Department of Fish and Game (CDFG). 1999. *State and Federally Listed Endangered, Threatened, and Rare Plants of California*. Natural Diversity Data Base. October.
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- Skinner, M.W. and B.M. Pavlik. 1999. *Electronic Inventory of Rare and Endangered Vascular Plants of California*. Fifth ed. update. California Native Plant Society, Sacramento, California. January 1.
- Sycamore 2000. *Biological Constraints Analysis for East 18th Street Planning Area, Antioch, Contra Costa County, California*. Unpublished Technical Report prepared for Richard T. Loewke, AICP, Alamo, CA. May 26.
- U.S. Fish and Wildlife Service (USFWS). 1995. *Endangered and Threatened Wildlife and Plants*. 50 CFR 17.11 & 17.12. October 31.
- U.S. Fish and Wildlife Service (USFWS). 1996a. *Endangered and Threatened Plant and Animal Taxa; Proposed Rule*. 50 CFR part 17. February 28.
- U.S. Fish and Wildlife Service (USFWS). 1996b. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. September 23.



Appendix A-3

SYCAMORE ASSOCIATES LLC

1220 Oakland Blvd., Ste. 100 • Walnut Creek, California 94596 • 925-279-0580 • fax: 925-279-0581 • e-mail: syc@pacbell.net

July 24, 2000

Mr. Dick Loewke
55 Oak Trail Court
Alamo, CA 94507

RE: Habitat Assessment for Special-Status Insects and Invertebrates at the East 18th Street Planning Area, Antioch, Contra Costa County, California

Dear Dick:

The attached report presents the results from Dick Arnold's invertebrate habitat assessment. He considers the potential of 21 invertebrate species to occur within the East 18th Street Planning Area located in Antioch, Contra Costa County, California. His assessment is based in part on the presence or absence of appropriate habitat and location of nearby occurrences. He used a database developed by his own firm, "BUGGY", CNDDDB (2000), pertinent literature and his prior experience with these taxa for background information. In addition, Dr. Arnold made a site visit to survey for and evaluate the quality of the habitat present on site. This assessment, however, does not constitute a thorough status or protocol-level survey to determine presence or absence of these species at the project site.

The report contains background information and likelihood of each species to occur on site. Three of the taxa considered in this report are federally-listed as Threatened or Endangered. The remaining 18 taxa could be considered rare under the California Environmental Quality Act (CEQA) or were formerly-listed as federal species of concern. Based on the results from this habitat assessment, none of these taxa are expected to occur on site due to lack of appropriate habitat or the marginal quality of the habitat on site. Based on the above findings, further surveys do not appear warranted.

Please see enclosed report and feel free to call with any questions you may have.

Sincerely,

Susan E. Townsend, Ph.D.
Sycamore Associates LLC

Entomological Consulting Services, Ltd.

104 Mountain View Court, Pleasant Hill, CA 94523 • (925) 825-3784 • FAX 827-1809
bugdctr@home.com • www.ecsltd.com

17 July 2000

Sue Townsend, Ph.D.
Sycamore Associates, LLC
1220 Oakland Blvd., Suite 1000
Walnut Creek, CA 94596-4382

RE: Sycamore - Loewke 3A
East 18th Street Planning Area, Antioch, CA
Habitat assessment for special-status insects and invertebrates

Dear Sue:

At your request, I conducted a habitat assessment for 21 special-status insects and invertebrates, which might potentially occur at the East 18th Street Planning Area, located in Antioch (Contra Costa County), CA. Several of these species were on your original list of special-status taxa. I added others because: a) the site is located near Antioch Dunes or other nearby locations within the geographic ranges of these additional species; b) some species are associated with sandy soils, as have been identified from the site; and c) habitats that could occur at the site. Historical records for all of the species that I included in my assessment indicate that they have been observed in northeastern Contra Costa County or nearby areas. Most of these species are associated either with sand-based terrestrial or freshwater aquatic habitats in the Delta area.

In preparing my habitat assessment report, I reviewed a report prepared by Sycamore Associates, LLC, titled "Biological Constraints Analysis for East 18th Street Planning Area, Antioch, Contra Costa County, California." Also, I visited the site on July 4th and walked throughout the property to assess the suitability of habitat conditions there to support special-status insects and invertebrates, which might potentially occur there. The following 21 species of special-status invertebrates were included in my evaluation:

- a) Lange's Metalmark butterfly (*Apodemia mormo langei*);
- b) Valley Elderberry Longhorn beetle (*Desmocerus californicus dimorphus*);
- c) Ciervo Aegialian scarab beetle (*Aegialia concinna*);
- d) San Joaquin Dune beetle (*Coelus gracilis*);
- e) Curved-foot *Hygrotus* Diving beetle (*Hygrotus curvipes*);
- f) Molestan Blister beetle (*Lytta molesta*);
- g) Antioch Dunes anthicid beetle (*Anthicus antiochensis*);
- h) Sacramento anthicid beetle (*Anthicus sacramento*);
- i) Delta June beetle (*Polyphylla stellata*);
- j) Yellow-banded Andrenid bee (*Perdita hirticeps luteocincta*);
- k) Antioch Andrenid bee (*Perdita scitula antiochensis*);
- l) Redheaded Sphecid wasp (*Eucerceris ruficeps*);

Habitat Assessment for the East 18th Street Planning Area in Antioch, CA

Page 1

- m) Antioch Sphecid wasp (*Philanthus nasalis*);
- n) Antioch Mutillid wasp (*Myrmosula pacifica*);
- o) Antioch Cophuran robberfly (*Cophura hurdi*);
- p) Antioch Efferian robberfly (*Efferia antiochi*);
- q) Hurd's Metapogon robberfly (*Metapogon hurdi*);
- r) Middlekauff's shieldback katydid (*Idiostatus middlekauffi*);
- s) Shieldback katydid (*Neduba extincta*);
- t) Vernal Pool Fairy shrimp (*Branchinecta lynchi*); and
- u) California Linderiella (*Linderiella occidentalis*).

BACKGROUND INFORMATION

This section briefly summarizes available information about the distribution, natural history, and known habitat requirements about each of the invertebrate species of concern. For some species, such information is quite limited, hence my discussion about such species is somewhat abbreviated compared to other taxa.

My firm has developed and maintains a computerized database, known as "BUGGY", on the rare and special-status insects and invertebrates that occur in California. The contents of BUGGY are similar to the California Natural Diversity Database (CNDDDB), which is maintained by the California Department of Fish & Game. However, BUGGY contains approximately 50,000 specimen records for California's special-status insects and invertebrates that are housed in various North American institutional and private collections, literature citations, and other pertinent information about the distribution, life history, status, and taxonomic specialists for each taxon. Background information for the species discussed in this report was taken from the BUGGY database, the CNDDDB (2000), pertinent literature, and my prior experience with these taxa.

Pursuant to provisions of the Endangered Species Act of 1973, as amended, the U.S. Fish & Wildlife Service (USFWS) presently recognizes the Lange's Metalmark butterfly as an endangered species, and the Valley Elderberry Longhorn beetle and Vernal Pool Fairy shrimp as threatened species. All of the remaining taxa are either species of concern or would be considered rare species as defined by the California Environmental Quality Act (CEQA). At this time, none of the invertebrates are recognized by the California Department of Fish & Game as endangered, threatened, or sensitive species. The remainder of this section provides some pertinent background information about each taxon.

Lange's Metalmark Butterfly.

Apodemia mormo langei Comstock, 1938 (Lepidoptera: Lycaenidae: Riodininae) is one of the first insects from California to be recognized at the federal level as an endangered species under the Endangered Species Act of 1973. Today, this butterfly is known from only the Antioch Dunes in Contra Costa County. Historically, it may have been found at other sandy deposits, especially Delhi sands, in eastern Contra Costa County, wherever its foodplant, *Eriogonum nudum* ssp. *auriculatum* (Polygonaceae) grew.

Adults are active in August and September. Both adults and larvae of this endangered butterfly feed on this single foodplant, which is commonly referred to as Naked Buckwheat. Larvae feed on the leaves, flowers, and stems, while adults drink the nectar. Adults will occasionally visit other dune endemic composites for nectar (Arnold 1983).

Valley Elderberry Longhorn Beetle.

In 1980, the USFWS recognized the Valley Elderberry Longhorn Beetle (VELB) as a threatened species and designated portions of Putah Creek in Yolo and Solano counties and the American River in Sacramento County as critical habitat (USFWS 1980). The VELB (Coleoptera: Cerambycidae) was recognized as a threatened species because of loss and alteration of its riparian habitat and because it naturally occurs at low population densities.

Subsequent surveys have demonstrated that the VELB is more widespread. At this time, the VELB is known from widely scattered localities in the Central Valley and surrounding foothill locations. Adult specimens have been collected in locations ranging from the Kaweah River in Tulare County by Jeff Halstead (Barr 1991) to Red Bluff in Tehama County by Jones & Stokes Associates, Inc. (Barr 1991). Exit holes have been observed in elderberries growing as far north as the Shasta/Tehama county line (Barr 1991) and as far south as Caliente Creek in Kern County (Shields 1990a and 1990b).

The VELB generally occurs along waterways and in floodplains that support remnant stands of riparian vegetation. In particular, elderberry (*Sambucus* sp.: Caprifoliaceae) must be present, as both larvae and adults feed on this shrub or small tree. The VELB has also been observed in the Sierran foothills, particularly in Fresno, Madera, and Placer counties. At these foothill locations, the VELB is not restricted to riparian habitats. To the best of my knowledge, the nearest known records of the VELB to the proposed project site are from several localities, west and southwest of Stockton along the Middle and San Joaquin Rivers.

Ciervo Aegialian Scarab Beetle.

Since its original description in 1977 (Gordon and Cartwright 1977), the Ciervo Aegialian Scarab beetle, *Aegialia concinna* (Coleoptera: Scarabaeidae), has been found at only three general locations: a) the Ciervo Hills-Monocline Ridge area of Fresno County; b) the Panoche Road area of San Benito County; and c) the Antioch Dunes of Contra Costa County (Gordon and Cartwright 1988).

Members of the genus *Aegialia* burrow in sand deposits, such as coastal or inland dunes, and presumably feed on detritus. They are most frequently found in association with the roots of shrubs and grasses.

San Joaquin Dune Beetle.

Coelus gracilis Blaisdell, 1939, is a flightless beetle (Coleoptera: Tenebrionidae) that is found burrowing in sand dunes. Historically, it was collected at the Antioch Dunes prior to World War II, but has not been seen there since the early 1950's. This beetle is also known from a limited number of sandy localities in Fresno and Kings County (Doyen 1976).

Peak activity of the beetle is unclear because in drier climates dune beetles are only active during the winter, while coastal population are only active during the summer. This beetle is a nocturnal detritivore, which feeds on decaying vegetation. Adults can be observed on the sand surface on cool, damp nights. Adults and larvae can also be found buried in the sand at depths of one to 12 inches.

Curved-Foot *Hygrotus* Diving Beetle.

Hygrotus curvipes (Leach), 1936, is an aquatic beetle (Coleoptera: Dystiscidae), which was described from a series of specimens collected at a single pond in Oakley (Contra Costa County) in 1936 (Leach 1938). More recent surveys have found this beetle at several sites within the Kellogg Creek watershed and at additional sites near the watershed (Jones & Stokes Associates, Inc. 1990). In 1990 and 1991, I found the CFHDB at the Byron Airport and along Brushy Creek in southeastern Contra Costa County and at several sites between the airport and Mountain House, in northeastern Alameda County (Entomological Consulting Services, Ltd. 1990a and 1990b).

The preferred habitat of the aquatic-dwelling CFHDB is small, drying, mineralized pools formed by winter rains, plus small ponds, or pools in intermittent streams. Most of the sites are fringed by salt and salt-tolerant vegetation, for example salt grass, *Distichlis spicata* (Gramineae). The beetle has also occasionally been found in stock ponds that are near mineralized pools or intermittent streams.

Molestan Blister Beetle.

Lytta molesta, the Molestan Blister beetle, was described in the late 1800's. It is among 15 species in the genus *Lytta* that occur in the Central Valley of California (Selander 1960). Collection records (BUGGY 2000; CNDDDB 2000; Selander 1960; and Halstead and Haines 1992) indicate that approximately 250 specimens of *L. molesta* have been collected at about 30 locations, primarily in the San Joaquin Valley. The nearest records for this species to the project site are from Brentwood and the hills, three miles southwest of Brentwood (BUGGY 2000; Selander 1960).

Specific biological information about *L. molesta* is unknown, however, several related species of *Lytta* are believed to be parasitic on wild, ground-nesting bees. Recorded hosts include Anthophorid bees of the genera *Anthophora*, *Diadasia*, *Emphoropsis*, and *Ptilothrix*, Andrenid bees in the genus *Andrena* (Andrenidae) and Colletid bees in the genus *Colletes* (Hurd 1979; Selander 1960). These bees often make their nests in sandy or hardpan type soils. Adult beetles congregate on various foodplants that typically grow in valley grassland and vernal pool habitats. Specific bee hosts for *L. molesta* are not known, but would likely include members of the aforementioned bee genera.

Known foodplants for species of *Lytta* include native species of Leguminosae, Convolvulaceae, Compositae, Papaveraceae, and Rosaceae plus the introduced filaree, *Erodium cicutarium* (Geraneaceae) (Selander 1960; MacSwain 1956; BUGGY 2000 [specimen label data]). The adult beetle feeds on both the petals and pollen. These same plants are also visited by the above-mentioned bees, which serve as hosts for developing larvae of *Lytta*. Specimen

label data (Selander 1960; MacSwain 1956; BUGGY 2000) indicates the use of *Lupinus* and *Erodium cicutarium* flowers by *Lytta molesta*. Also, the triungulin larval stage of *L. molesta* have been found on *Lupinus* flowers (MacSwain 1956).

Adult *Lytta* beetles are most frequently observed in March and April, but there are also a few collection dates during May, June, and July. Nearly all collection records from the floor of the Central Valley are prior to 1952, with most from the 1920's and 1930's. *L. molesta* was last collected on the valley floor in 1952 at Wasco in Kern County. More recent collections have occurred in 1980 and 1991 at Big Table Mountain, in Madera County (BUGGY 2000).

Delta June Beetle.

Polyphylla stellata Young 1986 (Coleoptera: Scarabaeidae), was described from specimens collected in Carmichael (Sacramento County), but has also been found at the Antioch Dunes and other sandy localities in the Delta (Young 1988). At this time, little is known about the biology and specific habitat requirements of this beetle. Based on the biology of related species, the larvae of this beetles (referred to as "grubs"), are probably root feeders in sandy soils. Females are flightless and remain in their burrows, while females are active fliers and are probably attracted to a pheromone emitted by the females. Adults have been found at sites that support oaks (*Quercus*), a suspected foodplant of the larvae.

Antioch Dunes and Sacramento Anthicid Beetles.

Anthicus antiochensis (Coleoptera: Anthicidae) was described by Werner (1975) in 1975 from specimens collected in 1953 at the Antioch Dunes, and until recently, it was known only from the Antioch Dunes. However, recent surveys by Ken Hagen (1986) and Matthew Davis (1991) have discovered new populations of this beetle at four locations along the Sacramento River and near the town of Nicolaus on the Feather River.

Anthicus sacramento Chandler, 1978 was described from specimens collected at several localities in the San Joaquin-Sacramento Delta region. The latter species was formerly found along Putah Creek in Solano County and the Sacramento River in Butte County (Hagen 1986). More recently, Davis (1991) found this species at six locations along the Sacramento River in Solano, Butte, Glenn, Tehama, and Shasta counties; along the Feather River in Sutter County; and at four localities along the San Joaquin River in San Joaquin County.

Based on biological information of related taxa, these beetles are probably scavengers or detritus feeders that live in loose, fine-grained sand that is sparsely vegetated. Both beetles have been collected in natural sand deposits, such as sand dunes, sand bars, or riverine alluvial fans, and man-made deposits, such as dredge spoils.

Adults are active at night, foraging on the surface of the sand, and burrow in the sand during daytime. Adults have been collected throughout the year, but appear to be most common in June and July. Larvae have been observed in April and May. Despite the lengthy period of activity, each species appears to have only one generation per year.

Andrenid Bees.

Both *Perdita hirticeps luteocincta* Timberlake, 1960, and *P. scitula antiochensis* Timberlake, 1960, were described from the Antioch sand dunes (Timberlake). The former taxon is known only from the type series collected in 1936, while the latter has been collected more recently at Antioch and nearby Oakley. Both bees (Hymenoptera: Andrenidae) are active in the late summer and early fall months. They are active pollinators of *Gutierrezia californica*, *Eriogonum nudum*, and probably late-summer flowering composites.

Redheaded Sphecid Wasp.

Although *Eucerceris ruficeps* Scullen, 1948 (Hymenoptera: Sphecidae) is known from a few sites in the Delta and foothills of the Central Valley, most specimens have been collected at the Antioch Dunes, its type locality. This wasp nests in the sand. At the Antioch Dunes, Linsley and MacSwain (1954) found it nesting in hard-packed sand, where the wasp was using abandoned burrows of halictine bees. Weevils (Coleoptera: Curculionidae) of the genera *Sitona* and *Dysticheus* were found as prey items in the nests.

Antioch Dunes Sphecid.

Philanthus nasalis Bohart, 1972 (Hymenoptera: Sphecidae) is known only from the type series, collected 1948 and 1959 at Antioch. It is feared to be extinct at the dunes.

Antioch Mutillid Wasp.

Myrmosula pacifica (Mickel), 1940 (Hymenoptera: Mutillidae), is known from only one specimen collected at Antioch in 1938. Wasbauer (1974) considered it likely to be a synonym of *M. exaggerata* (Krombein), which is a widespread species. Mutillids are ant-like wasps that nest in the ground, usually in sandy soils.

Three Robberflies.

Cophura hurdi Hull, 1960, *Efferia antiochi* Wilcox, 1966, and *Metapogon hurdi* Wilcox, 1964 are robberflies (Diptera: Asilidae) that are associated with the Antioch Dunes. *Cophura hurdi* was described from a single specimen collected at Antioch in 1939, but unfortunately the type specimen was lost and the taxonomic status of this robberfly is uncertain due to possible confusion with another species. *Efferia antiochi* was named for its type locality, but this robberfly is also known from other localities in the Central Valley south to Fresno County. *Metapogon hurdi* was described from the Antioch Dunes, but is also known from Fresno County. All three robberflies are predaceous on other insects, probably taxa that are associated with sand dunes or loose sandy deposits.

Two Katydid.

Idiostatus middlekauffi (Orthoptera: Tettigoniidae) is known only from the Antioch Dunes (Rentz 1973), where it was collected between 1937 and 1965, but has not been seen since despite intensive searches. This species lived on various shrubs indigenous to the dunes. It was active between April and August.

Neduba extincta is known only from a single specimen, collected at the Antioch Dunes in 1937. It is feared to be extinct. Unfortunately, nothing is known about its natural history.

Fairy Shrimps.

The Vernal Pool fairy shrimp, *Branchinecta lynchi* (Anostraca: Branchinectidae) was described as a new species in 1990 by Eng, Belk, and Erikson (1990) and was recognized by the U.S. Fish & Wildlife Service as a threatened species status a few years later. The Vernal Pool fairy shrimp is known from southern Oregon, a number of locations throughout the Central Valley, as far south as Riverside County, and from a few locations in the Coast Range as far south as Santa Barbara County. This fairy shrimp is associated with vernal pools and grassy swales that are usually characterized by clear to tea-colored water. Collection records range from December through May, but probably vary considerably from year-to-year and in different localities depending upon the timing of winter rains.

A common cohabitant in these types of vernal pools is the California Linderiella, *Linderiella occidentalis* (Anostraca: Linderiellidae), whose distribution includes several locations in the Central Valley and Coast Range mountains, between Tehama and Riverside counties. This species was described in the 1920's from the Stanford University campus in Palo Alto. Collection records range from October through May, but the actual annual activity period at a particular location will vary depending upon winter precipitation levels and the timing of winter rains. The nearest locality records for both species are from the Brentwood area and Byron Airport, where both fairy shrimp are associated with alkali vernal pools.

Fairy shrimp are among the most characteristic inhabitants of temporary ponds and pools of water, especially vernal pools that form in the spring after winter rains. They are absent from running waters, and unlike all other groups of crustaceans, there are no true marine species. Most species feed on algae, phytoplankton, bacteria, protozoans, rotifers, and other detrital material that is suspended in the water, hence they are referred to as suspension feeders.

HABITAT ASSESSMENT EVALUATION

A habitat assessment evaluation was conducted for each of the 21 special-status insect and invertebrate taxa considered in this report during my site visit on July 4th. I walked throughout the 183-acre project site to identify the habitats present and to evaluate the suitability of existing habitat conditions to support each of the special-status insect and invertebrate species, based on their respective habitat requirements and available information about their natural histories.

The timing of my visit did not coincide with the activity periods for most of the taxa of concern. Although I briefly searched for a couple of species that were active at the time of my visit, thorough status surveys were not conducted for any of the invertebrates treated in this report to determine their presence or absence at the project site.

Approximately one-sixth of the project site has been developed, including a golf driving range, small office and industrial buildings, a car repair and towing facility, and retail businesses. Undeveloped portions of the project site are characterized primarily by cultivated vineyards. Remaining terrestrial areas are characterized by ruderal, non-native grasslands.

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Resident plant species included numerous non-native taxa as well as natives adapted to living in disturbed habitats. Flood control detention basins support freshwater marsh vegetation. This area could not be inspected more carefully as it was fenced and inaccessible.

Sandy soils, such as those that characterize the nearby Antioch Dunes, were observed at the project site. However, past and current land uses appear to have eliminated most of the vegetation indigenous to sand dunes.

The remainder of this section discusses my habitat evaluation for each of the special-status species considered. For most of the taxa, the conversion of the former native plant communities to pasture land has rendered the site unsuitable for habitation.

Lange's Metalmark Butterfly.

Because its sole larval foodplant, *Eriogonum nudum* ssp. *auriculatum*, is apparently absent from the site, this butterfly would not be expected to occur there.

Valley Elderberry Longhorn Beetle.

This beetle is usually found in or near riparian areas where its elderberry foodplant grows. As no elderberry plants were observed at the project site, the beetle would not be expected to occur there.

Ciervo Aegialian Scarab Beetle.

Undeveloped portions of the project site are characterized by ruderal grassland, vineyards, or detention basins, habitats that do not support this beetle. For this reason, I doubt that the Ciervo Aegialian Scarab beetle could survive today at the project site despite the presence of sandy soils.

San Joaquin Dune Beetle.

This species burrows in the sand of well-developed sand dunes. Although the sand deposits represent potential habitat for this species, the absence of real sand dunes at the site probably precludes the occurrence of this beetle there. As the dune beetle is active at night and burrows in the sand during the day, I briefly sifted sand in a few portions of the site, but did not find any specimens of this beetle. Based on the lack of sand dunes and the degraded habitat conditions, I doubt that this species occurs at the site.

Curved-foot Hygroplitis Diving Beetle.

The only potential habitat for this species at the project site is the flood control detention basins. At other locations, where I have found this beetle, it is generally associated with a network of alkali vernal pools or alkali pools in a creek channel. The presence of cattail (*Typha* spp.) and willows (*Salix* spp.) in the detention basins suggest that they are semi-permanent wetlands, whereas the beetle is known from ephemeral, seasonal wetlands. For these reasons, I doubt that this beetle occurs at the project site.

Molestan Blister Beetle.

This species is associated with grassland habitats and adults are found on various wild flowers or flowers of native shrubs. Because the native vegetation at the site has been converted

to ruderal grassland, dominated by introduced species, I would not expect this beetle to be found there. Also, the sand deposits are potential areas where the ground-nesting bees that the beetle parasitizes would likely nest. During my site visit, I did not find any burrows of ground-nesting bees in these areas. Because of the disking for fire control, plus the use of insecticides in the vineyards, these sand deposits are probably unsuitable nesting sites for the presumed bee hosts.

Delta Inne Beetle.

I have seen this species in the Sacramento area in riparian-savanna situations on sandy soils. Related species are known to feed on the roots of oaks. Due to the absence of suitable habitat at the project site, I would not expect this beetle to occur at the project site.

Anthicid Beetles.

Both anthicid beetles have been found at other sandy sites, including dredge spoils, but usually along or in close proximity to the shoreline of rivers. I briefly sifted sand at a few locations on site, but did not observe any anthicid beetles. For these reasons, I do not expect either of these beetles to occur at the project site.

Andrenid Bees.

Both of these sand dune indigenous bees nest in tunnels in the ground, however, the disking for fire control and vineyard operations are not compatible with the nesting activities of these bees. These species are known to visit the flowers of various late summer – early fall flowering native plants, especially *Eriogonum* and *Gutierrezia*, which are apparently absent from the project site. For this reason, and the absence of sand dunes, I would not expect these bees to occur at the project site.

Sphecid Wasps.

Both of these species are associated with sand dunes, a habitat that does not occur at the project site. The sand deposits on site are probably too disturbed to support either wasp. For these reasons, I would not expect either species to be found at the project site.

Antioch Mutillid Ant.

As discussed in the background information, this species is probably a synonym of a more widespread mutillid. Thus, this species is probably not as unique as was originally believed.

Three Robberflies.

All three of these species are associated primarily with sand dunes. As discussed in the background information, *Cophura hurdi* is known from only a single specimen and there is uncertainty about the taxonomic status of this species. The sand deposits on site are probably too disturbed to support any of the three robberflies.

Two Katydid.

Neither species of katydid is likely to occur at the project site. Both species were formerly found at the Antioch Dunes, but neither has been seen for several decades. *Neduba extincta* is known from only a single specimen. *Idiostatus middlekauffi* was associated with

various dune indigenous shrubs. Because of the conversion of native plant communities to ruderal grassland and vineyards, I would not expect either katydid to occur at the project site.

Fairy Shrimps.

The detention basins are the only aquatic habitats on site, however they appear to be semi-permanent rather than seasonal wetlands, which would preclude the occurrence of the shrimp at this site.

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If you have any questions about my report, give me a call.

Sincerely,



Richard A. Arnold, Ph.D.
President

Traffic Impact Analysis
of the
East 18th Street Specific Plan
in the
City of Antioch

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May, 2001

Appendix B: Traffic Impact Analysis East 18th Street Specific Plan

Traffic Impact Analysis

East 18th Street Specific Plan in the City of Antioch

(Abrams Associates - May, 2001)

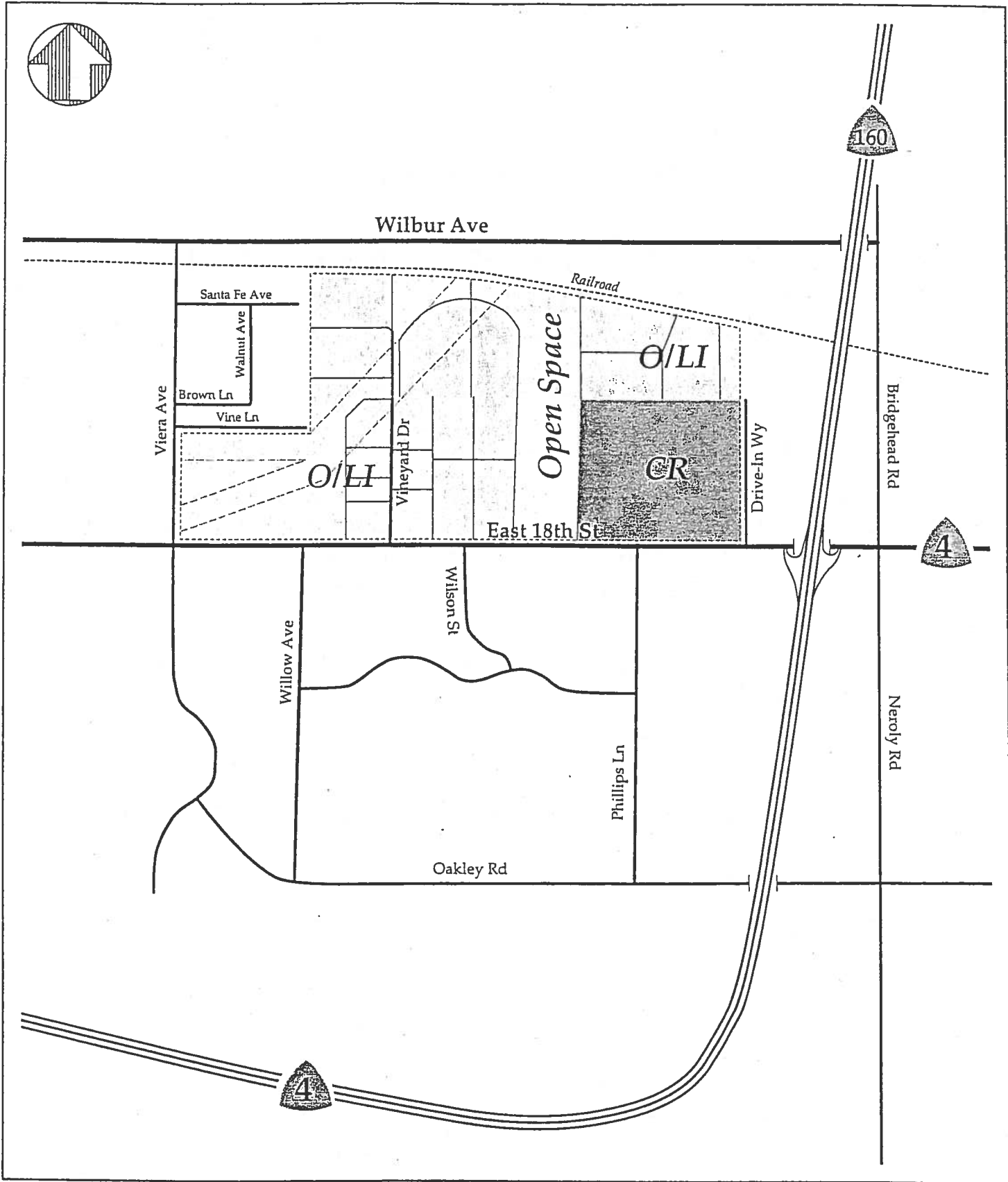
1. Introduction

The City of Antioch is in the process of developing a Specific Plan for the area north of East 18th Street between Viera Avenue and State Highway 160. The East 18th Street Specific Plan is proposed to include changes in zoning and public infrastructure that will enhance the economic viability and development potential of this area. Figure 1 shows the project location and Figure 2 shows some of the proposed zoning changes in this corridor.

The purpose of this report is to consider the traffic impacts of the land use changes and to define the transportation system that is needed to accommodate this growth. The transportation system currently consists of only roadways and highways, but it must also consider future bus transit routes, access to future BART regional rail systems, and bicycle travel and pedestrian environments. For the purposes of this study the properties in the East 18th Street Specific Plan were separated into zones based on the location of access for each. The resulting analysis zones and their development assumptions are summarized on Figure 3.

Four scenarios were addressed in the study:

1. Existing Conditions - this scenario evaluates the existing level-of-service at the project study intersections based on traffic counts taken in January 2001.
2. Existing Plus Traffic Phase 1 Conditions - this scenario includes the analysis of the first traffic phase of the proposed project that assumes build-out of those properties readily accessible without construction of Street "A". As shown in Figure 6, those properties represent roughly 65% of the net buildable acreage in the planning area.
3. Existing Plus Traffic Phase 2 Conditions - this scenario analyzes all of the changes associated with the proposed project and assumes that Street "A" has been constructed and all properties within the planning area have been built-out (see Figure 8).
4. Cumulative Conditions - this scenario includes the analysis of the build out conditions for the surrounding area, projected to be the Year 2020 (See Figure 10).



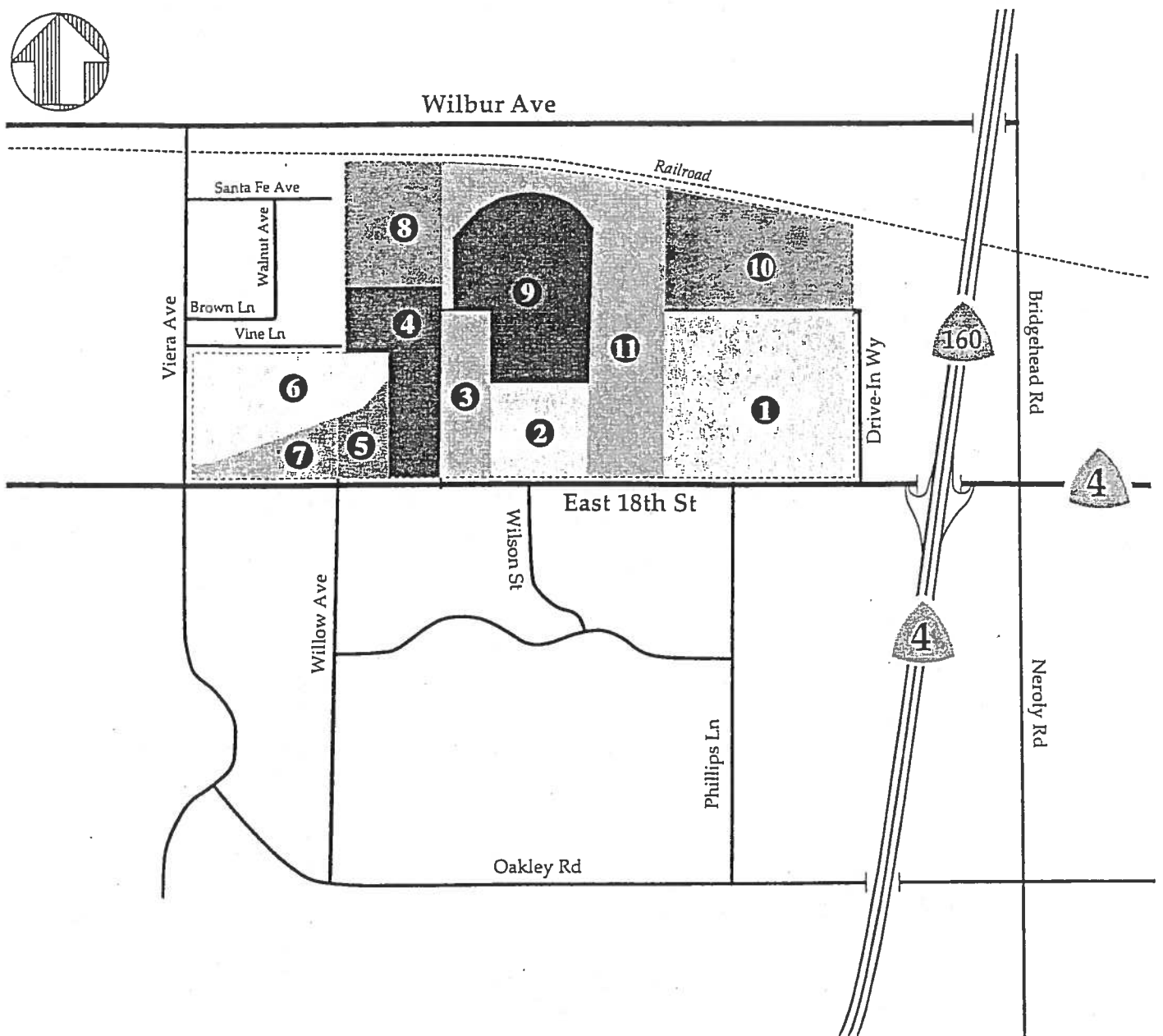
East 18th Street Specific Plan
Traffic Impact Analysis

City of Antioch

Figure 1

Project Location

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Zone	Land Use	Size (acres)	Bldg Size (Square Feet)	PM Peak Hour Trips
1	Regional/Commercial	35	457,380	1,461
2	Light Industrial	10	108,900	162
3	Light Industrial	7.5	81,675	122
4	Light Industrial	9.7	105,633	157
5	Light Industrial	5	54,450	81
6	Light Industrial	3	32,670	49
7	Light Industrial	5	54,450	81
8	Light Industrial	16	201,465	300
9	Light Industrial	20	217,800	195
10	Light Industrial	23	250,470	393
11	Open Space	26	0	0

East 18th Street Specific Plan
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City of Antioch

Figure 3

Specific Plan Buildout Assumptions

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Within the East 18th Street Specific Plan there are eight intersections which have been evaluated. These are as the following.

- 1) East 18th Street and Viera Avenue (Signalized)
- 2) East 18th Street and Willow Avenue
- 3) East 18th Street and Vineyard Drive
- 4) East 18th Street and Wilson Street
- 5) East 18th Street and Phillips Lane
- 6) East 18th Street and Drive-In Way
- 7) East 18th Street and SR 4 WB On-Ramp (Signalized)
- 8) Main Street and SR 4 EB Off-Ramp (Signalized)

2. Existing Conditions

Regional access to the project area is provided by State Route 4 (SR 4). State Route 4 is a four- to six-lane east-west highway in Contra Costa County, providing connections with Interstate 80 (I-80) and I-680, and access to the Pittsburg and Antioch areas to the east.

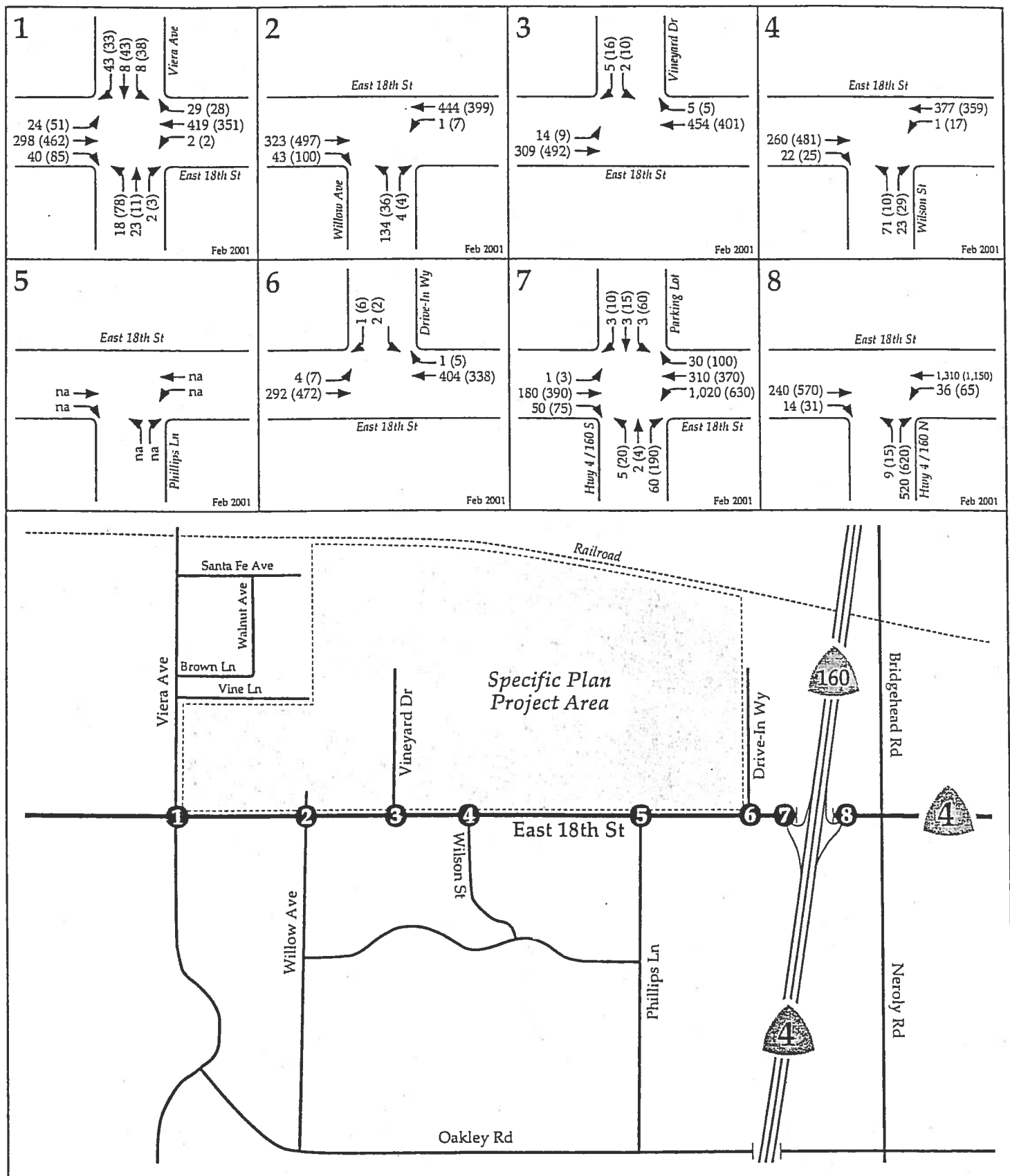
East 18th Street is currently a two-lane roadway between Viera Avenue and the Highway 160 freeway. There are traffic signals at the access to K-Mart on the east and at Viera Avenue on the west. The City of Antioch has plans to reconstruct 18th Street as a four-lane divided highway within these limits, and this widening is expected to occur within the next year.

There is no existing bus transit service on East 18th Street. There are no special bicycle facilities in this area, nor are there any special pedestrian considerations. There are few sidewalks on 18th Street, or on any of the other streets in the area. As a part of the road widening, it is expected that there will be sidewalks on both sides of 18th Street.

Traffic volumes on East 18th Street have been measured to be 7,500 vehicles per day, which is well within the capacity of a two-lane roadway, and all road segments and intersections on East 18th Street are operating at Level of Service "A" and "B".

Existing Traffic Volumes – AM and PM midweek peak-hour turning movement counts were conducted at each of the seven existing study intersections during January of 2001. The results of these counts are presented in Figure 4.

Standards of Significance – East 18th Street is considered to be a Basic Route in the Contra Costa County network. As such, the traffic standards are that any signalized intersections shall not exceed Level of Service (LOS) "E", or exceed a volume to capacity ratio (v/c ratio) of 0.86.



East 18th Street Specific Plan
Traffic Impact Analysis

City of Antioch

Figure 4

Existing AM (PM) Peak
Hour Traffic Volumes

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Intersection Analysis Methodology - The TRB (Transportation Research Board) Circular 212 methodology used in analyzing operations at the proposed signalized intersection is based on the utilization of intersection capacity. This methodology yields both a volume-to-capacity (V/C) ratio and Level-of-Service (LOS) ratings from A to F. For this study, the LOS for signalized intersections has been determined using the most recent 1995 update of the Contra Costa County Transportation Authority's CCTALOS Program (Version 2.35). The level-of-service definitions and corresponding volume to capacity ratios for signalized intersections are included in the Appendix as Table A-1.

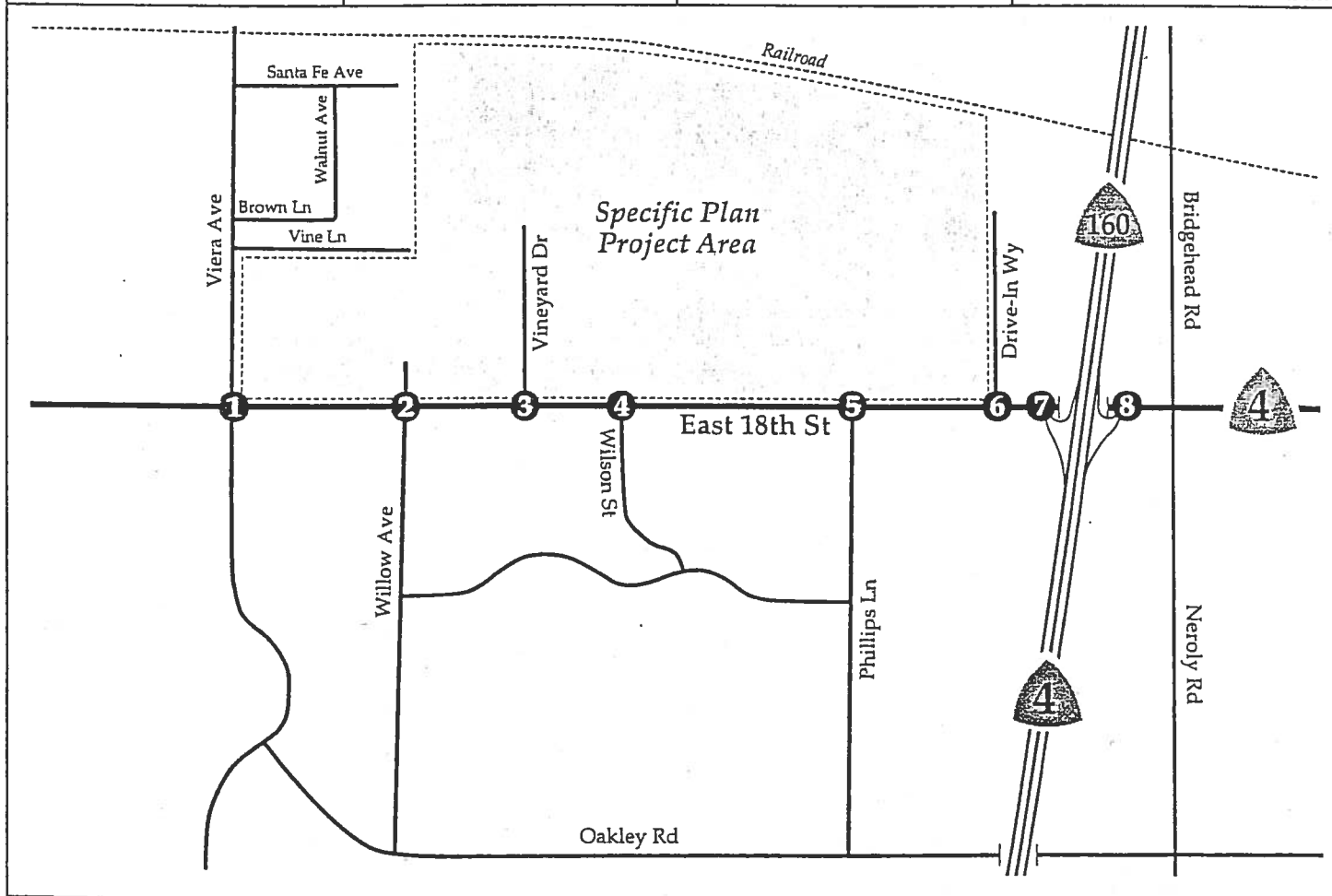
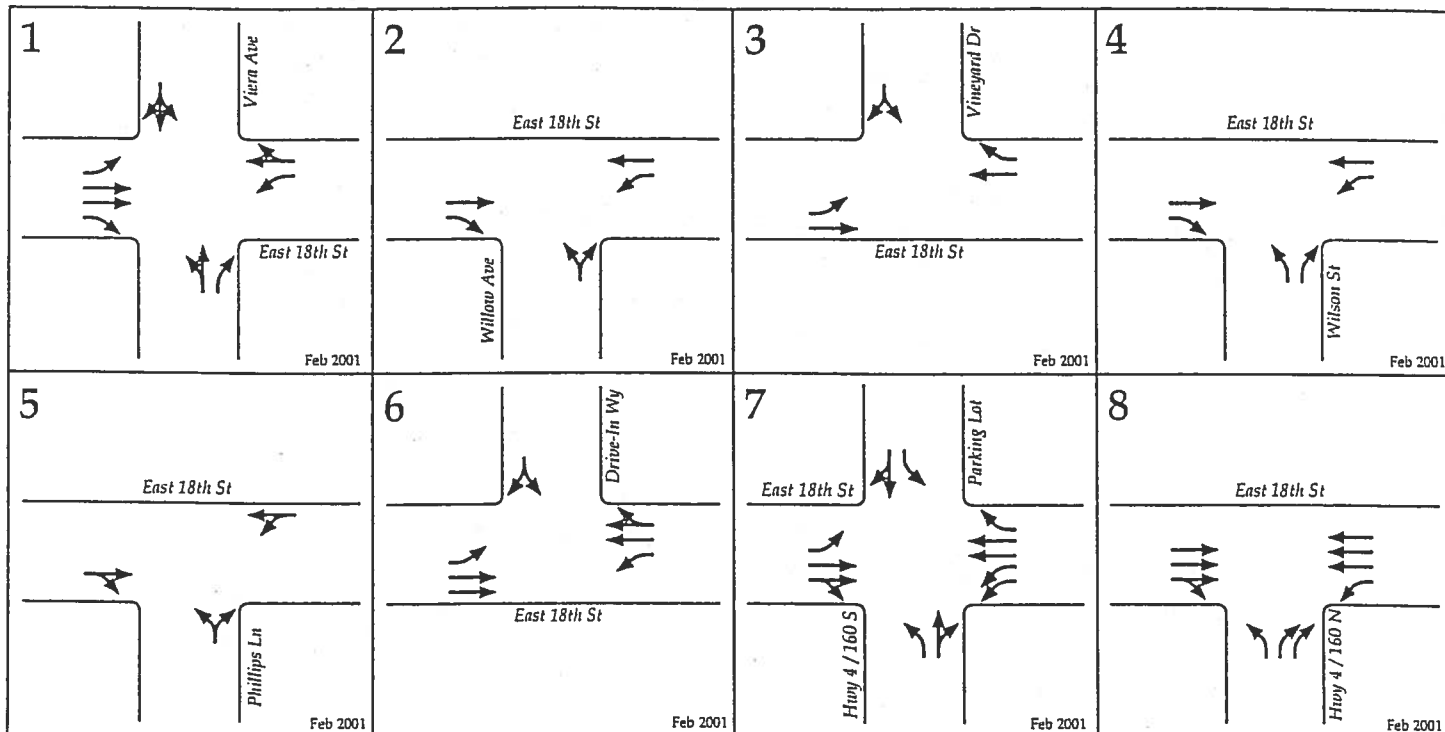
The unsignalized intersections were analyzed using the methodology set forth in Chapter 10 of the Highway Capacity Manual, which is based on average total delay (seconds/vehicle). The capacity of each approach is estimated as a function of the proportion of traffic on each approach, the number of lanes on each approach, and the proportion of turning movements on the opposing and conflicting approaches. With the average total delay for each approach the levels of service for each and for the entire intersection can then be determined. As with signalized intersections, there are six levels of service, A through F, which represents conditions from best to worst, respectively. Table 1 shows the corresponding average total delay per vehicle for each LOS category from A to F.

Table 1
Level of Service Criteria for Unsignalized Intersections

Level of Service (LOS)	Ave Total Delay (sec/veh)	Traffic Condition
A	< 5	No Delay
B	5 - 10	Short Delay
C	10 - 20	Moderate Delay
D	20 - 30	Long Delay
E	30 - 45	Very Long Delay
F	> 45	Volume>Capacity

Existing Intersection Operations - The Highway Capacity Manual methodology was used to calculate the level-of-service at the four unsignalized study intersections. The results of the existing intersection analysis are summarized in Table 2.

The peak hours generally occur from 7:30 to 8:30 AM and from 4:45 to 5:45 PM. The minor street left turns at the two-way stop controlled intersections have some difficult left turn delays but the overall delay at these intersections is acceptable. The existing lane configurations are shown on Figure 5.



East 18th Street Specific Plan
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Figure 5

Existing Lane Configurations

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Table 2
Existing Level-of-Service Conditions at Study intersections

Intersection	Peak Hour	Existing Conditions
1) East 18 th Street and Viera Avenue (Signalized)	AM	A
	PM	A
2) East 18 th Street and Willow Avenue	AM	C (20.0)
	PM	C (17.9)
3) East 18 th Street and Vineyard Drive	AM	B (12.2)
	PM	B (13.4)
4) East 18 th Street and Wilson Street	AM	A (8.1)
	PM	A (8.4)
5) East 18 th Street and Phillips Lane	AM	N/A
	PM	N/A
6) East 18 th Street and Drive-In Way	AM	B (11.7)
	PM	B (10.3)
7) East 18 th Street and SR 4 WB On-Ramp (Signalized)	AM	A
	PM	A
8) Main Street and SR 4 EB Off-Ramp (Signalized)	AM	A
	PM	A

Note: C (17.5) = LOS (Delay in Seconds per Vehicle of the Most Critical Approach)

3. Proposed Specific Plan

The standard methodology for estimating the traffic impacts of a given development consists of three main steps: trip generation, trip distribution, and trip assignment.

Trip Generation in the East 18th Street Corridor - The East 18th Street corridor will be developed primarily as office and light industrial. There will also be a site designated as commercial-retail, which will likely accommodate a second big-box or specialty retail use in addition to K-Mart. There will also be additional development of both multi-family and single family residential areas on the south side of East 18th Street.

The trip generation rates for this development has been estimated using the most current ITE rates taken from the sixth edition of the ITE Trip Generation Manual.¹ Pass-by traffic, i.e., those trips that are already in the existing traffic stream on East 18th Street is estimated to be 10 percent of the regional commercial component while pass-by traffic for all other project uses is considered to be negligible. The total project trips will be as shown in Table 3. Detailed trip generation calculations are included in the appendix as Table A-1.

Table A-1 provides a list of the potential development in zone, and the trip generation from each use. The zones have been selected to group properties together with others that have approximately the same point of access. With full build-out of the area, the

¹ Trip Generation - An Informational Report, 6th Edition, Institute of Transportation Engineers, Washington, D. C., 1997.

office/light industrial properties within the specific plan have the potential to generate over 11,000 vehicle trips on an average weekday, while the retail commercial uses will generate about 15,400 trips per day. The AM and PM weekday peak hours will be the periods of traffic that will have the maximum volumes.

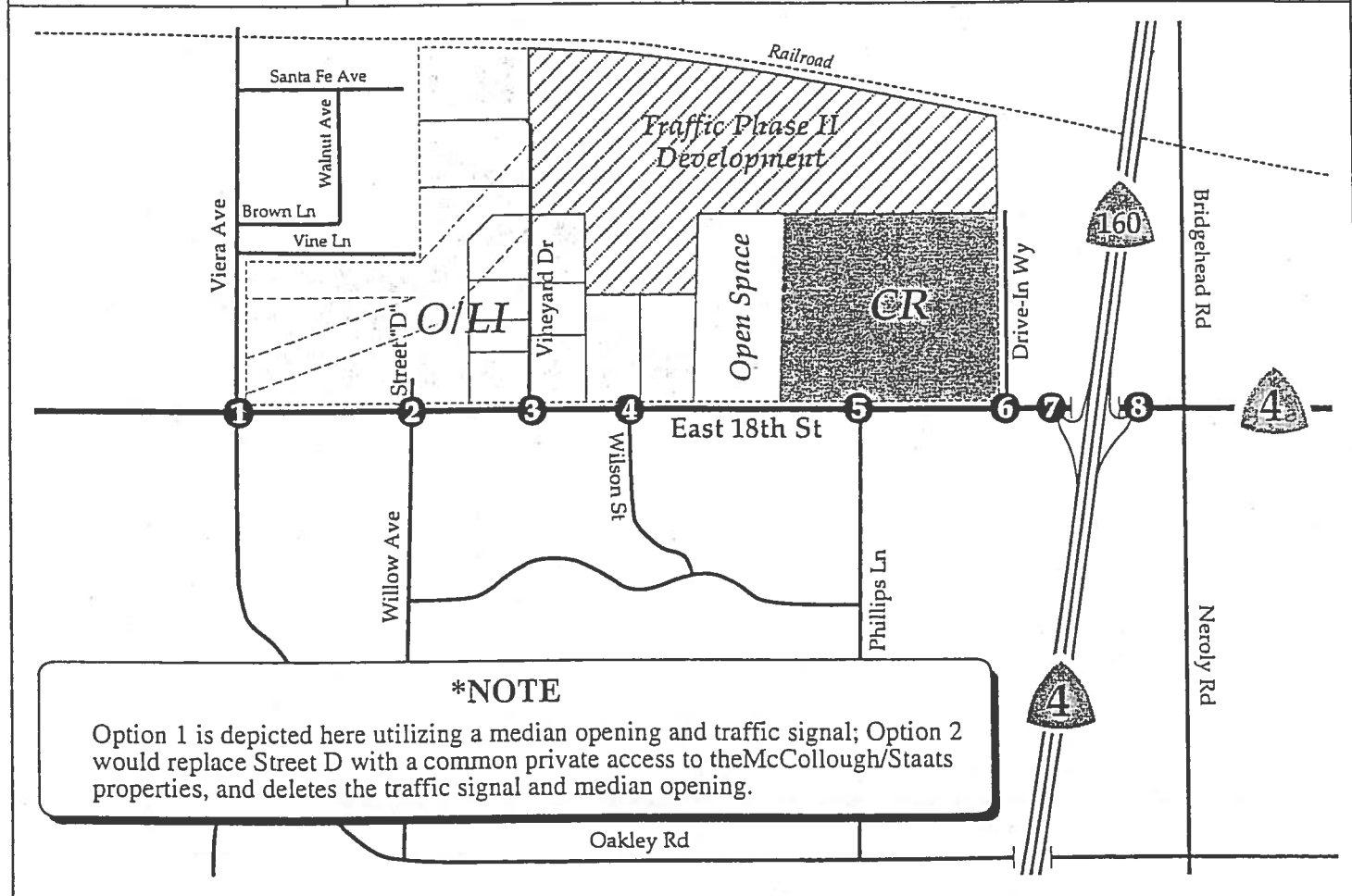
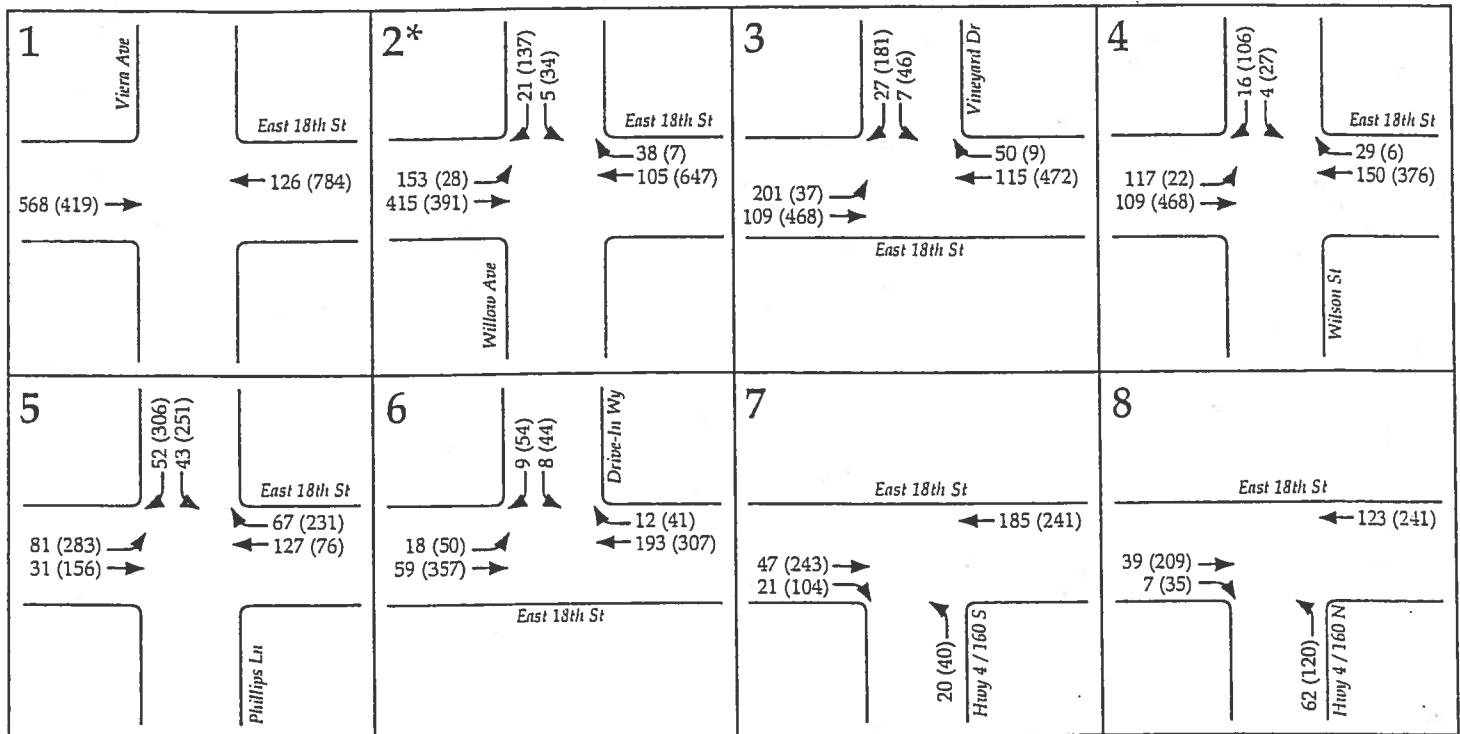
Table 3
Trip Generation Rates Used in this Study

Weekday Trip Generation Rates (per 1000 sq. ft.)							
Type of Development	Daily Trip Rates	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Shopping Center	37.49	0.49	0.32	0.81	1.70	1.85	3.55
Office Building	11.01	1.37	0.19	1.56	0.25	1.24	1.49
Light Industrial/Warehousing	6.97	0.81	0.11	0.92	0.12	0.86	0.98

Resulting Trip Generation							
Development	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Shopping Center / Regional Commercial (est. 450,000 sq ft)	15,432	203	130	333	701	760	1,461
Light Industrial/Office Uses	11,235	1,401	191	1,592	258	1,262	1,520
Project Total	26,667	1,604	321	1,925	960	2,022	2,982

Distribution and Assignment - All traffic generated in this area will ultimately use 18th Street for access. Individual land uses will have different patterns and distribution assumptions have been prepared for each property based on the location and land use. Based on this the future traffic volumes have been forecasted for the various segments of East 18th Street as well as for each of the major intersections. These traffic forecasts assume all properties are completely built-out. For the purposes of these forecasts, it is assumed that this development will occur within the next 10-year period, so the forecast year is assumed to be 2010. This is very likely to be an optimistic assumption of the rate of build-out, but it has been made to illustrate the likely maximum traffic characteristics.

The project trips were distributed onto the local street system based on traffic counts data and land use patterns in the area. Figure 6 shows the number of trips added to each of the study intersections as a result of the designated properties assumed for Traffic Phase I (which does not include Street "A"). Figure 7 shows the number of trips added to each study intersection as a result of adding in Traffic Phase II (which includes the completed Street "A" and all remaining study area properties). The expected turning movements at each of the major intersections are shown for both the AM and PM peak hours.



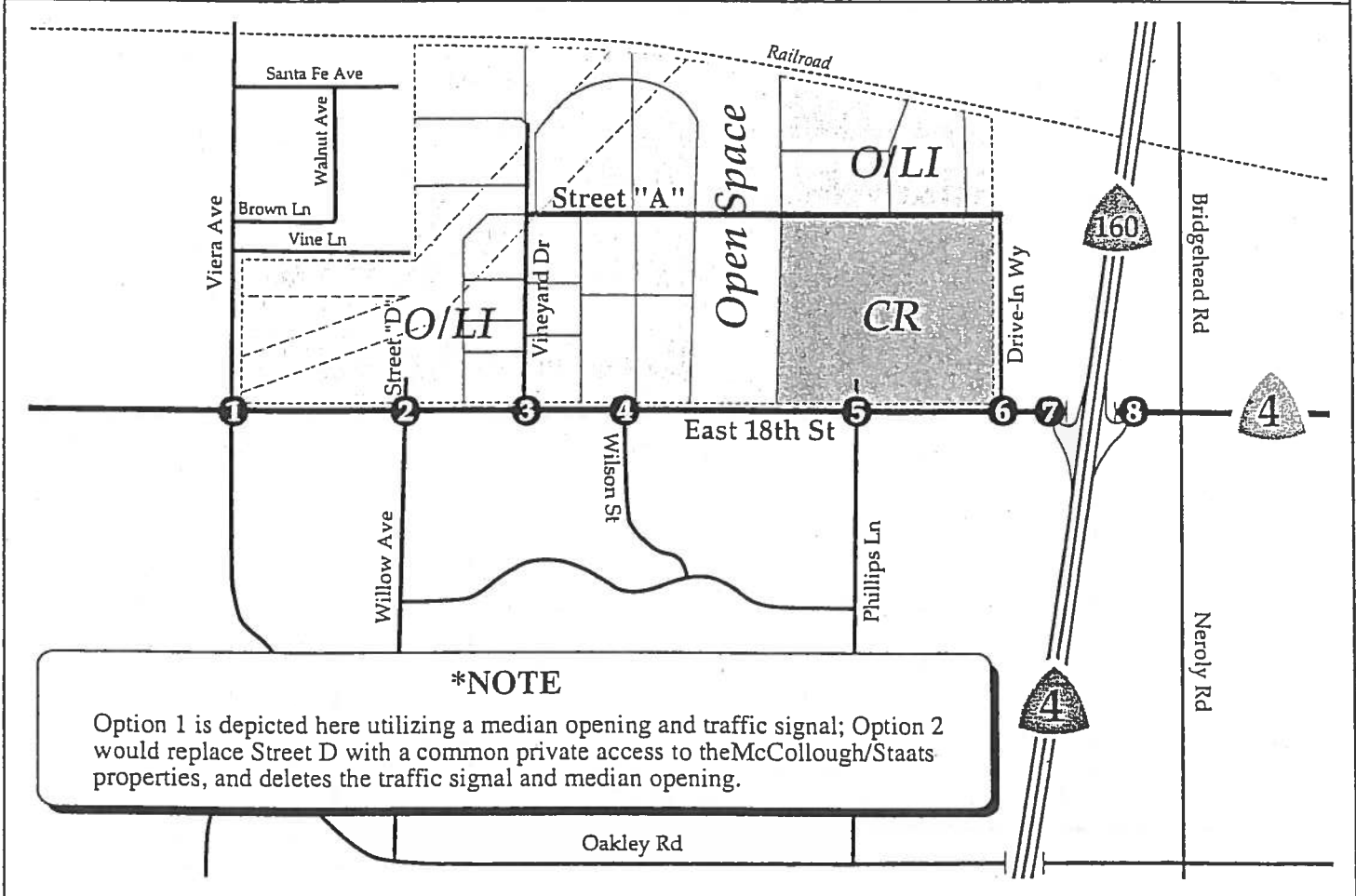
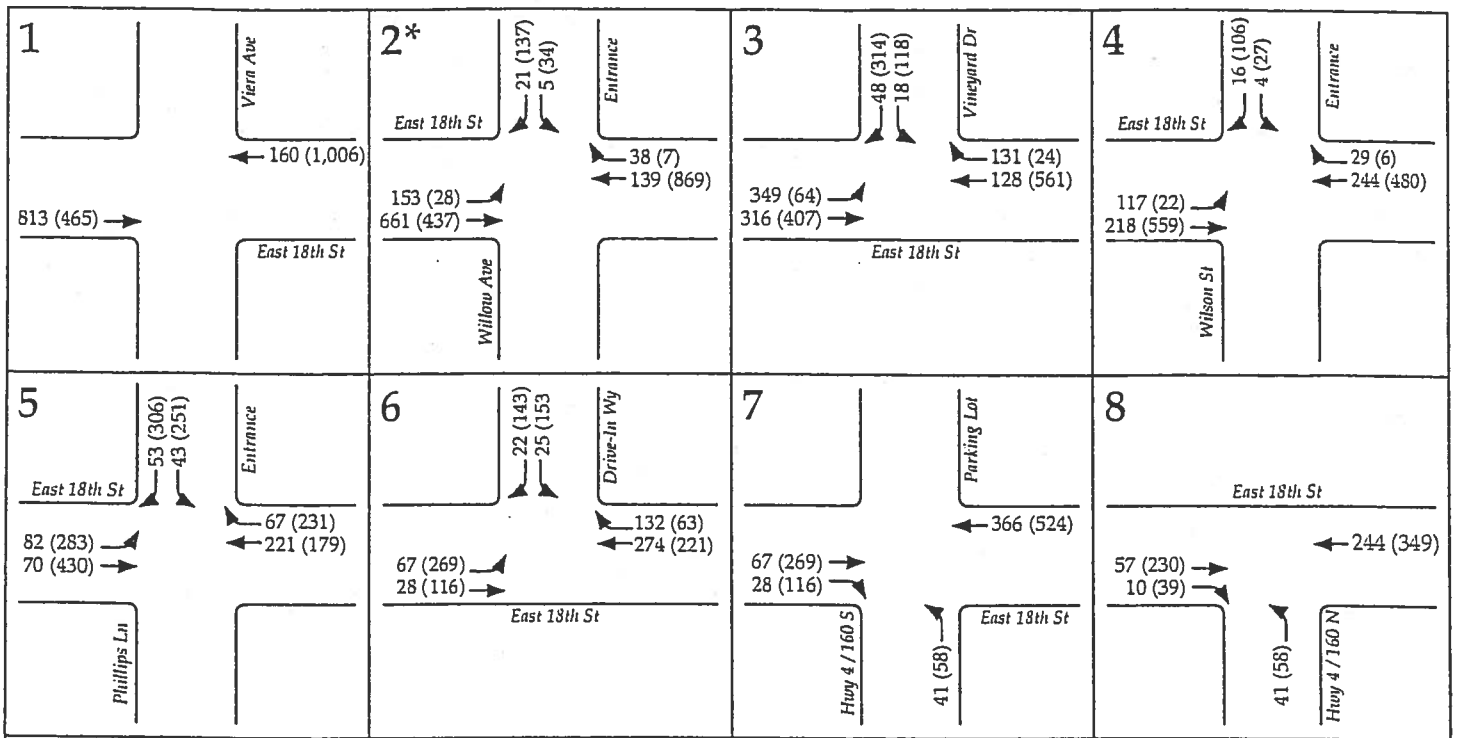
East 18th Street Specific Plan
Traffic Impact Analysis

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Figure 6

Project Trip Distribution
(Traffic Phase 1 - Without Street "A")

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East 18th Street Specific Plan
Traffic Impact Analysis

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Figure 7

Project Trip Distribution
(Traffic Phase II - With Completion of Street "A")

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Existing Plus Project Build-out Intersection Operations - The results of the intersection analysis for this condition are summarized in Table 4. It is assumed that with the widening of East 18th Street to four lanes, including the addition of left and right turn lanes, the future service levels would be as shown on Figure 8. It is also assumed that three traffic signals will be installed on East 18th Street at Willow Avenue / Street D, Vineyard Drive, and at Philips Lane. These would be warranted when the regional commercial property is developed. With these improvements, all intersections would operate at LOS "C" or better during both the AM and PM peak hours.

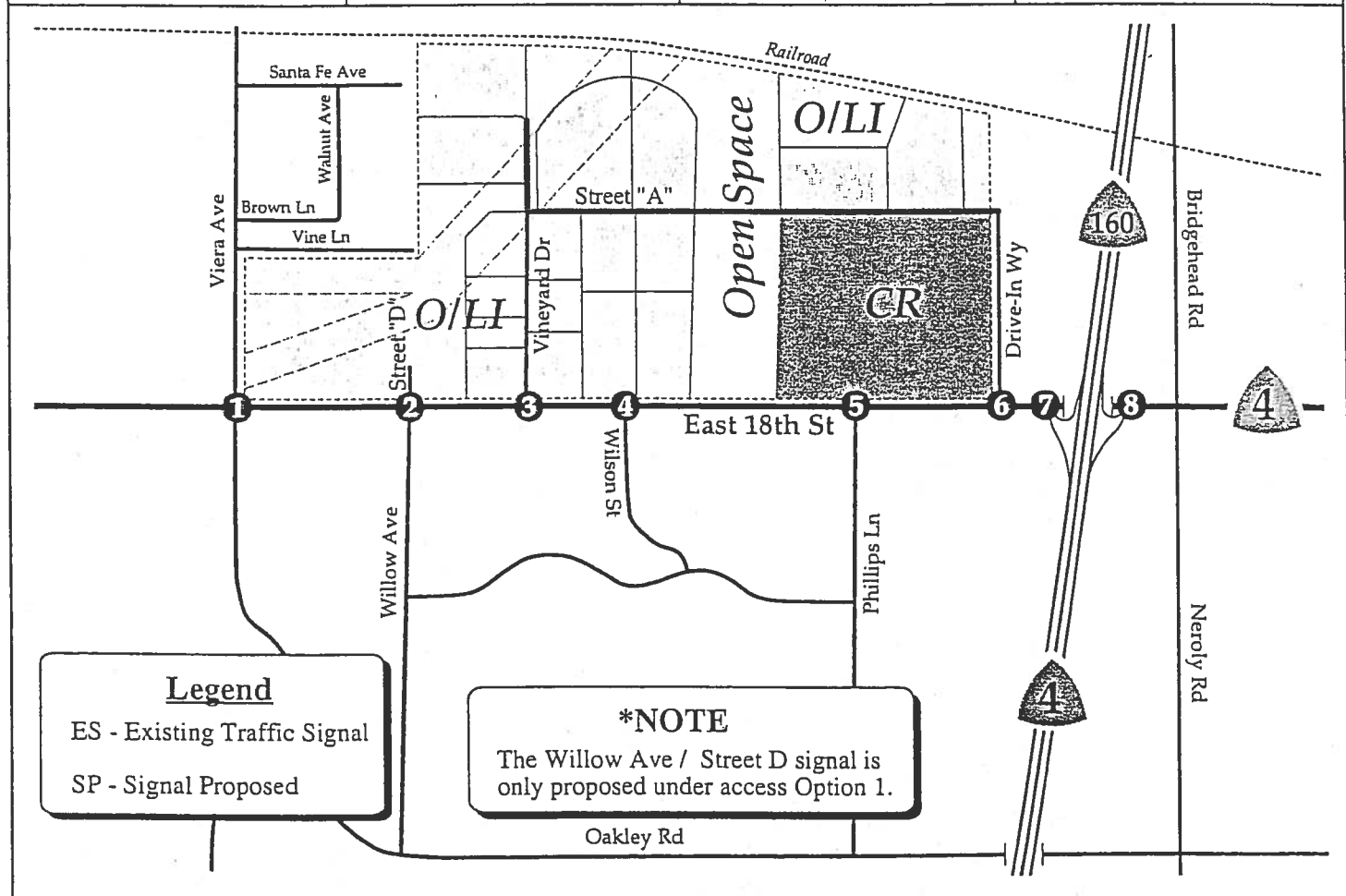
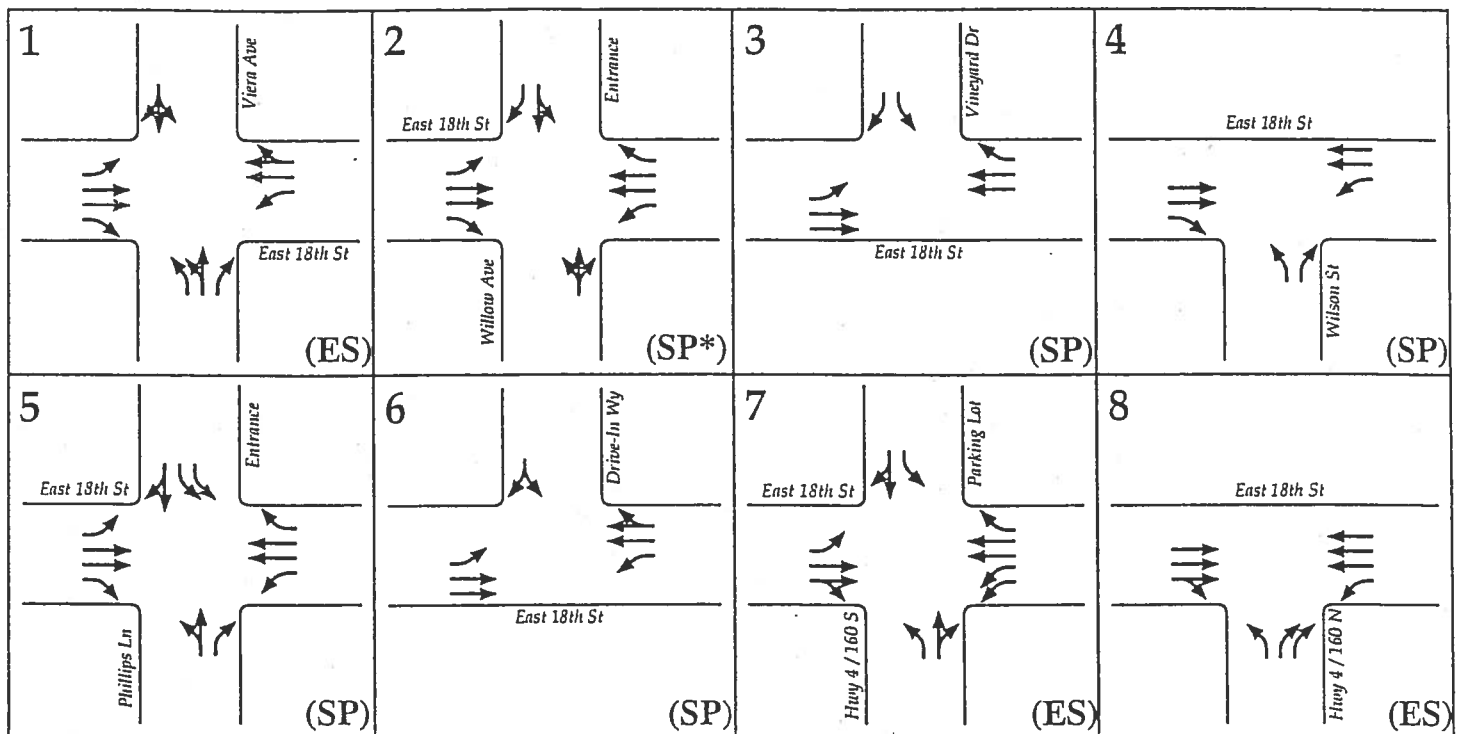
Table 4
Existing Plus Project Level-of-Service Conditions
at Study intersections

Intersection	Peak Hour	Exist. Plus Phase 1 Project	Exist. Plus Phase 2 Project
1) East 18 th Street and Viera Avenue	AM	A	A
	PM	A	A
2) East 18 th Street and Willow Avenue	AM	A (9.5)	A (9.8)
	PM	B (12.2)	B (14.1)
3) East 18 th Street and Vineyard Drive	AM	A	A
	PM	A	A
4) East 18 th Street and Wilson Street	AM	A (8.2)	A (8.9)
	PM	A (8.8)	A (9.4)
5) East 18 th Street and Phillips Lane	AM	A	A
	PM	A	A
6) East 18 th Street and Drive-In Way	AM	A (9.3)	B (10.5)
	PM	B (10.8)	C (21.8)
7) East 18 th Street and SR 4 WB On-Ramp	AM	A	A
	PM	A	A
8) Main Street and SR 4 EB Off-Ramp	AM	A	A
	PM	A	A

Note: C (17.5) = LOS (Delay in Seconds per Vehicle of the Most Critical Approach)

Roadway System Requirements - Based on these assumptions and traffic forecasts, the basic four-lane divided cross-section on East 18th will be more than adequate to handle the ultimate traffic volumes. However, the need for turn lanes and traffic signals will vary at each of the intersections. Figure 8 shows the ultimate lane configurations at each intersection under the Existing plus Project conditions.

Alignment of Street D and Willow Avenue - Several options have been considered for access to the properties across from Willow Avenue. These are labeled as properties 5, 6, and 7 on Figure 3. Based on our LOS analysis, allowing full access onto East 18th Street from multiple driveways in this area is not a viable option. In addition, traffic safety and intersection operations would be adversely affected during even the first phase of area development if unsignalized left-turn movements were allowed in and out of these westerly-most properties. Two alternative access options have therefore been developed for properties 5, 6, and 7.



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Figure 8

Ultimate Lane Configurations
 (Cumulative)

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Option 1 calls for the alignment of the new Street D opposite of Willow Avenue, forming a 4-way signal controlled intersection (as shown on Figure 2). Properties 5, 6, and 7 would all take access from Street D under this option. Implementation would require an agreement among the affected property owners for the sharing of street improvements and signalization costs (see Infrastructure section of Specific Plan). Though more expensive (and dependent upon cooperation between the affected landowners) Option 1 provides an improved level of accessibility on both sides of East 18th Street.

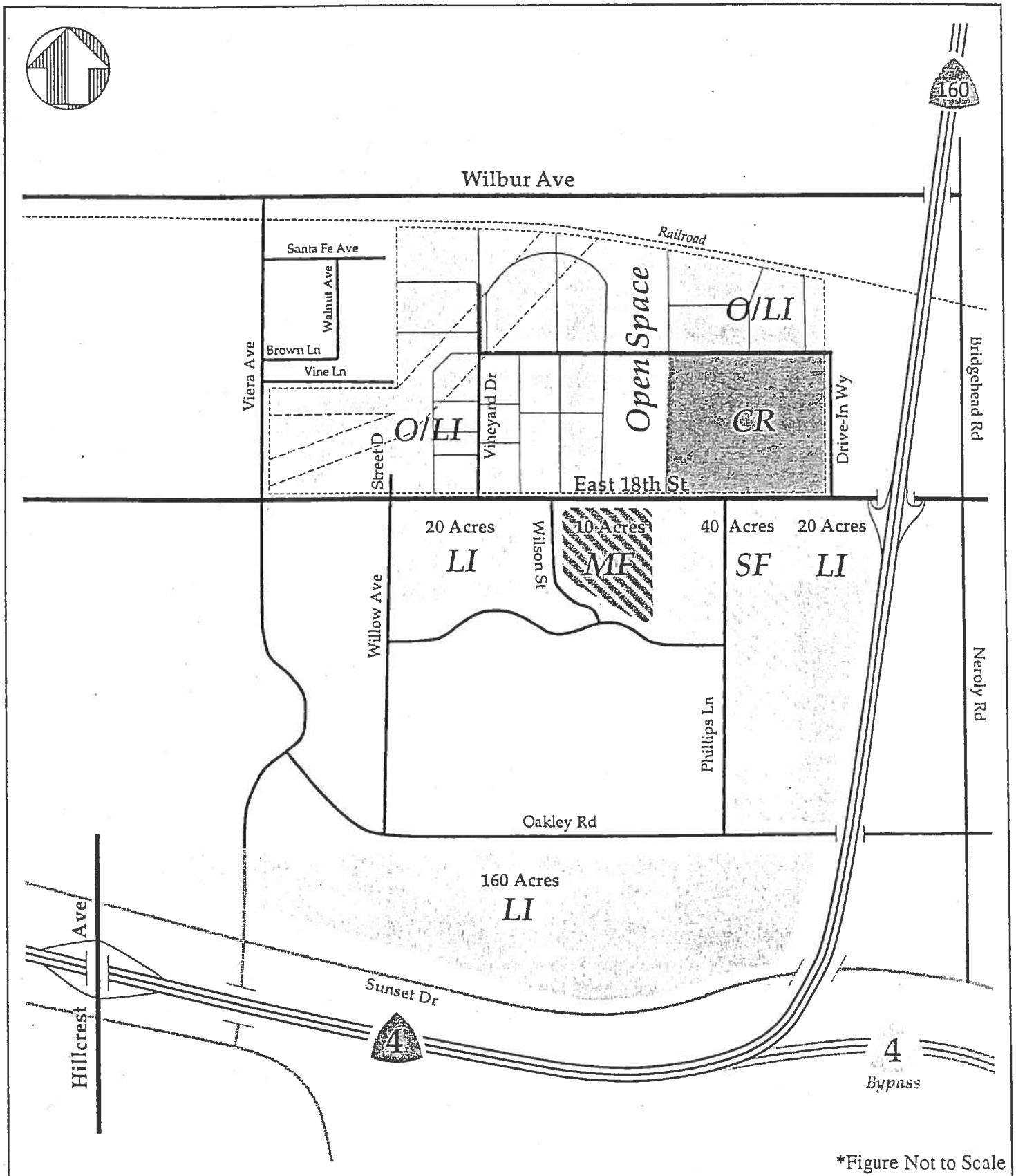
Option 2 replaces Street D with a private common driveway opening serving properties 5 and 7 only, with property 6 alone taking access from Viera Avenue (see Infrastructure section of Specific Plan for discussion of utility services). The common driveway could be positioned at the common boundary between properties 5 and 7, allowing right-in and right-out movements only (a solid median would be installed along East 18th Street in the vicinity of the new driveway and Willow Avenue). Building placement and overall size on properties 5 and 7 would be subject to approval of a site plan demonstrating proper visibility and access with respect to the common driveway opening.

It must be noted that under Option 2 there would be a substantial number of U-turn movements introduced to Viera Avenue and other cross streets further to the west. No U-turns would be permitted for westbound East 18th Street at Viera Avenue. This would force vehicles wishing to head east from properties 5 and 7 to turn onto Viera Avenue and make a U-turn or to go beyond the intersection and make a U-turn further down on East 18th Street. This situation, created by Option 2, would be a less than desirable condition but would not be considered serious. The volumes from the two properties would be low enough that there should not be any significant impacts to safety of intersection operations in the area. It is estimated that about 35 vehicles per hour would be making these movements during the PM peak hour if properties 5 and 7 were fully developed.

Transit Needs and Pedestrian/Bicycle Improvements - There will be a bus route on East 18th Street in the future, but unlikely to have bus routes on lesser streets. The bus route should provide frequent service connections to the last station on the BART line, wherever that ends up being in 2010. Bus turnouts are not needed, but patronage should be monitored in the future to see if any conditions change. Pedestrians will have protected crossings at all signals and there will also be new sidewalks on both sides of the street.

4. Cumulative Traffic Conditions

This section evaluates the operations (level-of-service) of the studied intersections for the cumulative conditions. Figure 9 shows the assumptions for land use and the roadway network that were used for cumulative conditions. Table A-2 of the appendix shows the detailed trip generation calculations for the cumulative scenario. It should be noted that the development of all cumulative properties would require substantial improvements to the transportation system. It is assumed that the State Route 4 Bypass would be in place with



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Figure 9

Cumulative Development
Assumed for the Study Area
(Year 2020)

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an interchange at Laurel Drive and that a connection to Sunset Drive from Viera Avenue would allow access to the Hillcrest Avenue freeway interchange. Without these improvements the cumulative traffic that is forecast to be generated in this area could not be adequately accommodated.

The results of the intersection analysis for Cumulative (Year 2020) conditions are summarized in Table 6. Based on these assumptions, it is expected that all intersections would continue to operate at LOS "D" or better during both the AM and PM peak hours.

Resulting Intersection and Roadway Capacity - The cumulative conditions would not result in any significant traffic capacity problems, or violation of traffic standards, as established by the CCTA. Under cumulative conditions a traffic signal is expected to be required at the intersection of East 18th Street and Wilson Avenue to be funded by the remaining properties to be developed south of East 18th Street. With the installation of a traffic signal at this intersection, the level of service would be improved to LOS "B" or better during both the AM and PM peak hours.

5. Conclusions and Recommendations

The widening of East 18th Street to a four-lane divided roadway will generally accommodate all new specific plan traffic satisfactorily and at an acceptable Level of Service. Figure 10 shows the improvements that are recommended to accommodate the various phases of growth along East 18th Street. A summary of the level-of-service analysis is shown in Table 5.

Table 5
Summary of Level-of-Service Conditions
at Study intersections

Intersection	Peak Hour	Existing Conditions	Exist. Plus Phase 1 Project	Exist. Plus Phase 2 Project	Cumulative Traffic Conditions
1) East 18 th Street and Viera Avenue	AM	A	A	A	D
	PM	A	A	A	D
2) East 18 th Street and Willow Avenue	AM	C (20.0)	A (9.5)	A (9.8)	A
	PM	C (17.9)	B (12.2)	B (14.1)	B
3) East 18 th Street and Vineyard Drive	AM	B (12.2)	A	A	A
	PM	B (13.4)	A	A	B
4) East 18 th Street and Wilson Street	AM	A (8.1)	A (8.2)	A (8.9)	A
	PM	A (8.4)	A (8.8)	A (9.4)	B
5) East 18 th Street and Phillips Lane	AM	N/A	A	A	A
	PM	N/A	A	A	B
6) East 18 th Street and Drive-In Way	AM	B (11.7)	A (9.3)	B (10.5)	A
	PM	B (10.3)	B (10.8)	C (21.8)	B
7) East 18 th Street and SR 4 WB On-Ramp	AM	A	A	A	A
	PM	A	A	A	B
8) Main Street and SR 4 EB Off-Ramp	AM	A	A	A	D
	PM	A	A	A	B

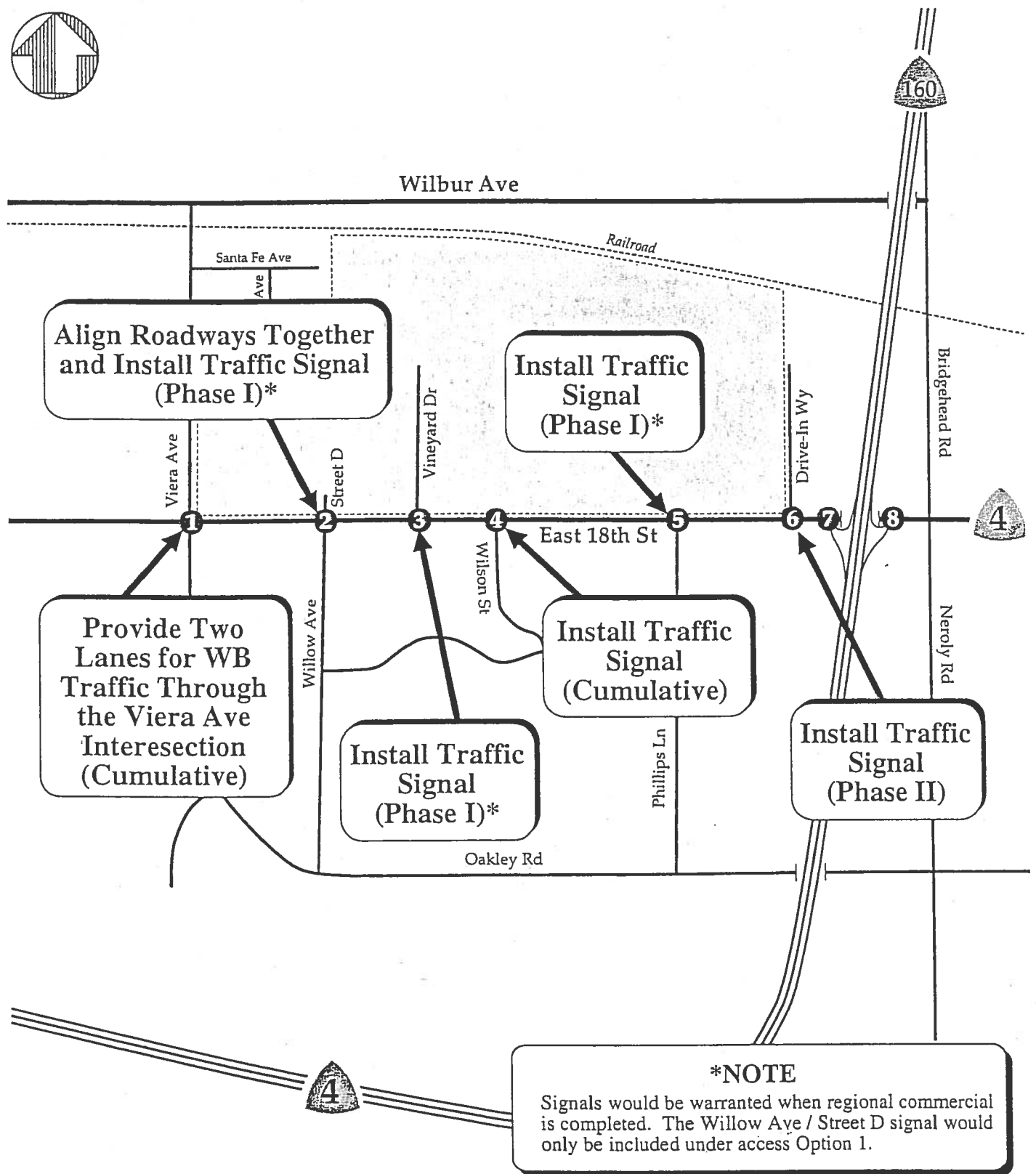
Note: C (17.5) = LOS (Delay in Seconds per Vehicle of the Most Critical Approach)

Mitigation required under Traffic Phase 1 include traffic signals and turn lanes at the following locations on East 18th Street: (a) Willow Avenue / Street D, concurrently with the initial development of properties 5, 6, and 7 (only if Access Option 1 is chosen by the affected owners); (b) Vineyard Drive, concurrently with development contributing to a cumulative total of 125 PM peak hour trips (using the rates shown in Table 3, this represents a total of approximately 100,000 additional square feet of office or 145,000 additional square feet of light industrial development)²; and (c) Phillips Lane, concurrently with development contributing to a cumulative total of 150 PM peak hour trips, which would equate to the development of about 27 percent of the commercial/mixed use site (or about 125,000 square feet).

Traffic Phase II mitigations include a traffic signal and additional turn lanes at the intersection of Drive-In Way, concurrently with the development of any portion of the Traffic Phase II properties with access to Drive-In Way. Finally, cumulative development conditions will also necessitate the following supplemental improvements to be paid for by development south of East 18th Street: (a) Signalization and turn lanes at the intersection of Wilson Street and East 18th Street; (b) Reconstruction of the Viera Avenue / East 18th Street intersection to provide two eastbound and two westbound through lanes as shown in Figure 8; and (c) Extension of Viera Avenue south to connect with Sunset Drive to Hillcrest Avenue as shown in Figure 9.

With the implementation of the proposed improvements these intersections they would meet the traffic standards established by Measure "C. Although the project would increase the traffic volumes in the area there is no evidence to suggest that the specific plan would result in any unusual impacts to pedestrians, bicyclists or traffic operations. With the exception of the above mentioned traffic signals and the improvements along the project frontage on East 18th Street, the project will not cause the need for any additional off-site mitigation measures.

² 150 vehicles is the lower threshold volume for a minor street with two approach lanes. Existing traffic was subtracted out to determine the remaining capacity.



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Traffic Impact Analysis

City of Antioch

Figure 10

Recommended Improvements

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It should again be noted that the proposed 35-acre regional commercial site would be the driving factor behind the need for the traffic signals. Although they could certainly be installed at an earlier stage, the traffic signals are unlikely to be fully warranted until the regional commercial site is developed. When the size and layout of this project is known, a focused study of the traffic needs for the new big-box or specialty retail / mixed use will be required.

Appendix

1. Table A-1 Specific Plan Trip Generation Calculations
2. Table A-2 Cumulative Trip Generation Calculations
3. Table A-3 Level-of-Service Definitions for
Signalized Intersections

Table A-1
East Eighteenth Street Specific Plan
Project Trip Generation Calculations

Trip Generation Rates

Land Use	Assumed FAR	ADT	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Shopping Center	FAR = 0.30	37.49	0.49	0.32	0.81	1.70	1.85	3.55
Office Building	FAR = 0.25	11.01	1.37	0.19	1.56	0.25	1.24	1.49

Trip Generation and Distribution Calculations

Area	Land Use	Size Acres	Bldg Size	ADT	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
1	CR	35.0	457,380	17,147	226	144	370	779	844	1624
	With a Pass-By Reduction of		10%	15,432	203	130	333	701	760	1461
2	OLI	5.0	54,450	599	75	10	85	14	67	81
	OLI	5.0	54,450	599	75	10	85	14	67	81
	Subtotals	10.0	108,900	1,199	149	20	170	28	135	162
3	OLI	2.4	26,136	288	36	5	41	7	32	39
	OLI	2.3	25,047	276	34	5	39	6	31	37
	OLI	2.8	30,492	336	42	6	48	8	38	45
	Subtotals	7.5	81,675	899	112	15	127	21	101	122
4	OLI	2.0	21,780	240	30	4	34	6	27	32
	OLI	1.3	14,157	156	19	3	22	4	18	21
	OLI	1.7	18,513	204	25	3	29	5	23	28
	OLI	1.7	18,513	204	25	3	29	5	23	28
	OLI	3.0	32,670	360	45	6	51	8	40	49
	Subtotals	9.7	105,633	1,163	145	20	165	27	131	157
5	OLI	5.0	54,450	599	75	10	85	14	67	81
6	OLI	3.0	32,670	360	45	6	51	8	40	49
7	OLI	5.0	54,450	599	75	10	85	14	67	81
8	OLI	8.0	87,120	959	120	16	136	22	108	130
	OLI	8.0	87,120	959	120	16	136	22	108	130
	OLI	2.5	27,225	300	37	5	42	7	34	41
	Subtotals	18.5	201,465	2,218	277	38	314	51	249	300
9	OLI	4.0	43,560	480	60	8	68	11	54	65
	OLI	4.0	43,560	480	60	8	68	11	54	65
	OLI	5.0	54,450	599	75	10	85	14	67	81
	OLI	7.0	76,230	839	105	14	119	19	94	114
	Subtotals	20.0	217,800	1,439	179	24	204	33	162	195
10	OLI	5.0	54,450	599	75	10	85	14	67	81
	OLI	6.0	65,340	719	90	12	102	17	81	97
	OLI	6.0	65,340	719	90	12	102	17	81	97
	OLI	6.0	65,340	719	90	12	102	17	81	97
	Subtotals	23.0	250,470	2,758	344	47	391	63	310	373
11	OSA	26.0	0	0	0	0	0	0	0	0

Summary

	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Net New Trips	26,667	1,604	321	1,925	960	2,022	2,982

Table A-2
East Eighteenth Street Specific Plan
Cumulative Trip Generation Calculations

Trip Generation Rates

Land Use	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Shopping Center	26.24	0.35	0.22	0.57	1.19	1.29	2.49
Office Building	7.71	0.96	0.13	1.09	0.18	0.87	1.04
Single Family	6.70	0.13	0.39	0.53	0.47	0.26	0.74
Multi Family	4.61	0.10	0.39	0.49	0.36	0.18	0.54
General Light Industrial	4.88	0.57	0.08	0.64	0.08	0.60	0.69

Note: Rates reduced by 30% percent to account for shred trips and tdm.

Trip Generation and Distribution Calculations

Area	Land Use	Size Acres	Bldg Size	ADT	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
1	Single Family	40.0	200	1,340	26	79	105	94	53	147
2	Multi Family	40.0	120	804	16	47	63	56	32	88
3	OLI	20.0	304,920	1,488	173	24	196	25	184	209
4	OLI	160.0	2,439,360	11,902	1,382	189	1,571	201	1,473	1,673
5	OLI	20.0	304,920	1,488	173	24	196	25	184	209

Summary

	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Net New Trips	17,021	1,770	362	2,132	402	1,925	2,327

Note: Density assumptions were as follows: LI = FAR of 0.35, Single Family = 5 units per gross acre, Multi Family = 12 units per gross acre.

Level of Service for Signalized Intersections

The 1997 HIGHWAY CAPACITY MANUAL¹ methodology for analyzing signalized intersections measures the performance by the control delay per vehicle in seconds. The CRITICAL MOVEMENT ANALYSIS METHODOLOGY², which is described in Transportation Research Board's Circular 212, defines Level of Service (LOS) for signalized intersections in terms of the ratio of critical movement traffic volumes to an estimate of the maximum capacity for critical volume at an intersection. Critical movements at an intersection are calculated by determining the maximum traffic volumes for conflicting traffic movements (i.e., left-turns plus opposing through traffic) per single stream of traffic (by lane). For the Critical Movement Methodology the LOS for intersections is determined by the ratio of critical movement volume to critical movement capacity (volume-to-capacity ratio = V/C) for the entire intersection. Six categories of LOS are defined, ranging from LOS "A" with minor delay to LOS "F" with delays averaging more than 40 seconds during the peak hour.

Level of Service			Description
LOS "A"	V/C Range	0.00 - 0.60	Free flow (relatively). If signalized, conditions are such that no vehicle phase is fully utilized by traffic and no vehicle waits through more than one red indication. Very slight or no delay.
	Average Stop Delay (seconds)	0.0 - 10.0	
LOS "B"	V/C Range	0.61 - 0.70	Stable flow. If signalized, an occasional approach phase is fully utilized; vehicle platoons are formed. Slight delay.
	Average Stop Delay (seconds)	10.1 - 20.0	
LOS "C"	V/C Range	0.71 - 0.80	Stable flow or operation. If signalized, drivers occasionally may have to wait through more than one red indication. Acceptable delay.
	Average Stop Delay (seconds)	20.1 - 35.0	
LOS "D"	V/C Range	0.81 - 0.90	Approaching unstable flow or operation; queues develop but quickly clear. Tolerable delay.
	Average Stop Delay (seconds)	35.1 - 55.0	
LOS "E"	V/C Range	0.91 - 1.00	Unstable flow or operation; the intersection has reached ultimate capacity; this condition is not uncommon in peak hours. Congestion and intolerable delay.
	Average Stop Delay (seconds)	55.1 - 80.0	
LOS "F"	V/C Range ³		Forced flow or operation. Intersection operates below capacity. Jammed
	- Measured	1.00 or less	
	- Forecast	1.01 or more	
	Average Stop Delay (seconds)	> 80	

¹ Source: Transportation Research Board, "Highway Capacity Manual, Special Report 209, Third Edition", Washington D.C., December 1997.

² Source: Transportation Research Board, "Planning Level Methodology - Signalized Intersections", Circular 212, Washington D.C., January, 1980

³ While forecast demands can exceed maximum capacity, actual measured volumes theoretically cannot. Since traffic inefficiencies arise at capacity demand conditions, the calculated V/C ratios for LOS "F" conditions can be substantially below a V/C of 1.00.

Appendix C: Project-Sponsored Mitigation Measures East 18th Street Specific Plan

The proposed East Eighteenth Street Specific Plan amends the Antioch General Plan to provide overall guidance for future light industrial, office and regional commercial/business park land uses within a planning area consisting of a total of approximately 192 acres, including roughly 16 acres of currently unincorporated territory. Specific localized impacts from the Specific Plan project have been largely avoided pursuant to the policies contained in the July 9, 2001 draft document. Remaining potential impacts are detailed in Sections IV (Initial Study Checklist), V (Biological Resources Analysis) and VI (Traffic Impact Analysis). These remaining impacts are either individually and cumulatively insignificant, or have been mitigated pursuant to specific measures incorporated into the project design and implementation. Following is a summary of these potential impacts and corresponding project-sponsored mitigation.

Summary Table Legend

- ❶ Less than significant project impact
- ❷ Potentially significant project impact
- ❸ Mitigation incorporated to minimize less than significant impact
- ❹ Impact reduced through mitigation to less than significant level
- ❺ Potentially significant and unavoidable project impact

	Impact	Mitigation	Result
1C	Aesthetics: Visual Character ❷	<u>Review of Subsequent Plans:</u> Plans for all future development to be subject to Planned Development process, including design review; no unenclosed principal uses allowed. All development to conform to development standards contained in Plan Section 6 and City Ordinances.	Ongoing review of future projects to assure high level of aesthetic quality. ❸
1D	Glare: Streetlights and Parking Lot Lights ❷	<u>Lighting Control:</u> Equip streetlights and parking lot lights with shields and special lenses to direct light downward. Install landscape improvements to mute effect of automobile headlights on adjoining residential uses.	Off-site glare reduced to less than significant level. ❸
3D	Construction Dust ❷	<u>Dust Control Measures:</u> Construction controls to include: (1) Water exposed and disturbed soil surfaces twice daily; (2) Limit speed of construction equipment to 15 MPH while on site; (3) Suspend dust producing activities during periods of high winds.	Dust from construction activities reduced to less than significant level. ❸
4D	Biological Resources: Migratory Birds ❷	<u>Pre-Construction Survey:</u> Pre-construction surveys for nesting migratory birds within trees, scrub and ruderal non-native grassland areas shall be completed no more than 30 days prior to each major phase of construction.	Assure avoidance of impacts to migratory birds. ❸
4E	Biological Resources: Major Oak Trees ❷	<u>Review of Subsequent Plans:</u> Plans for all future development of parcels 14-16 is automatically subject to the Planned Development process; this process will provide for protection of major oak trees.	Avoidance of impact to major oak trees. ❸

	Impact	Mitigation	Result
5B, C,D	Grading Operations: Cultural Resources ②	<u>Verification and Inspection:</u> Potential for cultural and archaeological resources is low; follow procedures stipulated in Checklist to report and protect any artifacts discovered during grading. Sec. 7050(b) of the California Health and Safety Code shall be implemented in the event that human remains are discovered. Grading operations shall be suspended and appropriate authorities consulted in the event that archaeological or unique paleontological resources are located during any phase of grading.	Potential impacts to cultural resources reduced to less than significant level. ④
8F	Water Quality: Existing Water Wells ①	<u>Closure or Protection Plans Required:</u> Development of Parcel 18 must take into consideration the presence of two water wells and a supply line operated by the Gaylord Company. The wells must be properly closed and sealed or otherwise protected at the time of future development.	Potential impacts avoided through review and implementation of future plans. ③
11A	Short-Term Exposure to Noise and Fumes ②	<u>Limitation on Hours of Construction:</u> All future development to comply with local ordinances currently in force to limit heavy equipment usage to weekday periods between 8 and 5. All construction equipment shall be properly muffled and maintained.	Impacts to adjoining sensitive uses reduced to less than significant level. ④
11C	Long-Term Exposure to Noise ②	<u>Setbacks and Buffering:</u> Future development projects adjoining the westerly planning area boundary shall be designed to avoid outdoor operations adjoining the rear property line, and shall provide a masonry sound wall on the common boundary with adjoining residential uses.	Potential future impacts from development reduced to less than significant level. ④
15A	Traffic: Overall Traffic Volumes ②	<u>Roadway System Capacity and Traffic Volumes:</u> As detailed in Section VI, all intersections within the Study Area and adjoining street systems have been analyzed with respect to current and future conditions, with and without the proposed Specific Plan policy changes. This analysis shown that subject to implementation of the following mitigation measures, the project will not cause any significant reduction in levels of service: (1) Widen East 18 th Street to 4 lanes concurrently with the first major phase of development. (2) Install traffic signals and capacity enhancements in accordance with Measures 15B & C below. (3) Prior to initiation of additional off-site development south of East 18 th Street (cumulative conditions), the City shall obligate developers to reconstruct the Viera Avenue/East 18 th Street intersection to provide two westbound through lanes. (4) Concurrently with additional off-site development south of East 18 th Street (cumulative conditions), the City shall obligate developers to connect Viera Avenue south to connect with Sunset Drive to Hillcrest Avenue (as shown in Figure 9 of Section VI and in the General Plan Circulation Element).	Potential impacts avoided through phased implementation of specific transportation system improvements, as part of this and future projects. ④

	Impact	Mitigation	Result
15 B	Traffic: Intersection LOS ②	<u>Level of Service at Existing Intersections:</u> Existing intersections on East 18 th Street shall be signalized and improved in accordance with Section VI recommendations as follows: (1) Vineyard Drive: Signalize concurrently with first phase development contributing to a cumulative total of 125 peak hour trips (above current volumes - see Table 3 of Section VI). This represents any combination totaling 100,000 additional square feet of office or 145,000 square feet of light industrial uses. (2) Wilson Street: Signalize and add turn lanes concurrently with additional off-site development south of East 18 th Street (cumulative conditions), the City shall obligate developers of future projects to fund these improvements.	
15C	Traffic: New Intersection s and Signal Lights ②	<u>Opening of New Streets at Phillips Lane & Willow Ave.:</u> The planned intersection at Phillips at the retail center entrance will be served by a traffic signal with interconnect to Drive In Way. This intersection will be aligned directly opposite existing Phillips Lane, thereby improving capacity and safety of movements. A second new street opening is possible opposite existing Willow Avenue. If completed, this intersection will also align with the opposing street, and be both signalized and phase interconnected. These improvements will be completed as part of the proposed project as follows: (1) Phillips at Commercial Entrance: Concurrently with initiation of development contributing to a cumulative total of 150 new peak hour trips (above current volumes - see Table 3 of Section VI). This represents approximately 27% of the Commercial/Mixed Use site, or 125,000 square feet of future development. (2) Willow Avenue at Street D: Concurrently with initial development of Parcels 5, 6 or 7 (only if Access Option 1 is chosen - see Section VI).	Potential safety and LOS impacts avoided by intersection design and traffic control. ③
15D	Traffic: Access to Properties West of Vineyard Drive ②	<u>Controlled Access:</u> Access to all future development on Parcels 1, 4 & 22-28 shall be from East 18 th Street only, and shall be limited to right-in and out, unless a new street is provided opposite Willow Avenue with controlled median openings as shown in Figure 10.	Avoidance of impact to Viera Avenue; avoidance of unsafe turn movements on East 18 th Street. ④

