Appendix A

Final Environmental Impact Report-
Green Valley Specific Plan (1990)
SCH #89032707

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Final Certified: March 5, 1990

FINAL ENVIRONMENTAL IMPACT REPORT

GREEN VALLEY SPECIFIC PLAN

SCH # 89032707

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FINALIZING ADDENDUM

SECTION 1
INTRODUCTION TO THE FINAL EIR

1.1 ORGANIZATION

This document is the Final Environmental Impact Report (Final EIR) for the Green Valley Specific Plan. The Final EIR for the project consists of several separate parts which have been bound together in the project documentation volumes. Specifically, the Final EIR consists of 1) this text (which is a revision of the Draft EIR text), 2) a Finalizing Addendum (FA) containing the required list of agencies/persons commenting on the Draft EIR, the EIR comments and a response to the substantive points raised, a mitigation monitoring program and the resolutions and conditions of approval, and 3) the Technical Appendices of the original Draft EIR. The text of the Draft EIR is also included for reference. These distinct parts of the Final EIR are separated by tabs in the project documentation volumes.

Table 1-1 contains an index which lists all of the required sections of EIR content along with the corresponding document, section and page number indicating where the information is located within the Final EIR.

1.2 PURPOSE

The Perris Green Valley Associates (applicant) propose to develop a multi-use planned community called Green Valley on approximately 1269 acres of land about a mile south of existing old Perris. The project site is completely within the City of Perris municipal boundary. The Green Valley Specific Plan includes 4,210 residential dwelling units on approximately 782 acres, commercial uses on 115 acres, and industrial uses on 108.7 acres. Additionally, the project includes three school sites (24 acres), 90.6 acres of roadways, 51.1 acres of parks, and 97.8 acres of open space in the form of river channels and swales. The project would be developed over a 10 to 12 year time frame commencing in late 1990.

The City of Perris, as lead agency for the proposed action, has authorized the preparation of this Environmental Impact Report (EIR) to assess the potential environmental effects of the project pursuant to and in accordance with the California Environmental Quality Act of 1970 (CEQA; Public Resources Code, Section 21000 et. seq.), the Guidelines for Implementation of the California Environmental Quality Act published by the Resources Agency of the State of California (California Administrative Code Sections 15000 et. seq.) and the City of Perris local guidelines for implementing CEQA.

TABLE 1-1
REQUIRED EIR CONTENTS

REQUIRED SECTION (CEQA)	SECTION IN EIR	PAGE NO.
Table of Contents (Sec. 15122)		FEIR-i
Summary (Sec. 15123)	2.0	FEIR 2-1
Project Description (Sec. 15124)	3.0	FEIR 3-1
Environmental Setting (Sec. 15125)	4.2 - 4.13 Subhead	var.
Significant Environmental Effects of Proposed Project (Sec. 15126a); Environmental Impacts.	4.2 - 4.13 Subhead	var.
Unavoidable Significant Environmental Effects (Sec. 15126b)	4.2 - 4.13 Subhead	var.
Mitigation Measures (Sec. 15126c)	4.1 - 4.13 Subhead	var.
Alternatives to the Proposed Action (Sec. 15126d)	5.2	FEIR 5-10
Growth Inducing Impacts (Sec. 15126g)	5.3	FEIR 5-20
Local Short-term Uses vs. Long-term Productivity (Sec. 15126e)	5.4	FEIR 5-22
Irreversible Environmental Changes (15126f)	5.5	FEIR 5-23
Effects Found Not To Be Significant (Sec. 15128)	5.6	FEIR 5-23
Organizations and Persons Consulted (Sec. 15129)	6.0	FEIR 6-1
Cumulative Impacts (Sec. 15130)	5.1	FEIR 5-1
Response to DEIR Comments	FA 2.0	2-1
List of DEIR Commentors	FA 1.0	1-1

Note: FA is used in the Section column to denote material contained in the Finalizing Addendum. Var. indicates text is found under specific subheading on various pages.

This EIR is intended to provide information to public agencies, the general public, and the City decision-makers regarding the potential significant short-term and long-term impacts associated with project implementation. A purpose is also to investigate feasible ways to avoid or significantly reduce potential environmental damage and to investigate alternatives or implement mitigation measures to reduce the severity of impacts.

1.3 USES OF THE EIR

State law (CEQA) requires that the lead agency consider the information contained in the EIR prior to taking discretionary action on the proposed project. The discretionary actions involved with the proposed project which are specifically addressed in this EIR include approval of, a General Plan Amendment, the Specific Plan of Development (including zoning framework); the Design Guidelines; the General Development Agreement; and the Mello-Roos Community Services District.

Subsequent discretionary actions by the Lead Agency are required including consideration of the final detailed designs as depicted in the Tentative Maps for the various phases and sub-phases of the project. Whether or not additional environmental documentation is required will be determined by examining the specific project component at the time it is proposed for processing and then applying criteria contained in Sections 15162, 15163, 15164 and 15182 of the CEQA guidelines, relative to supplemental, subsequent EIRs, addendums and residential projects pursuant to a specific plan.

This EIR also may be used by other public agencies which must make discretionary actions relative to the proposed project, such as the granting of discretionary permits or entitlement. A list of all potential agencies and project approvals for which this EIR may be used is as shown in Table 1.2-1.

1.4 SCOPE OF THE EIR

In accordance with Sections 15063 and 15082 of the CEQA guidelines, the City of Perris, as Lead Agency, prepared an Initial Study and a Notice of Preparation of Draft EIR (NOP). These were circulated to various public agencies and interested individuals. The Initial Study determined that the proposed project could have a significant impact on the environment and that an EIR would be prepared. It also identified the major environmental issues to be addressed in this EIR. Responses to the NOP have resulted in an expansion of the scope of analysis for several project issues.

Appendix A (behind the Technical Appendices tab) contains a copy of the Initial Study, Notice of Preparation (with mailing list), and all letter responses received.

Upon completion of the Draft EIR, it was sent directly to numerous public agencies and to interested individuals for review and comment. The public review period was held during June and July of 1989. Public hearings were held before the Planning Commission on July 5, 1989, October 11, 1989, January 4, 1990 and January 17, 1990. Written and oral comments were summarized and responded to in the Finalizing Addendum which was approved by the Planning Commission on January 17, 1990.

The City Planning Commission recommended to the City Council that the Green Valley Specific Plan EIR be certified and that the Specific Plan be approved. The City Council acted positively on this recommendation at its March 5, 1990 meeting.

1.5 EIR AVAILABILITY

The Final EIR is available for inspection and copying at the City of Perris Department of Planning and Community Development, 101 North D Street, Perris, CA 92370.

TABLE 1.2-1
TENTATIVE LIST OF PROJECT APPROVALS

AGENCY	APPROVAL
City of Perris	General Plan Amendment, Land Use Specific Plan and Zoning Approval Development Agreements Design Guidelines Mello-Roos District Tentative Maps Final Maps Building Permits Grading Permits
Riverside Co. Flood Control	Onsite Flood Control Facilities San Jacinto River Mods.
Riverside Co. Fire Department	Emergency Support and Fire Facilities Hazardous Materials Plan
Riverside Co. Department of Disaster Preparedness	Hazardous Materials Plan
Riverside Co. Airport Land Use Com.	Avigation easements from March AFB
Riverside Co. Health Dept.	Use of Reclaimed Water
Eastern Municipal Water Dist.	Water Supply Sewage Treatment
California Regional Water Quality Control Board	NPDES permits: const. dewatering, site runoff
California Dept of Fish & Game	1601-1603 streambed permit
U.S. Army Corps of Engineers	Section 10 & 404 permits dredge and fill

SECTION 2
EIR SUMMARY

2.1 DESCRIPTION OF THE PROPOSED PROJECT

The Green Valley Specific Plan project site is located in the Perris Valley portion of Riverside County, California, and contains approximately 1,269.2 acres of land entirely within the boundaries of the incorporated City of Perris. The site is situated within the southern central portion of the City, south of the present central business district.

The Perris Green Valley Associates propose to develop a mixed use project which is comprised of largely residential uses, but includes commercial, industrial, open space and recreational uses. The land use plan for Green Valley divides the project site into 49 planning areas. Statistically, the proposed uses include;

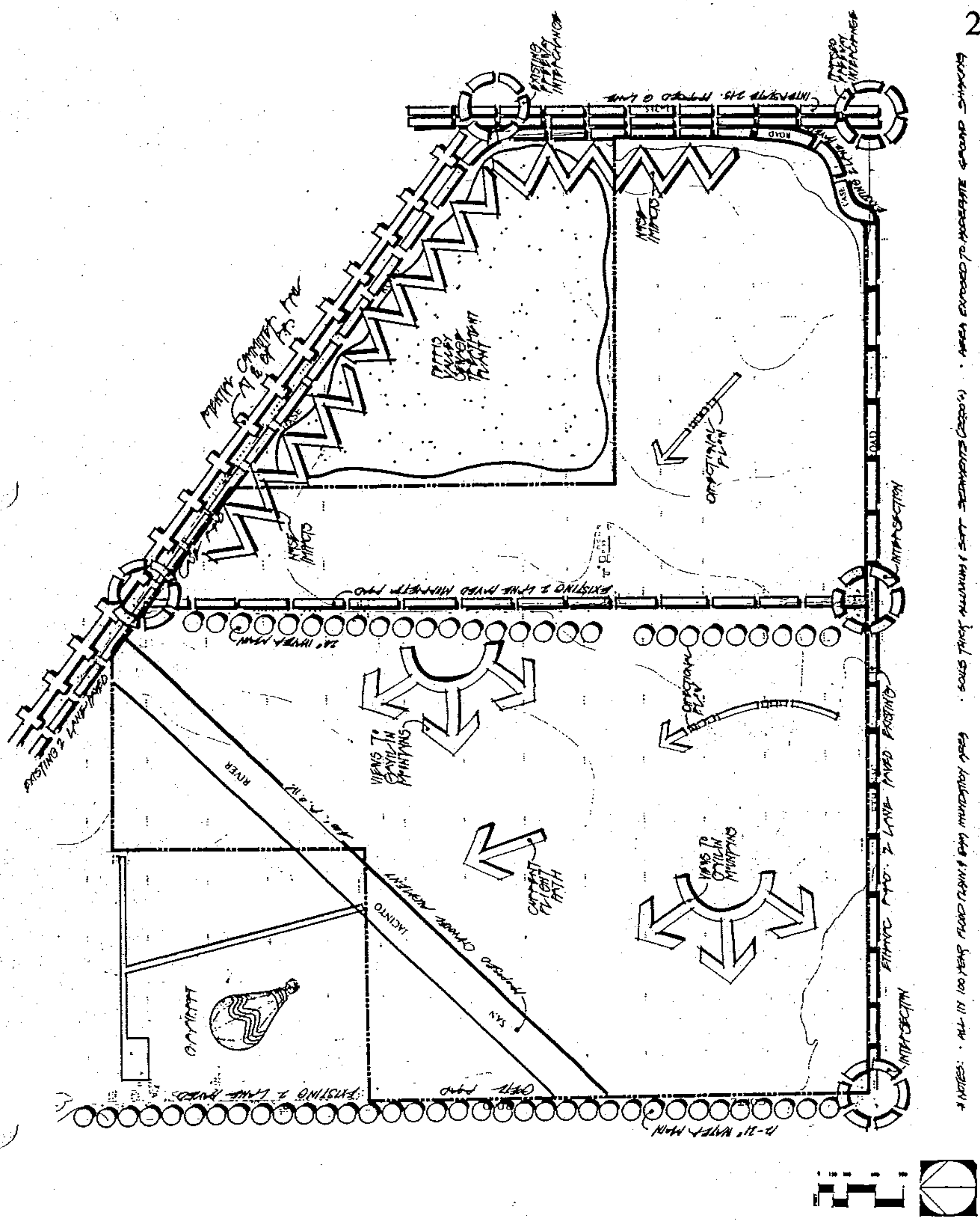
- 3460 Single family dwellings on 7,200, 6,000, and 5,500 square foot lots.
- 750 Multi-family units at a density of 15 units per acre.
- 3 Elementary school sites totalling 24 acres.
- 115 acres of commercial development (potentially 1.46 million square feet).
- 108.7 acres of industrial development (potentially 1.8 million square feet).
- 51.1 acres of developed park land including a 30 acre sports complex.
- 98 acres of open space associated with the San Jacinto River and drainage swales.
- 90 acres devoted to streets.

The majority of the site historically and currently is in agricultural use. The San Jacinto River crosses the western portion of the site. The site is also bordered on the east by the Escondido Freeway (Interstate 215). Other notable surrounding uses include the Perris Airport on the northwest, the AT & SF railroad on the north, and the Perris Valley Wastewater Treatment Plant on the northeast. Some of these features are shown on the constraints map which is included as Figure 2-1.

OPPORTUNITIES AND CONSTRAINTS

GREEN VALLEY

FIGURE 2-1



2.2 SUMMARY OF PROJECT IMPACTS

Table 2-1 provides a summary of the environmental impacts of the proposed project. It is important to note that the column dealing with significance of the impact refers to project-specific impacts. Cumulative impact significance, particularly as it concerns significance after mitigation is discussed in Section 5 of this EIR.

As a result of the impact assessment contained herein and comments made during review of the Draft EIR, there are no known areas of controversy with the proposed project. Aspects of the impact of the project on and by the Perris Valley Airport generated substantial interest and comment during the EIR review period. The site plan for the project has been modified to accommodate increased safety areas and has been developed through input by an airport committee. Issues relative to the airport compatibility have been resolved.

What remains unresolved is the future of the airport. Expansion as a private use facility, expansion as a public use facility and status quo operations have all been mentioned as possible options for the airport. However, there is presently no development plan, proposal or policy statement that gives guidance on this issue.

The EIR has considered several alternatives to the proposed project. These are described in detail in Section 5.2. The alternatives considered include:

- No Project
- Reduced Density of Development
- All Residential Use
- All Commercial/Industrial Use
- Alternative Locations

The No Project alternative is considered the Environmentally Superior alternative. Among the alternatives which result in some development, the Reduced Density of Development is considered environmentally superior.

Table 2-1

IMPACT SUMMARY - GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
GRADING/EROSION	Site will undergo substantial landform modification. 3.6 million cubic yards moved.	Adherence to recommendations of project geotechnical report. Balanced cut and fill. Monitoring during construction. Erosion and Sedimentation Control Plan. Soils report for each grading phase.		X			X	
SEISMIC SAFETY	Will place more people in an area subject to seismic activity.	Adherence to Uniform Building Code and project geotechnical report recommendations.		X	X		X	
HAZARDOUS WASTE	Potential soil contamination from prior uses.	Soil sampling, analysis and clean up is required in suspected areas. Submit list of hazardous materials to fire department.	X				X	
FLOODING	Runoff from project site will be increased. Development will occur within present floodplain area.	Provisions of on-site drainage facilities. Grading techniques for flow diversion. Drainage Plan approved by RCFCD. Master Plan drainage fees.		X	X		X	
WATER QUALITY	Project development will result in the replacement of rural/agricultural contaminants in runoff with urban contaminants. Erosion potential during construction.	Regular street sweeping will be required. Water quality control program will also be provided .	X	X	X		X	

Table 2-1 (Continued)

IMPACT SUMMARY – GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
WILDLIFE/ VEGETATION	Loss of raptor foraging.	No mitigation		X	X			X
	Impact on San Jacinto river migration and wildlife.	Recognize buffer between project and San Jacinto River. Recognize 750 foot ultimate channel development width. Participate in San Jacinto Mitigation Plan. Monitor wildlife use of river. Consult with Cal DFG, U.S. Army Corps and U.S. Fish and Wildlife. K-Rat mitigation fee.		X	X		X	
	Potential impact on San Jacinto Valley saltbush (in river mitigation area).	Any applicant-prepared restoration plan for the river mitigation area will consider habitat restoration for this species.		X			X	
HISTORIC/ PREHISTORIC RESOURCES	Potential impact to the Settler's house.	Monitor construction in the area of the house.		X			X	
AGRICULTURE	Existing agricultural land will be developed for urban purposes.	The loss of 1,100 acres of agricultural land is unavoidable; preservation is infeasible.		X	X			X
	Potential conflict with remaining ag lands.	Establish buffer zones. Encourage interim use.	X				X	
LAND USE	Land use compatibility impacts and odors from adjacent wastewater treatment facility.	Provide vegetative buffer. Notify prospective residences of odor potential.		X				X
	Land use compatibility and associated risks from establishing residential uses in and near Perris Valley Airport operating zones and sky-diving.	Clear zones free of assembly. Approach zone reduced density. Romoland Channel realignment for emergency touchdown. Avigation Easements.		X				X

Table 2-1 (Continued)

IMPACT SUMMARY - GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
LAND USE (Continued)	Impact on airport operations.	Realignment of ultra-light landing runway.		X			X	
POPULATION & HOUSING	Increase of 11,740 persons and 4,210 dwelling units.	None required.		X		X		
CIRCULATION	Project development will increase traffic volumes on adjacent roadways and I-215. Potential adverse circulation system impacts during early phase of the project.	Implementation of project circulation plan; construction of traffic signals as warranted.	X	X	X		X	
		Implement traffic phasing plan.						
		Fund fair share of Park and Ride facilities.						
		Fund Transportation Services Coordinator.						
		Participate in Areawide fee mitigation program.						
AIR QUALITY	Air pollutant emissions will result from construction, mobile, and stationary sources.	Implementation of erosion control measures will reduce fugitive dust emissions. Location of jobs proximity to housing, and provision of bicycle, pedestrian, and bus turnout facilities will assist in reducing mobile source emissions. Energy conservation features will reduce stationary source emissions. Coordinate with regional emissions strategies/AQMP.	X	X	X		X	

Table 2-1 (Continued)

IMPACT SUMMARY - GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
WIND EROSION		Erosion control plan to include wind mitigation measures.	X				X	
NOISE	Increased on-and off-site noise levels will be created. Noise exposure from construction activities.	Noise attenuation measures will be implemented so as to meet applicable noise standards. Review of site layout by acoustical engineer. Construction limited to 7:00 AM to 7:00 PM and prohibited on Sundays.	X	X	X		X	
	Noise impact from Perris Valley Airport.	Avigation easements and 65 CNEL Land Use performance criteria.		X			X	
AESTHETICS	Project will illuminate the night sky with potential impact to Palomar Observatory. Visual impact of adjacent wastewater facility.	Incorporate light control measures; County Ordinance 655. Provide landscape buffer at treatment plant boundary. Prepare design manual.		X			X	
ENERGY	Substantial increase in energy consumption will result from project development and operation.	Energy conservation measures will be incorporated into the project development.	X	X	X		X	
POLICE	Project development will result in increased demands for 18 police officers.	Project to provide funding for additional police staff and equipment.		X	X		X	
FIRE PROTECTION	Project development will result in increased demands for fire protection services.	Project to fund pro rata share of new fire facilities.		X	X		X	

Table 2-1 (Continued)

IMPACT SUMMARY - GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
WATER/SEWER	Substantial increases in water consumption and sewage generation will result from project implementation. Wastewater capacity not available.	Installation of water conservation devices, use of drought tolerant plantings, and payment of applicable fees to EMWD, wastewater treatment capacity agreement required prior to recordation of the final map.		X	X		X	
SCHOOLS	Residential uses will generate new students within the Perris and Romoland school districts which are presently impacted.	Provision of 3 on-site school sites and payment of applicable school fees. Development ageement with School District on capital support for construction. Location of one additional school property off-site.		X	X		X	
	School sites within two miles of active airport runway.	Hazard assessment conducted by Caltrans Division of Aeronautics and Department of Education.		X			X	
PARKS AND RECREATION	Project development will result in a demand for additional community parks. Quimby Act requires 35 acres.	Dedication of 51.1 acres of developed parks including 30.6 acre sports complex.		X	X	X		
UTILITIES	Project development will increase demands for electrical, natural gas, and telephone services.	Coordination with utility companies, construction of on-site distribution systems, and payment of applicable fees.		X	X		X	
SOLID WASTE	Project development will substantially increase the amount of solid waste dumped at the Mead Valley Landfill.	Recycling programs will be encouraged. Trash compactors required.		X	X		X	

Table 2-1 (Continued)

IMPACT SUMMARY - GREEN VALLEY SPECIFIC PLAN

	Project Impacts	Mitigation Measures	Short-Term	Long-Term	Cumulative	Minor	Significant Mitigable	Significant Not Mitigable
LIBRARIES	New residents will increase demands for library facilities and services.	None proposed.		X	X	X		
HEALTH SERVICES	Residents and employees within the project site will increase demands for health services.	None proposed.		X	X	X		
TOXIC SUBSTANCES	Industrial uses will have the potential for using, storing, transporting, and creating hazardous substances.	Industrial users will be required to prepare lists of hazardous materials kept on-site and report same to fire department.		X	X		X	
FISCAL	Various early years have negative fiscal effect on City.	Applicant to prepare revised Fiscal Study reflective of modified phasing assumptions.		X			X	

SECTION 3
PROJECT DESCRIPTION

3.1 PROJECT LOCATION

The project site for the Green Valley Specific Plan is regionally located in the Perris Valley portion of Riverside County, California (Figure 3-1). The proposed project site contains approximately 1,269.2 acres of land entirely within the boundaries of the incorporated City of Perris. The site is situated within the southern central portion of the City, south of the present central business district.

3.2 SITE DESCRIPTION AND BOUNDARIES

Figure 3-2 illustrates the site boundaries with respect to surrounding features. The Green Valley Specific Plan site includes the southwest 1/4 of section 4 (south of the AT & SF railroad only), the southeast 1/4 of section 5, all of section 8, and north 1/2 of section 9, township 5 south, range 3 west, SBBM. The project site is nearly flat with a sheet flow gradient toward the west. The highest portion of the property is the southwest corner (1426 feet above mean sea level; MSL). The lowest portion is adjacent to the San Jacinto River channel at the northeast corner which is approximately 1410 feet MSL. The majority of the site historically and currently is in agricultural use.

The San Jacinto River crosses the western portion of the site. The site is also bordered on the east by the Escondido Freeway (Interstate 215). Other notable surrounding uses include the Perris Valley Airport on the northwest, the AT & SF railroad on the north, and the Perris Valley Wastewater Treatment Plant on the northeast.

Access to the site from I-215 can be made via the Highway 74 interchange to Case Road or via the Ethanac Road turnoff. From the west, access is provided by Goetz Road. Murrieta Road is an existing north/south roadway which essentially bisects the site.

3.3 DESCRIPTION OF THE GREEN VALLEY SPECIFIC PLAN OF DEVELOPMENT

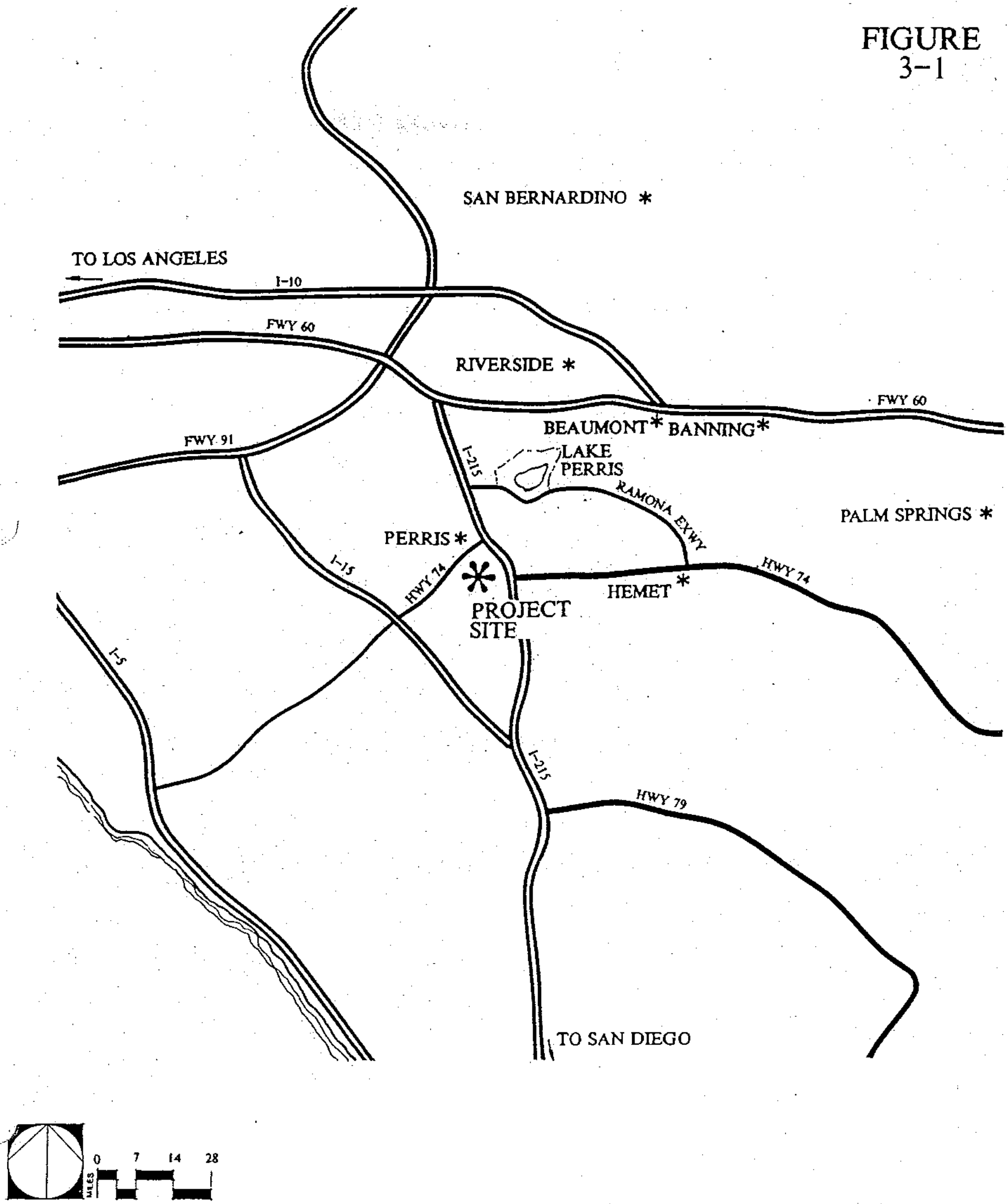
3.3.1 Project Goals and Objectives

The Green Valley Specific Plan of development incorporates a multi-use concept which is comprised of largely residential uses, but includes commercial, industrial, open space and recreational uses. The proposed project is being developed to respond to a strong

REGIONAL SETTING

GREEN VALLEY

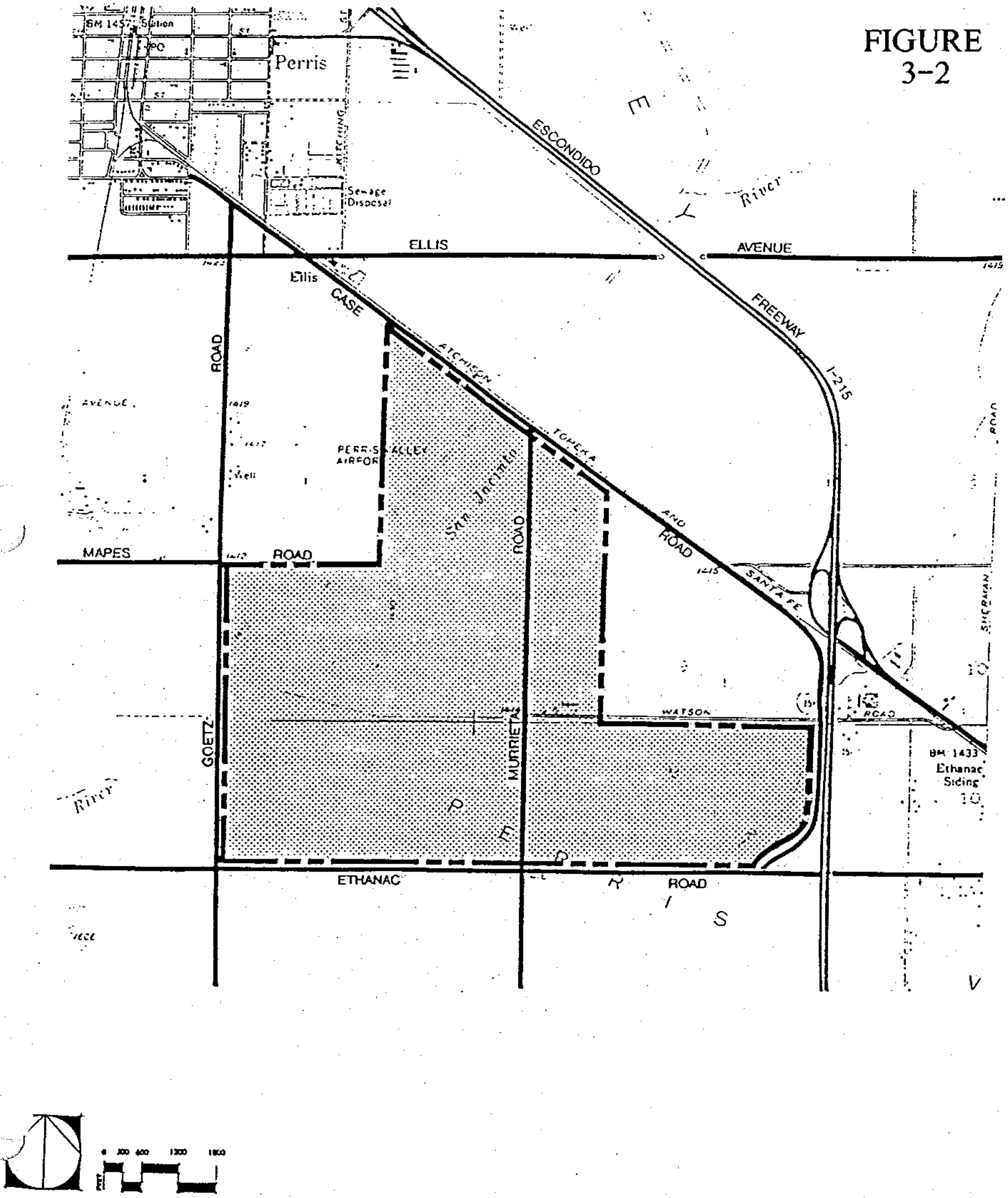
FIGURE 3-1



GREEN VALLEY

FIGURE 3-2

LOCAL SETTING



market demand for conventional single-family residential housing priced under $100,000, with an increasing demand for move-up housing in the $100,000 to $150,000 price range.

A diversity of product types will be provided which is intended to stimulate the creation of a planned community for singles and families, both first-time home owners and move-up buyers. There is also a local demand for a smaller increment of attached and rental units.

It is also an objective of the project to take advantage of the sites location with respect to I-215 and the Perris Valley Airport. Easy access to I-215 will generate a demand for sub-regional commercial and business park uses. The portion of the site adjacent to the Perris Valley Airport offers an opportunity for industrial development.

All of these factors have guided the development of the concept land use plan for Green Valley.

3.3.2 Proposed Comprehensive Land Use Plan

The comprehensive land use plan for the Green Valley Specific Plan has evolved in several important ways compared to the plan initially included in the Draft EIR. While still containing up to 4,210 dwelling units, the plan has responded to concerns about compatibility with surrounding uses which include the Perris Valley Airport. The site plan recognizes the airport's approach airspace zone by reducing residential density under the zone as well as relocating a proposed school site out of area under the zone. A substantial realignment of the Romoland A flood control channel is proposed in order to provide dedicated open area that can be used for aircraft emergency touchdown purposes. In addition, the Sports Complex has been reoriented to ensure that airport clear zone can be kept free of large assemblages of people.

The Green Valley Specific Plan now includes 51 planning areas as shown on Figure 3-3. It provides for the development of 1269.2 acres in residential, commercial, business and professional, industrial, public parks, public schools, and open space land uses. The Green Valley Specific Plan proposed distribution of land uses is summarized in Table 3.3-1. For more detailed information concerning the proposed uses, concept site plans and in particular, the development standards and proposed specific zoning regulations, please refer to the Green Valley Specific Plan under separate cover.

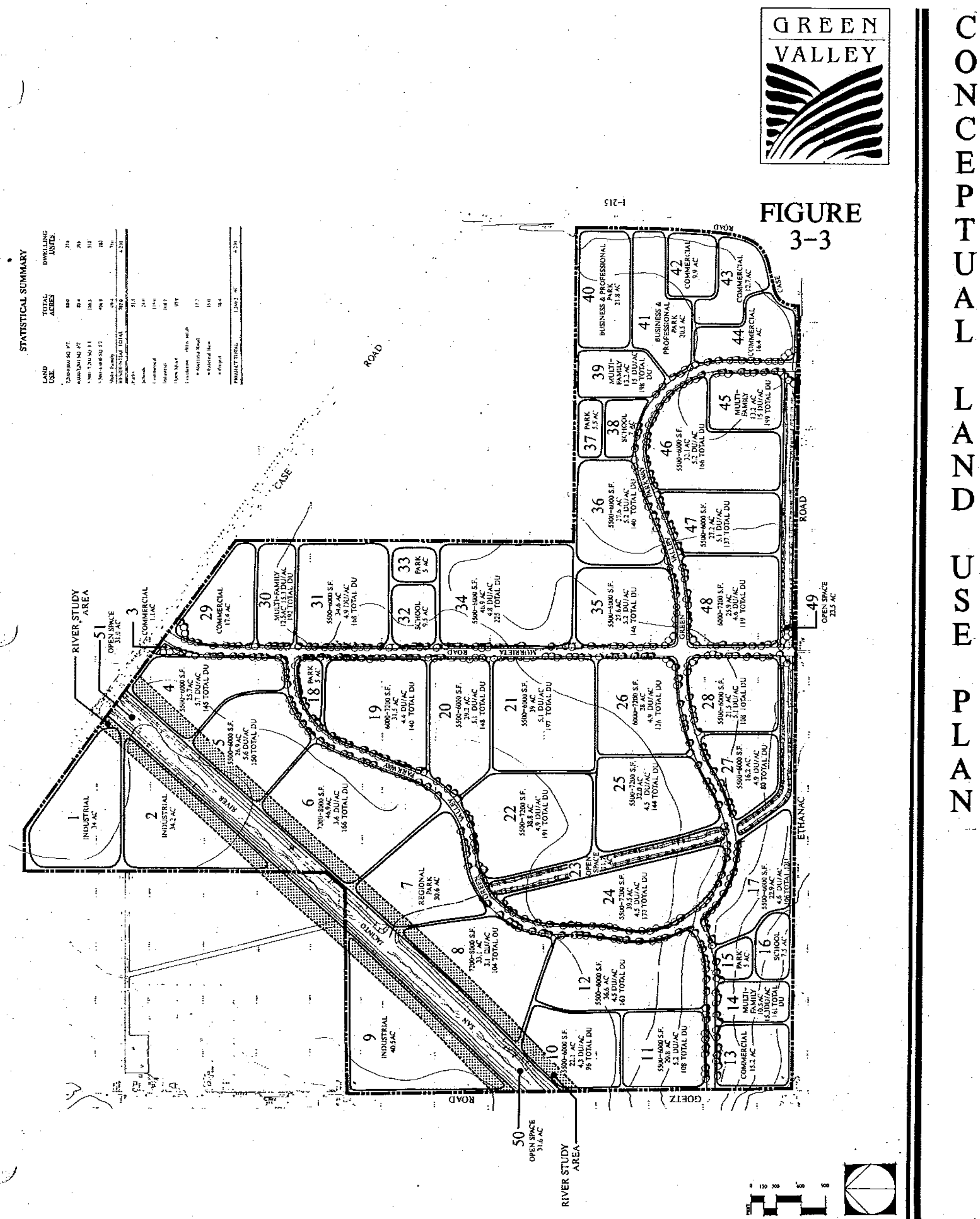

GREEN VALLEY
FIGURE 3-3
CONCEPTUAL LAND USE PLAN
STATISTICAL SUMMARY
I-215
CASE ROAD
MURRIETA ROAD
ETHANAC ROAD
GOETZ ROAD
GREEN VALLEY PARKWAY
SAN JACINTO RIVER
1 INDUSTRIAL 34 AC
2 INDUSTRIAL 34.2 AC
3 COMMERCIAL 1.1 AC
4 5500-6000 S.F. 25.7 AC 5.7 DU/AC 145 TOTAL DU
5 5500-6000 S.F. 26.9 AC 5.6 DU/AC 150 TOTAL DU
6 7200-8000 S.F. 46.9 AC 3.6 DU/AC 166 TOTAL DU
7 REGIONAL PARK 30.6 AC
8 7200-8000 S.F. 33.1 AC 3.1 DU/AC 104 TOTAL DU
9 INDUSTRIAL 40.5 AC
10 5500-6000 S.F. 22.1 AC 4.3 DU/AC 96 TOTAL DU
11 5500-6000 S.F. 20.8 AC 5.2 DU/AC 108 TOTAL DU
12 5500-6000 S.F. 36.6 AC 4.5 DU/AC 163 TOTAL DU
13 COMMERCIAL 15.2 AC
14 MULTI-FAMILY 10.5 AC 15.3 DU/AC 161 TOTAL DU
15 PARK 5 AC
16 SCHOOL 7.5 AC
17 5500-6000 S.F. 22.9 AC 4.6 DU/AC
18 PARK 5 AC
19 6000-7200 S.F. 31.5 AC 4.4 DU/AC 140 TOTAL DU
20 5500-6000 S.F. 29.2 AC 5.1 DU/AC 148 TOTAL DU
21 5500-6000 S.F. 39 AC 5.1 DU/AC 197 TOTAL DU
22 5500-7200 S.F. 38.8 AC 4.9 DU/AC 191 TOTAL DU
23 OPEN SPACE
24 5500-7200 S.F. 39.5 AC 4.5 DU/AC 177 TOTAL DU
25 5500-7200 S.F. 32.0 AC 4.5 DU/AC 144 TOTAL DU
26 6000-7200 S.F. 28 AC 4.9 DU/AC 136 TOTAL DU
27 5500-6000 S.F. 16.2 AC 4.9 DU/AC 80 TOTAL DU
28 5500-6000 S.F. 21.5 AC 5.1 DU/AC 108 TOTAL DU
29 COMMERCIAL 17.4 AC
30 MULTI-FAMILY 12.5 AC 15.3 DU/AC 192 TOTAL DU
31 5500-6000 S.F. 34.6 AC 4.9 DU/AC 168 TOTAL DU
32 SCHOOL 9.5 AC
33 PARK 5 AC
34 5500-6000 S.F. 46.9 AC 4.8 DU/AC 225 TOTAL DU
35 5500-6000 S.F. 27.6 AC 5.2 DU/AC 146 TOTAL DU
36 5500-6000 S.F. 27.6 AC 5.2 DU/AC 140 TOTAL DU
37 PARK 5.5 AC
38 SCHOOL 7 AC
39 MULTI-FAMILY 13.2 AC 15 DU/AC 198 TOTAL DU
40 BUSINESS & PROFESSIONAL PARK 21.8 AC
41 BUSINESS & PROFESSIONAL PARK 20.5 AC
42 COMMERCIAL 9.9 AC
43 COMMERCIAL 12.7 AC
44 COMMERCIAL 16.4 AC
45 MULTI-FAMILY 13.2 AC 15 DU/AC 199 TOTAL DU
46 5500-6000 S.F. 32.1 AC 5.2 DU/AC 166 TOTAL DU
47 5500-6000 S.F. 27.2 AC 5.1 DU/AC 137 TOTAL DU
48 6000-7200 S.F. 25.9 AC 4.6 DU/AC 119 TOTAL DU
49 OPEN SPACE 23.5 AC
50 OPEN SPACE 31.6 AC
51 OPEN SPACE 31.0 AC
RIVER STUDY AREA
RIVER STUDY AREA

TABLE 3.3-1
GREEN VALLEY SPECIFIC PLAN
STATISTICAL LAND USE SUMMARY

LAND USE	PLANNING AREA NO.	TOTAL ACRES	DU'S	DU's/ AC	SQUARE FOOTAGE	% Of TOTAL
Residential						
7,200 - 8,000 S.F.	6	46.9	166	3.5		3.6
	8	33.1	104	3.1		3.0
Subtotal		80.0	270	3.4		6.6
6000 - 7,200 S.F.	19	31.5	140	4.4		2.5
	26	28.0	136	4.9		2.2
	48	25.9	119	4.6		2.1
Subtotal		85.4	395	4.6		6.8
5,500 - 7,200 S.F.	22	38.8	191	4.9		3.1
	24	39.5	177	4.5		3.1
	25	32.0	144	4.5		2.6
Subtotal		110.3	512	4.6		8.8
5,500 - 6,000 S.F.	4	25.7	145	5.7		2.1
	5	26.9	150	5.6		2.1
	10	22.1	96	4.3		1.8
	11	20.8	108	5.2		1.5
	12	36.6	163	4.5		3.1
	17	22.9	106	4.6		1.8
	20	29.2	148	5.1		2.3
	21	39.0	197	5.1		3.1
	27	16.2	80	4.9		1.4
	28	21.5	108	5.1		1.7
	31	34.6	168	4.9		2.7
	34	46.9	225	4.8		3.7
	35	27.6	146	5.2		2.1
	36	27.6	140	5.2		2.1
	46	32.1	166	5.2		2.4
	47	27.2	137	5.1		2.1
Subtotal		456.9	2,283	5.0		36.0
Multi-Family	13	10.5	150	15.0		0.9
	30	12.5	195	15.0		1.1
	39	13.2	195	15.0		1.1
	45	13.2	210	15.0		1.2
Subtotal		49.4	750	15.0		4.2
Residential Subtotal		**782**	**4,210**	**5.4 (Net)**		**62.1**

TABLE 3.3-1, cont.
GREEN VALLEY SPECIFIC PLAN
STATISTICAL LAND USE SUMMARY

LAND USE	PLANNING AREA NO.	TOTAL ACRES	DU'S	DU's/ AC	SQUARE FOOTAGE	% Of TOTAL
Parks	7	30.6				2.3
	15	5.0				0.4
	18	5.0				0.4
	33	5.0				0.4
	37	5.5				0.5
Subtotal		51.1				4.0
Schools	16	7.5				0.6
	32	9.5				0.7
	38	7.0				0.6
Subtotal		24.0				1.9
Commercial	3	1.1			13,000	0.1
	13	15.2			194,500	1.2
	29	17.4			222,500	1.4
	40	21.8			302,000	1.7
	41	20.5			262,000	1.6
	42	9.9			118,500	0.7
	43	12.7			153,500	1.0
	44	16.4			199,500	1.3
Subtotal		115.0			1,465,500	9.0
Industrial	1	34.0			570,000	2.7
	2	34.2			570,000	2.7
	9	40.5			645,000	3.2
Subtotal		108.7			1,785,000	8.6
Open Space	23	11.7				0.9
	49	23.5				1.8
	50	31.6				2.5
	51	31.0				2.3
Subtotal		97.8				7.5
Circulation		90.6				6.9
TOTAL PROJECT		1,269.2	4,210		3,250,500	100.0

3.3.2.1 Single-Family Residential Uses

It is the intent of the Specific Plan that all areas designated for residential use may be developed at a lower number of dwelling units without necessitating a change in the PRD-Specific Plan zoning. Also, it is proposed that the total number of dwelling units in any zone can exceed the indicated amount by up to ten percent, provided the total of 4,210 dwelling units is not exceeded. Unit transfers necessitated by density adjustments would be to the same zone only. Thus, the tabulations in Table 3.3-1 reflect the total average density of each product type by zone.

Green Valley Specific Plan includes three basic lot sizes for single-family residential products. Lot sizes of 7,200 to 8,000 square feet (minimum) are the largest proposed and occur in planning areas 6 and 8. The overall density of these areas would be approximately 3.4 units per acre. Lot sizes of from 6,000 to 7,200 square foot (minimum) lots are proposed in planning areas 19, 26, and 48, at an average density of 4.6 units per acre. Single-family units on 5,500 to 6,000 square foot (minimum) lots (but ranging up to 7,200 square feet) are proposed in the remaining single family residential planning areas. These units would have an overall density of from 4.5 to about 5.6 units per acre. Planning areas 22, 24 and 25, which include 5,500 to 7,200 square foot lots are affected by the airport approach zone. The portions of these planning areas under the approach zone would be limited to 7,200 square foot or larger lots. All residential structures would have a height limit of 35 feet or two stories.

3.3.2.2 Multi-Family Residential Uses

Multi-family uses are proposed in 4 planning areas and would generally consist of 2 story structures configured as apartments, condominiums, or townhomes. The density would be limited to 15.0 units per acre. The total number of multi-family units proposed is 750.

3.3.2.3 Commercial Uses

Commercial uses are proposed at the intersection of Ethanac Road and I-215 (planning areas 42, 43 and 44), and at the intersection of Murrieta Road and Case Road (planning areas 3 and 29). These commercially designated parcels account for a total of about 58 acres of subregional shopping and take advantage of their arterial roadway locations, accessibility to the freeway, and high visibility settings. A 15.2 acre local commercial center is also proposed at the intersection of Ethanac and Goetz Roads (planning area 13) to serve neighborhood shopping needs.

A 42.3-acre business, professional, and office park (planning areas 40 and 41) is proposed on Case Road, north of Ethanac, with exposure to the I-215 freeway.

All commercial uses will have a building height limit of three stories or 50 feet.

3.3.2.4 Industrial Uses

That portion of the Specific Plan sited to the northwest of the San Jacinto River, adjacent to the Perris Valley Airport is proposed for Light Industrial uses. Low density, low profile, industrial and office uses are envisioned on a total of 108.7 acres (planning areas 1,2 and 9). The Green Valley Specific Plan's proposed development standards indicate that the uses permitted in the Light Industrial zone include wholesale business, fruit packing plants, sales and salvage yards, but not including auto wrecking or the sale of used or second-hand goods or merchandise, and including light manufacturing, light industries, cabinet and woodworking shops, and metal working and light machine shops, but not including ferrous metal forging works. Other permitted uses include open storage, subject to conditional use permit. Building heights in the Light Industrial zone would be limited to 24 feet.

Specifically prohibited in this zone would be any uses which emit any dust, gas, smoke, odors, or vibrations which may be detrimental to other properties in the neighborhood or the welfare of the occupants thereof.

3.3.2.5 Other Proposed Uses

The Green Valley Specific Plan includes 3 school sites within the specific plan area and one school at an offsite location to be determined. Each school site is adjacent to a public park. About 51.1 acres of parks are provided ranging in size from 5 acres to 30.6 acres. The smaller local parks are intended for general purpose park and playground facilities for the broad community interest and use. The 30.6 acre Regional Sports Complex is intended to contain, as a minimum, four soccer fields, three baseball fields, a concession facility and off-street parking. The sports park is located adjacent to the San Jacinto River trail system.

The land use plan includes 35.2 acres of open space in landscaped flood control channels and swales. The Romoland A channel will traverse the site and will be approximately 176 feet wide and is designed principally for storm runoff conveyance. A portion of this channel onsite will serve the purpose of providing dedicated open area for aircraft emergency touchdown.

In addition to the above, another 62.6 acres of open space is provided by the San Jacinto River which flows through the site on the northwest. Approximately 90.6 acres is taken up by road rights-of-way on the site.

3.3.3 Circulation Plan

The Circulation Plan, Figure 3-4, illustrates the backbone circulation design for Green Valley. All roads within the development will be public streets and will conform with City standards. No direct access to or between individual residential lots and arterial roadways will be permitted. Commercial and industrial developments will have their own internal circulation system connected to the backbone roadways at restricted points. Final access locations to each planning area will be identified at the time of tentative map submittal.

Non-vehicular circulation is an important component of the Circulation Plan. Green Valley will be linked with the regional trail system by a trailhead located in the regional sports complex (planning area 7). Green Valley pedestrian and bicycle traffic will access this trailhead via local trails which utilize greenbelts and roadways within the planning area.

The design of the 110-foot wide perimeter arterials will allow for three travel lanes in each direction and one bicycle lane in each direction. These roadways (Case, Ethanac, and Goetz) will be developed from the centerline toward the site.

The design of the 100-foot wide internal collectors will have two travel lanes in each direction and a bicycle lane in each direction. A 12-foot wide landscaped median will be provided. These streets (Green Valley Parkway and Murrieta Road) will be developed to their full right-of-way.

3.3.4 Landscape Plan

Landscaping will be provided through out the Green Valley Specific Plan to provided visual buffering of various uses, to create interesting spaces and enhance architecture, and to identify the hierarchy of the street system. The conceptual landscape plan for the development is shown on Figure 3-5 (See various maps in the Green Valley Specific Plan for signage design, monumentation, fencing standards and landscape plant palette.

CIRCULATION PLAN

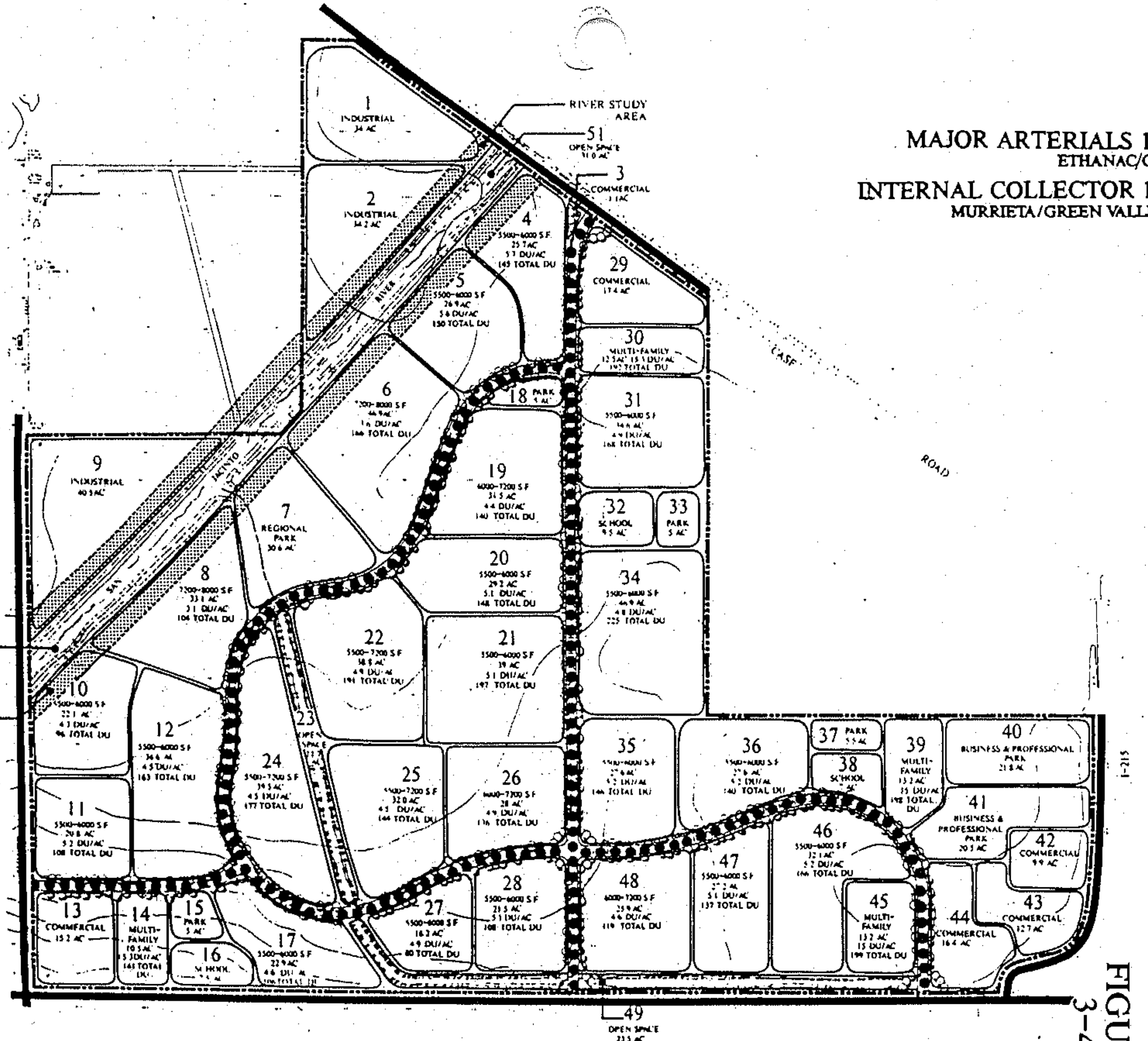
FIGURE 3-4

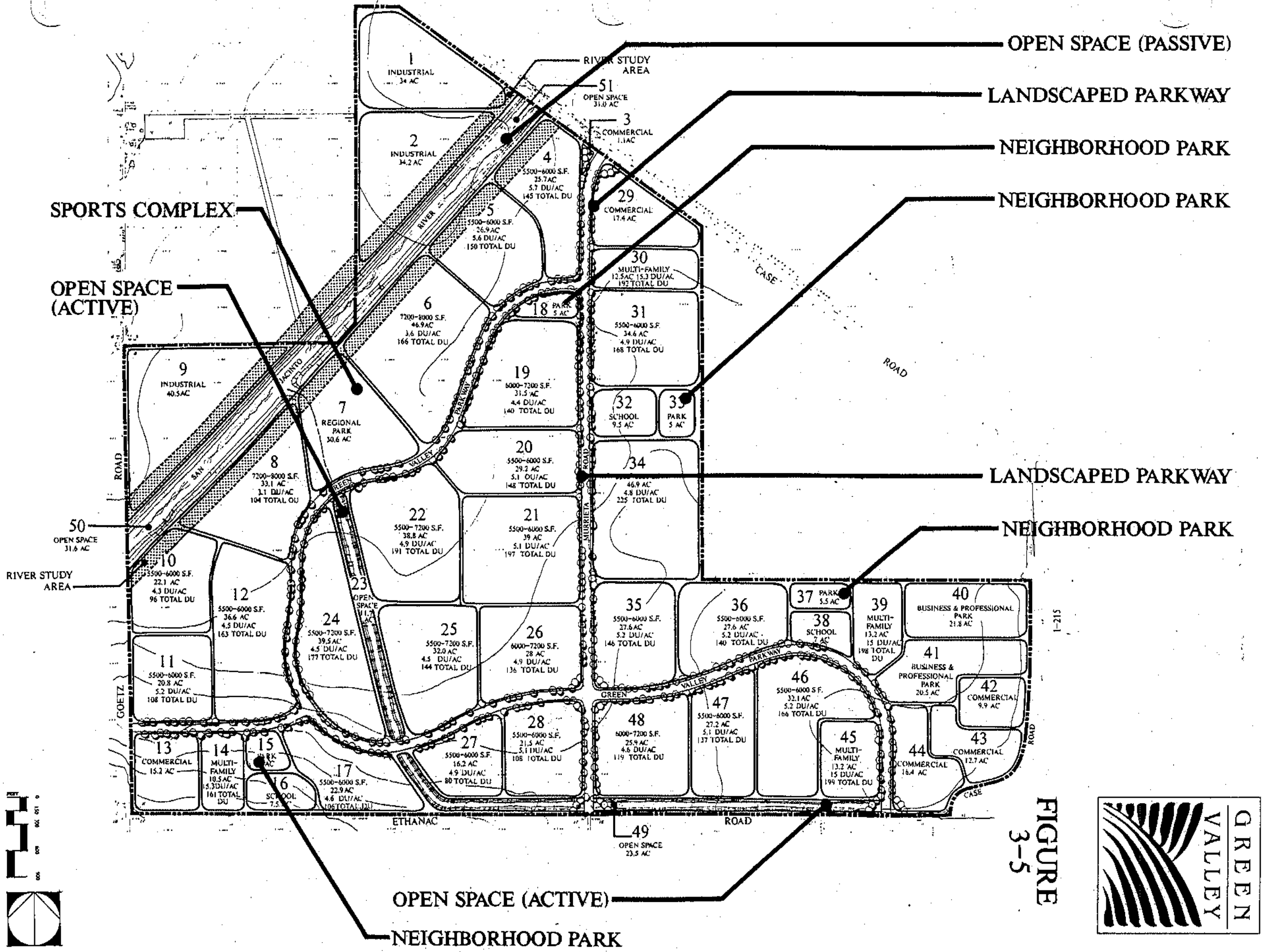
GREEN VALLEY

LEGEND

MAJOR ARTERIALS 110' ROW
ETHANAC/CASE/GOETZ

INTERNAL COLLECTOR 100' ROW
MURRIETA/GREEN VALLEY PARKWAY





CONCEPTUAL LANDSCAPE PLAN

3.3.5 Grading Plan

The Grading Plan, as illustrated in Figure 3-6, depicts the grading concept for the proposed project site. It is estimated that approximately 3,460,000 cubic yards of earth will be moved during the development of the entire site. However, the site is relatively flat and it is proposed to balance the earthwork such that no significant import or export will be required.

Two notable features of the grading plan include the low elevation of the sports complex site with respect to surrounding parcels and the movement of earth from the higher elevations on the southwestern portion of the site, to build up other areas of the site.

Grading will be phased to coincide with each phase of development. It may, however, be necessary to "borrow" or store dirt from other than construction areas as development proceeds.

3.3.6 Drainage Plan

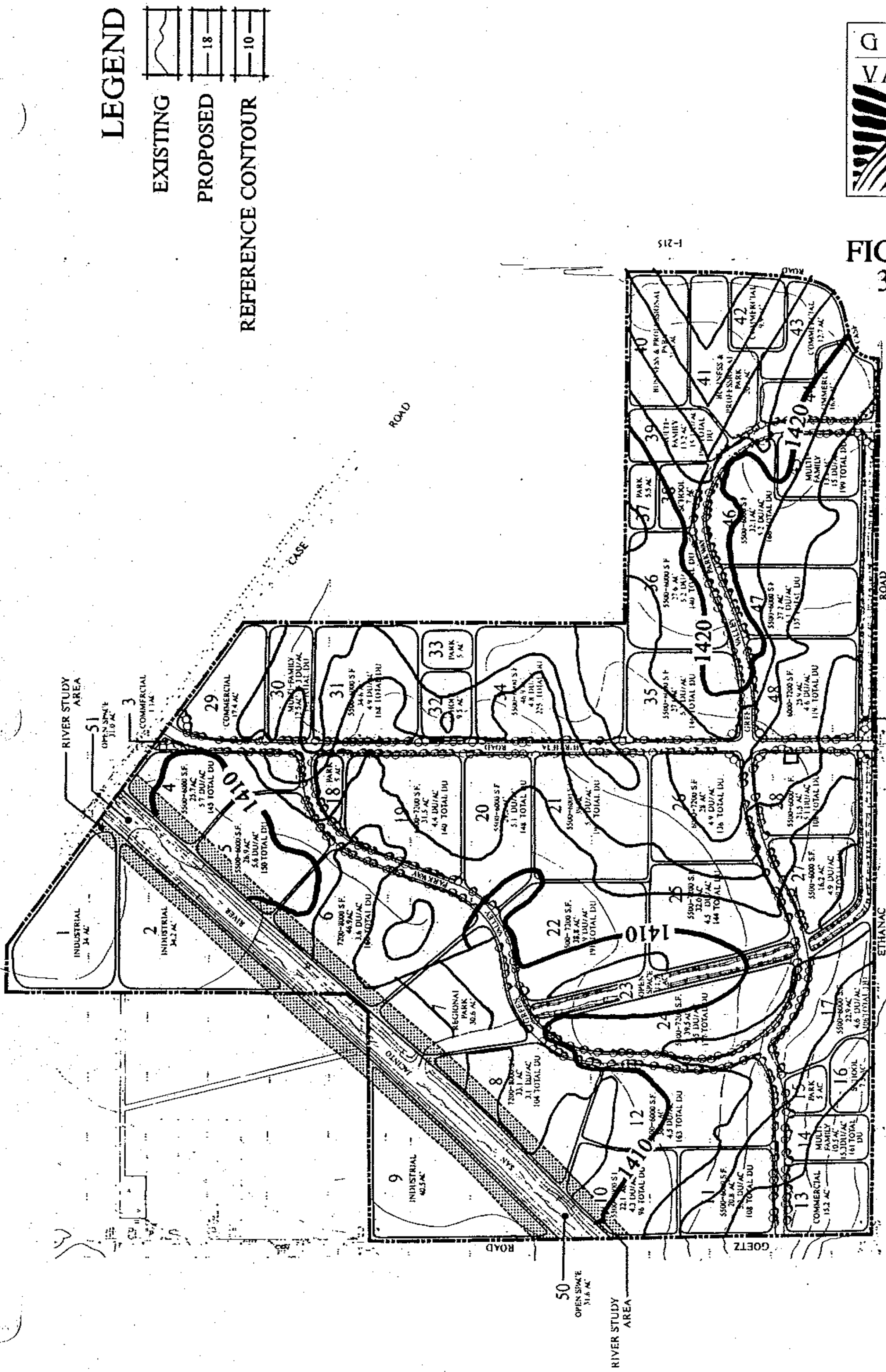
The Drainage Plan, as shown in Figure 3-7, illustrates the improvements necessary to convey flood waters from the site. The plan includes a combination of primary and secondary swales which carry flows to the two major channels on the property, San Jacinto River and Romoland Line A channel. For purposes of project planning, it has been assumed that the San Jacinto River Channel and Romoland Line A will be developed to their ultimate planned widths on the project site and that all improvements will be constructed by the Riverside County Flood Control District. Channel cross-sections are included as Figure 3-8 and 3-9, and indicated the extent of reserved right-of-way.

The construction of these elements is a major consideration of the Drainage Plan. The plan proposes to relocate a portion of Romoland Line A from its adopted location, to the one shown on Figure 3-7. The realignment would allow water to be channelized along greenbelt swales rather than across private lots. The realignment also accommodates airport compatibility concerns for provision of an area suitable for emergency landings by aircraft.

The Drainage Plan includes approximately 17,900 lineal feet of secondary swales of approximately 50 to 150 cubic feet per second (cfs) capacity. It is intended that the secondary swales be provided as turf-lined channels with some trees along the upper banks. It is proposed to provide a band of concrete down the center of the swale to assist the conveyance of nuisance and low-flow drainage water. These concrete bands will be used for walking or cycling.

GRADING PLAN

FIGURE 3-6



DRAINAGE PLAN

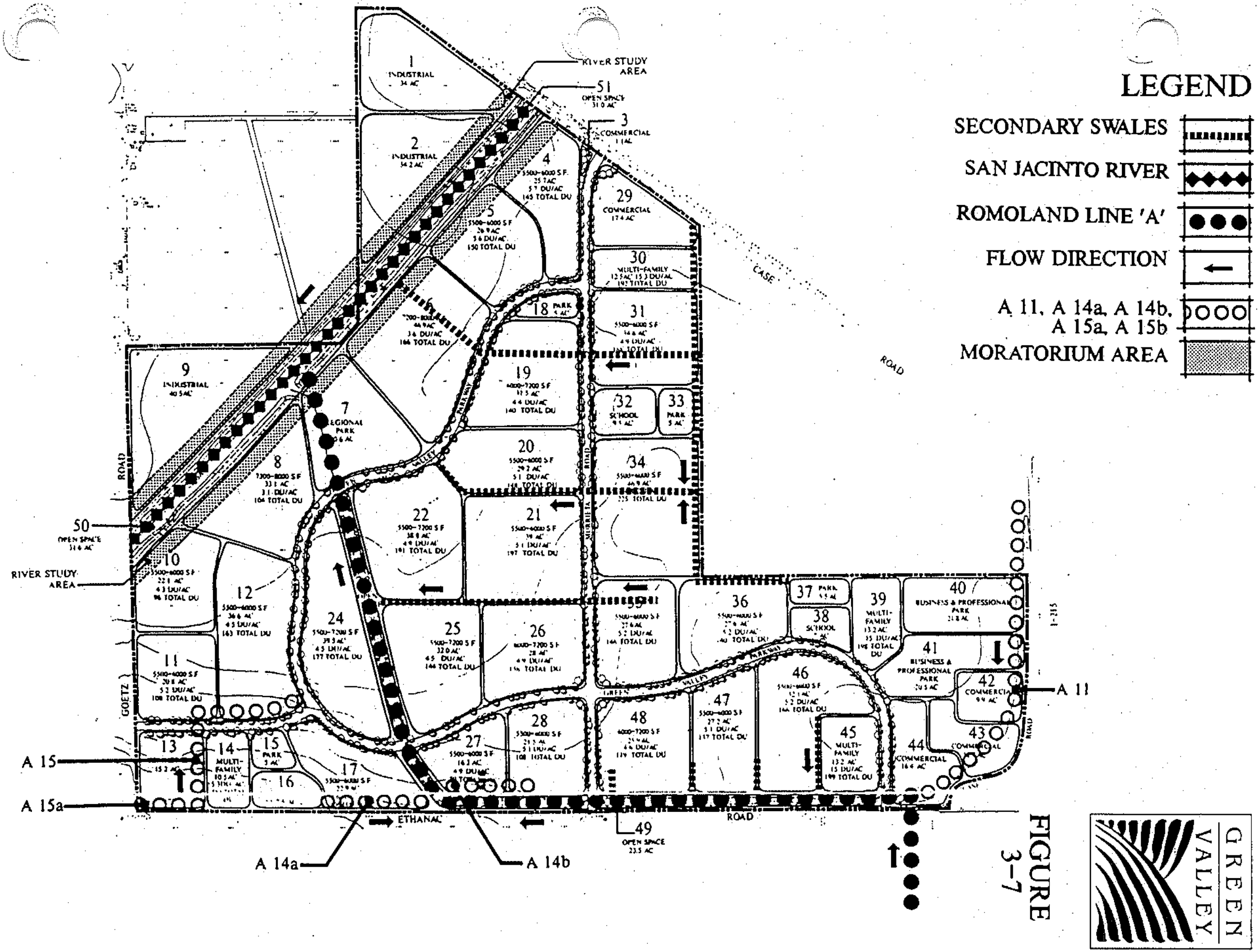
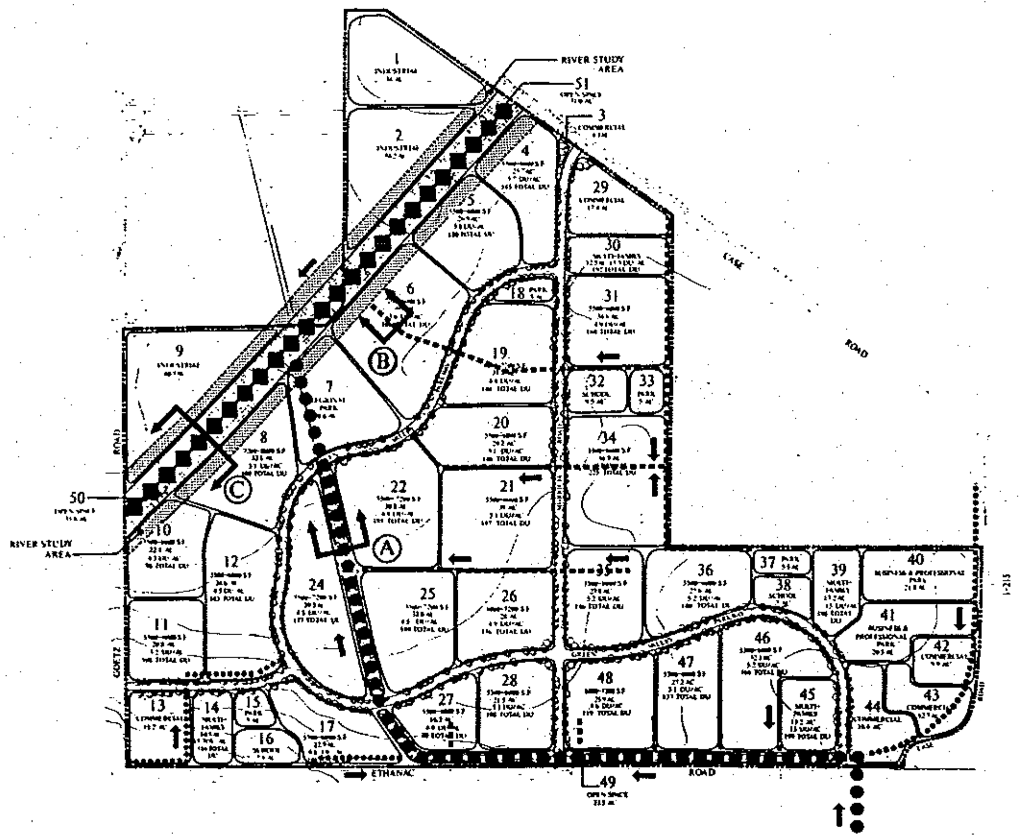


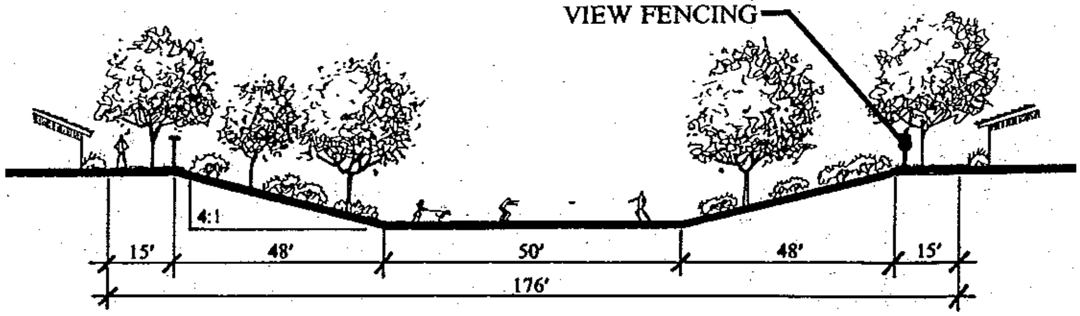
FIGURE 3-7

GREEN VALLEY

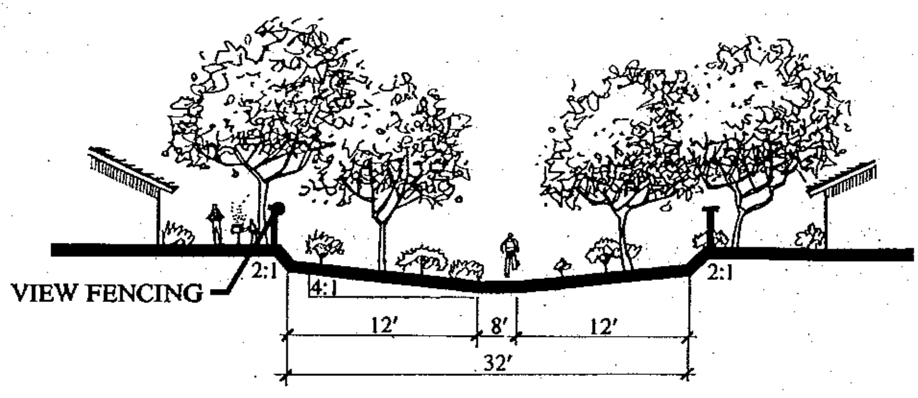
SWALE CROSS SECTIONS

FIGURE 3-8

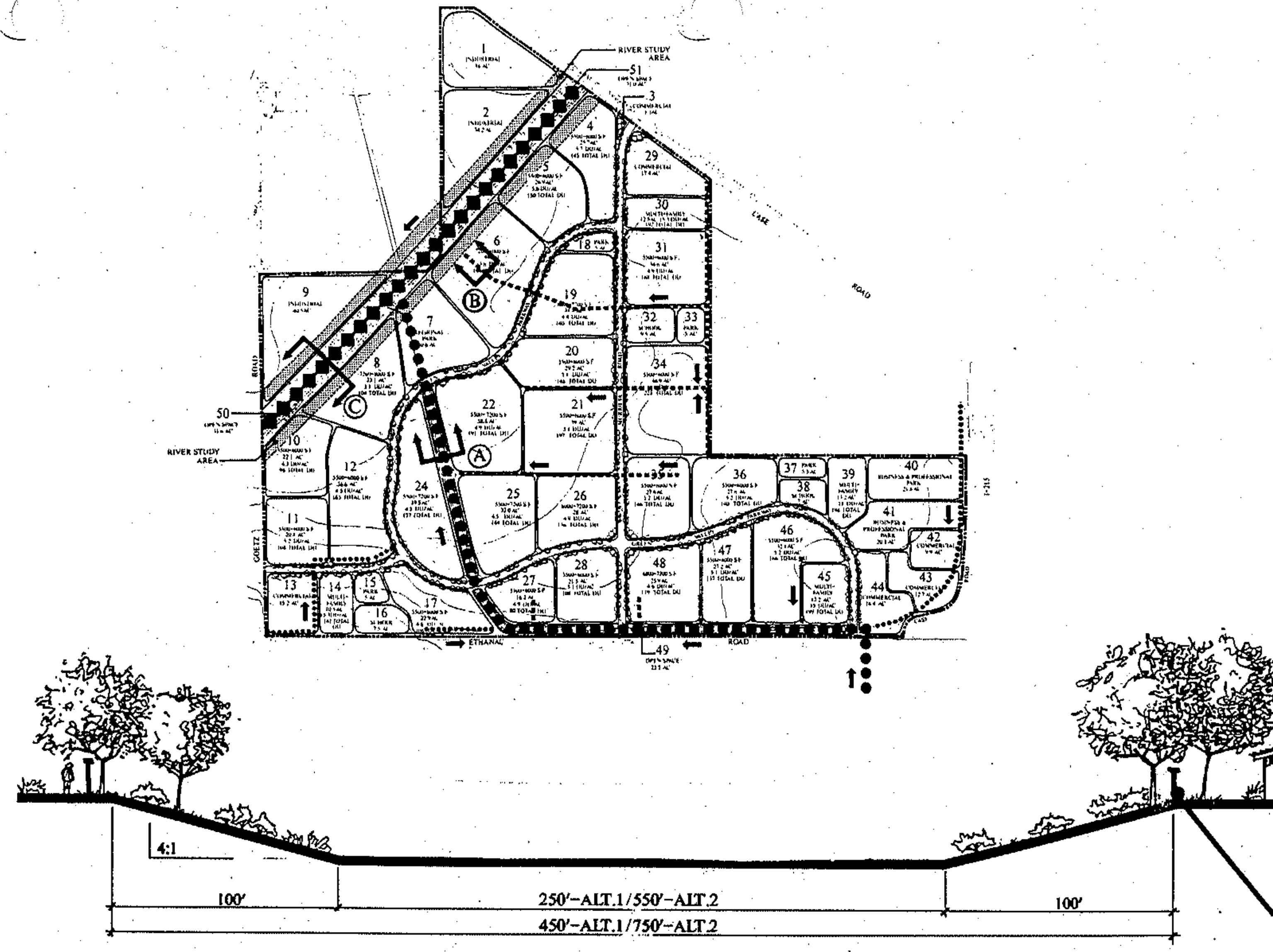




ROMOLAND CHANNEL "A"
(176' R.O.W.)



SECONDARY SWALE CONDITION "B"
(32' R.O.W.)



SAN JACINTO RIVER CONDITION "C"
(450' R.O.W.-ALT. 1/750' R.O.W.-ALT.2)

FIGURE 3-9

GREEN VALLEY

It is proposed that the primary and secondary swales on the site be used for active recreation. In general, any recreational use requiring a large grassy area could be accommodated.

The swales would be dedicated to the City of Perris, which would maintain them. The cost of maintenance would be provided through the proposed community services district to be established for the other parks within the development.

3.3.7 Water and Sewer Plan

Figures 3-10 and 3-11 illustrate the size and location of proposed water and sewer service pipelines serving the proposed development. Existing facilities are shown as well.

The Eastern Municipal Water District (EMWD) is the public agency responsible for provision of both water and sewer service to the project site.

The water system was designed based on a fire flow requirement of 5000 gallons per minute, a peak day demand of 8.8 million gallons and an average daily demand of approximately 5.0 million gallons. At ultimate buildout, a 10 million gallon water storage reservoir will be required. A location for the storage reservoir has not been identified.

The wastewater collection system consist of both force mains and gravity sewers up to 24 inches in diameter. All wastewater will be sent to the adjacent Perris Valley Treatment Plant for processing and disposal. Tentatively, it is estimated that the project will generate about 2.2 million gallons per day of wastewater requiring treatment.

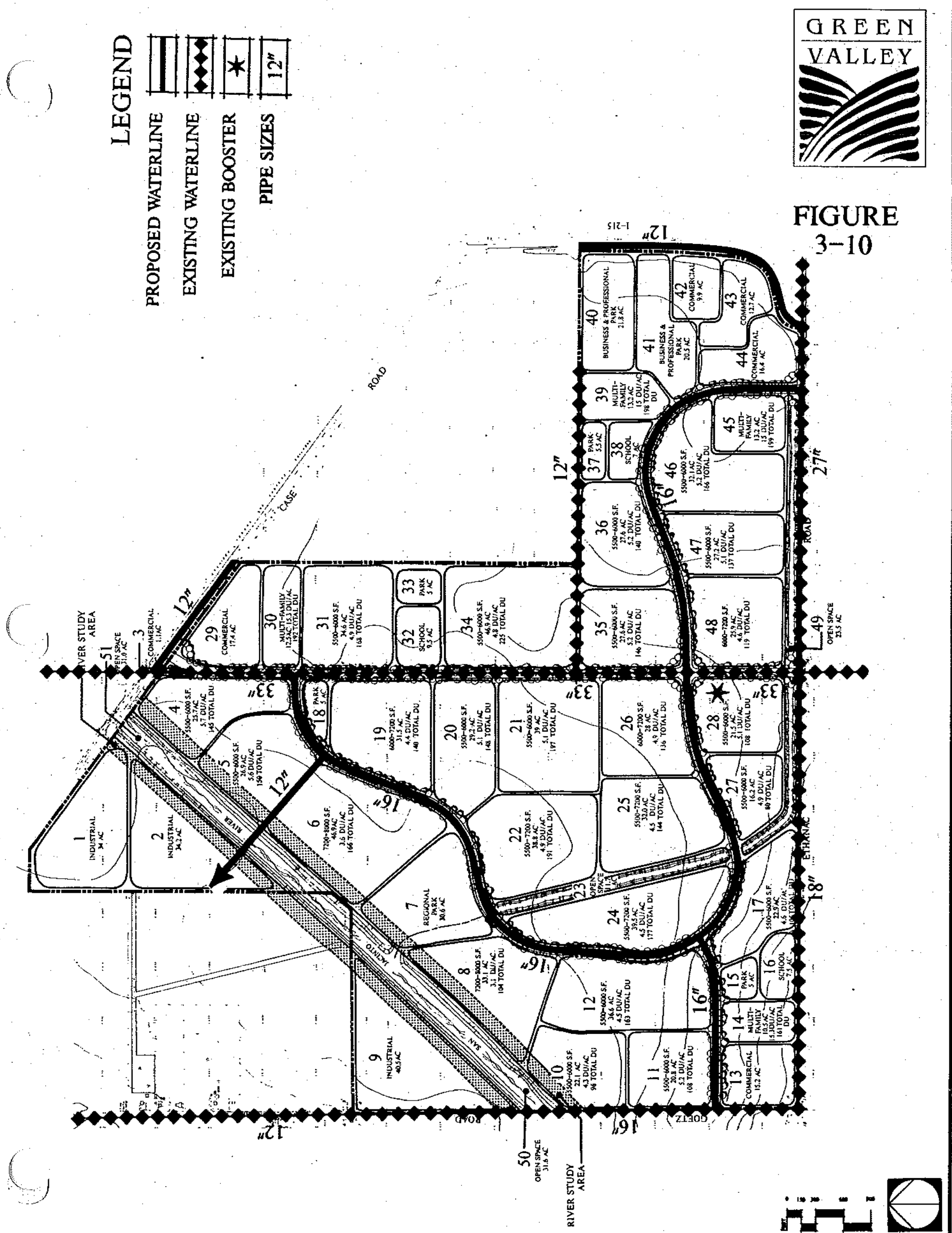
It is anticipated that reclaimed water will be used for the maintenance of landscaped areas within the development. A separate reclaimed water system would be developed to serve the project. A system of 12 inch diameter pipelines in major streets within the development is proposed. The source of reclaimed water for irrigation is the adjacent Perris Valley Wastewater Treatment Plant. Reclaimed water demand for irrigation of parks, open space, road medians and school sites is estimated to be 0.9 million gallons per day.

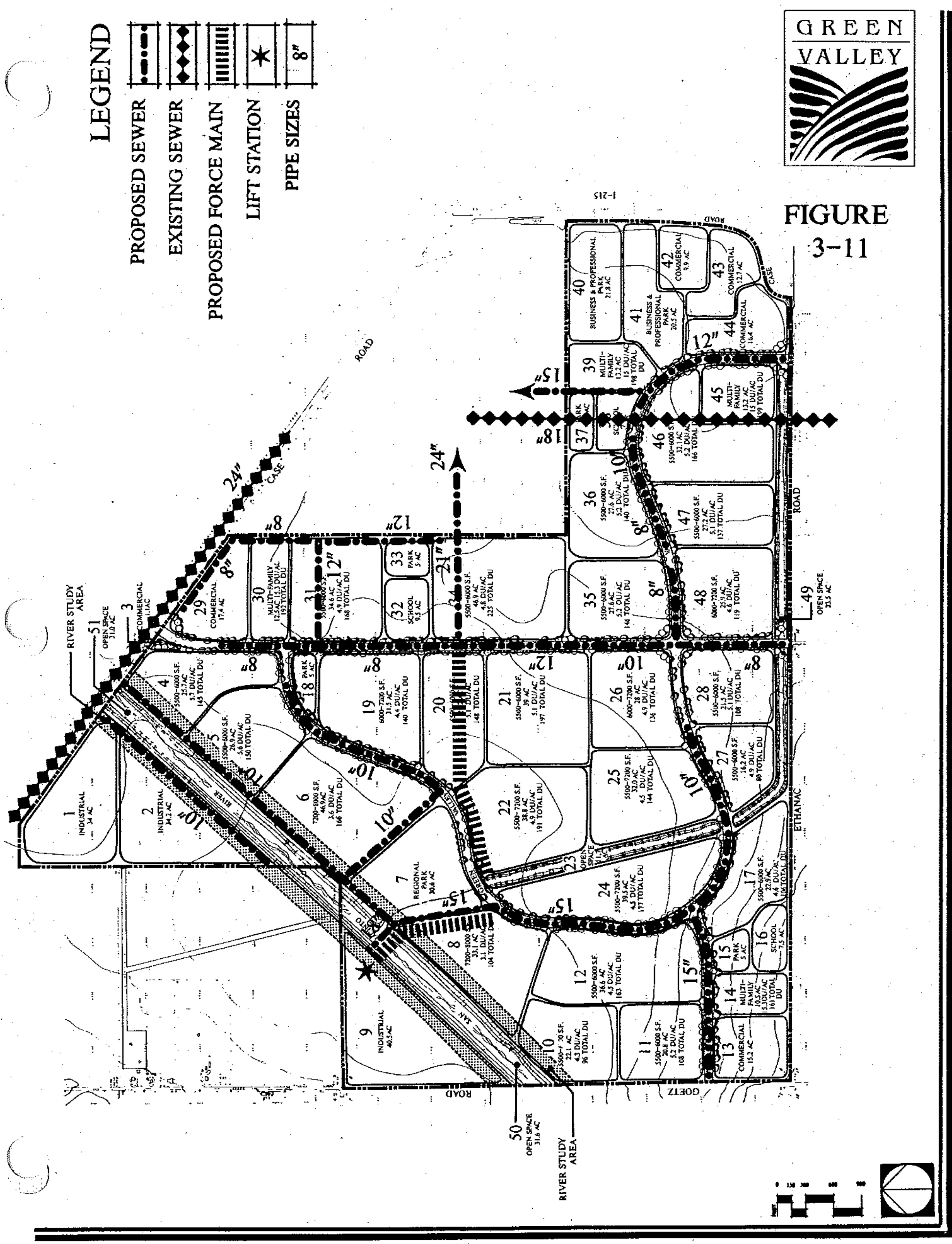
3.3.8 Phasing Plan

The following assumptions concerning phasing are contained in the Green Valley Specific Plan. It is assumed that there will be four major phases of the project which will require 10 to 12 years for

WATER PLAN

FIGURE 3-10




SEWER PLAN
FIGURE 3-11
GREEN VALLEY
LEGEND
PROPOSED SEWER
EXISTING SEWER
PROPOSED FORCE MAIN
LIFT STATION
PIPE SIZES
8"
RIVER STUDY AREA
OPEN SPACE
ROAD
CASE
ETHANAC
GOETZ
I-215
1 INDUSTRIAL 34 AC
2 INDUSTRIAL 34.2 AC
3 COMMERCIAL
7 REGIONAL PARK 30.6 AC
9 INDUSTRIAL 40.5 AC
13 COMMERCIAL 15.2 AC
15 PARK 5 AC
16 SCHOOL 7.5 AC
18 PARK 5 AC
29 COMMERCIAL 17.4 AC
32 SCHOOL 9.5 AC
33 PARK 5 AC
40 BUSINESS & PROFESSIONAL PARK 21.8 AC
41 BUSINESS & PROFESSIONAL PARK 20.5 AC
42 COMMERCIAL 9.9 AC
43 COMMERCIAL 12.7 AC
44 COMMERCIAL 16.4 AC
49 OPEN SPACE 33.5 AC
50 OPEN SPACE 31.6 AC
51 OPEN SPACE 31.0 AC
8" 10" 12" 15" 18" 21" 24"

complete buildout. Residential uses are expected to buildout within about 8 years due to the strong demand for such use in the area. Commercial and industrial uses are expected to buildout within 10 to 12 years. The phasing described below is conceptual, that is, it is subject to modification in the future as a result of market forces and improvement of major infrastructure such as the San Jacinto River improvements.

The project land uses are listed in Table 3.3-2 by proposed phase. This phasing is illustrated on Figure 3-12.

TABLE 3.3-2
PHASING PLAN

LAND USE	DU'S	ACRES	SQUARE FOOTAGE
PHASE 1			
R-7,200-8,000 Residential	-	-	
R-6,000-7,200 Residential	255	53.9	
R-5,500-7,200 Residential	-	-	
R-5,500-6,000 Residential	989	195.3	
Multi-family Res	192	12.5	
Schools (1 Site)	-	9.5	
Parks (1 Site)	-	5.0	
Commercial (2 Sites)	-	18.5	235,500
Industrial	-	68.2	1,140,000
Open Space	-	98.6	
Circulation	-	40.0	
TOTAL PHASE 1	1,436	500.7	1,375,500
PHASE 2			
R-7,200-8,000 Residential	166	46.9	
R-6,000-7,200 Residential	140	31.5	
R-5,500-7,200 Residential	-	-	
R-5,500-6,000 Residential	741	143.0	
Multi-family Res	199	13.2	
Schools (1 Site)	-	7.0	
Parks (3 Site)	-	41.1	
Commercial	-	-	
Industrial	-	-	
Open Space	-	-	
Circulation	-	32.6	
TOTAL PHASE 2	1,246	315.3	

TABLE 3.3-2, cont.
PHASING PLAN

LAND USE	DU'S	ACRES	SQUARE FOOTAGE
PHASE 3			
R-7,200-8,000 Residential	-	-	
R-6,000-7,200 Residential	-	-	
R-5,500-7,200 Residential	-	-	
R-5,500-6,000 Residential	533	118.6	
Multi-family Res	161	10.5	
Schools (1 Site)	-	7.5	
Parks (1 Site)	-	5.0	
Commercial (1 Sites)	-	15.2	194,500
Industrial	-	40.5	645,000
Open Space	-	-	
Circulation	-	18.0	
TOTAL PHASE 3	**714**	**215.3**	**839,500**
PHASE 4			
R-7,200-8,000 Residential	104	33.1	
R-6,000-7,200 Residential	-	-	
R-5,500-7,200 Residential	512	110.3	
R-5,500-6,000 Residential	-	-	
Multi-family Res	198	13.2	
Schools	-	-	
Parks	-	-	
Commercial (5 Sites)	-	81.3	1,035,500
Industrial	-	-	
Open Space	-	-	
Circulation	-	-	
TOTAL PHASE 4	**814**	**237.9**	**1,035,500**

PHASING PLAN

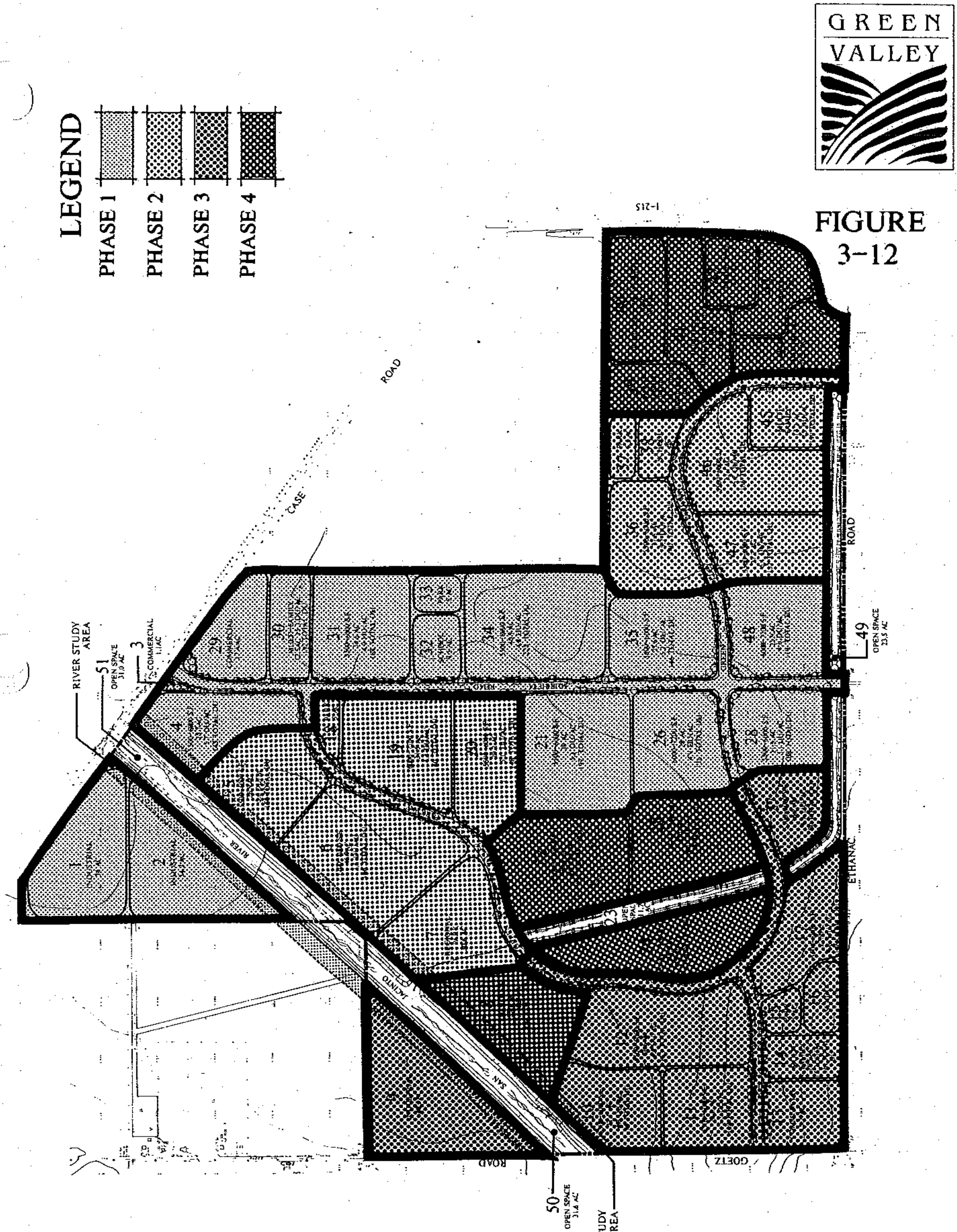


FIGURE 3-12

GREEN VALLEY

ENVIRONMENTAL IMPACTS

SECTION 4
ENVIRONMENTAL IMPACT ANALYSIS

4.1 INTRODUCTION

This section evaluates the environmental impacts which will occur should the proposed action be implemented. Both construction related effects and operational effects are discussed. The issues covered in this section where identified as potentially significant in the Initial Study prepared for the project (see Technical Appendices, Appendix A).

Each major resource issue is discussed with respect to four areas as required by CEQA guidelines. The four areas are as follows;

o Environmental Setting: Included is a discussion of the existing conditions, services and physical setting of the project site and vicinity.

o Environmental Impacts: Provides an analysis of the project's impacts in a quantitative and qualitative manner, and assigns significance to the impact.

o Mitigation Measures: Discusses the measures that are incorporated into the project or proposed which will minimize environmental impacts.

o Unavoidable Significant Impacts: Indicates whether or not significant impacts remain after implementation of mitigation.

4.2 EARTH RESOURCES

The specific geotechnical assessments and conclusions contained in this section of the EIR were taken from a study entitled, "Feasibility Geotechnical Investigation, 1,196 Acre Commercial Residential Development, Murrieta and Ethanac Roads, Perris, California", dated February 17, 1989 and prepared by Highland Soils Engineering, Inc. Additional information is presented in this section on the potential for hazardous wastes to be found onsite. The source of this information is the "Environmental Property Investigation" report dated February 7, 1989 and prepared by Hydrotech Consultants, Inc. These technical reports are included in the Technical Appendices, Appendix B.

4.2.1 Environmental Setting

4.2.1.1 Topography

The project site is predominantly flat with a slight downward gradient toward the west. Drainage across the site sheet flows consistent with the west ward gradient, eventually reaching the San Jacinto River. The extreme southwest corner of the site is the highest point on the property. Elevations across the site range from approximately 1,408 to 1,426 feet above mean sea level.

4.2.1.2 Existing Human Features

Based on examination of older aerial photographs and field reconnaissance, the majority of the site historically has been used for agricultural purposes. An older farm house with associated barns and grain storage silos is located at the northeast corner of Murrieta and Watson Roads. Field investigation revealed that two underground fuel storage tanks are located on this property.

The other predominant human feature on the site is the remains of a wholesale nursery which occupied the southwest portion of the property from about Murrieta Road west and Mapes Road south. The former nursery area includes several large debris piles 10 to 15 feet in height, numerous above ground temporary structures, an underground drainage system and a system of irrigation basins. The basins were about 50 to 100 feet wide and several hundred feet long, extending across the northern portion of the nursery adjacent to the San Jacinto River. Two underground fuel storage tanks are located within the west portion of the former nursery.

4.2.1.3 Geological Setting

The Green Valley site is located within the Perris Block of the Peninsular Ranges Geomorphic Province. The Perris Block is a terrain of crystalline basement of generally low relief between the San Jacinto Fault Zone to the east and the Elsinore Fault Zone to the southwest (Diblee, 1981).

Locally, the Perris Valley is underlain by recent alluvial deposits within a broad alluviated valley. These deposits are believed to be in excess of 300 feet in depth.

4.2.1.4 Site Specific Geology

The site is predominantly underlain by alluvial deposits consisting of loose to very dense, clayey sands, silts, silty sands and sands, and stiff to hard sandy clays and sandy silts. These soils vary from very low to very high in expansion potential and have low to moderate strength characteristics.

There are several areas of relatively shallow artificial fills within the southwest and central portions of the project site. These fills were observed to consist of firm to very stiff local sandy clays, and loose to medium dense silt and sandy silts.

4.2.1.5 Seismicity

The dominant structural feature in the area is the San Jacinto Fault (Casa Loma Fault) located approximately ten miles northeast of the site. The northwest-trending San Jacinto Fault Zone is considered to be the most active fault zone in Southern California.

This is a region of generally high seismicity, as is all of Southern California. During its design life, the site is expected to experience ground motions from earthquakes on regional and/or local faults. Figure 4-1 illustrates the site's location in relation to these faults. Table 4.2-1 lists known regionally active faults, their approximate distances from the site and their maximum probable magnitudes.

TABLE 4.2-1
COMPARISON OF SEISMIC PARAMETERS

FAULT ZONE	APPROXIMATE DISTANCE FROM SITE	MAXIMUM PROBABLE EARTHQUAKE (M)	PEAK ROCK* ACCELERATION AT SITE (g)
San Jacinto	10 Miles NE	7.1	0.35
San Andreas	23 Miles NE	7.5	0.27
Elsinore	11 Miles SW	7.0	0.35

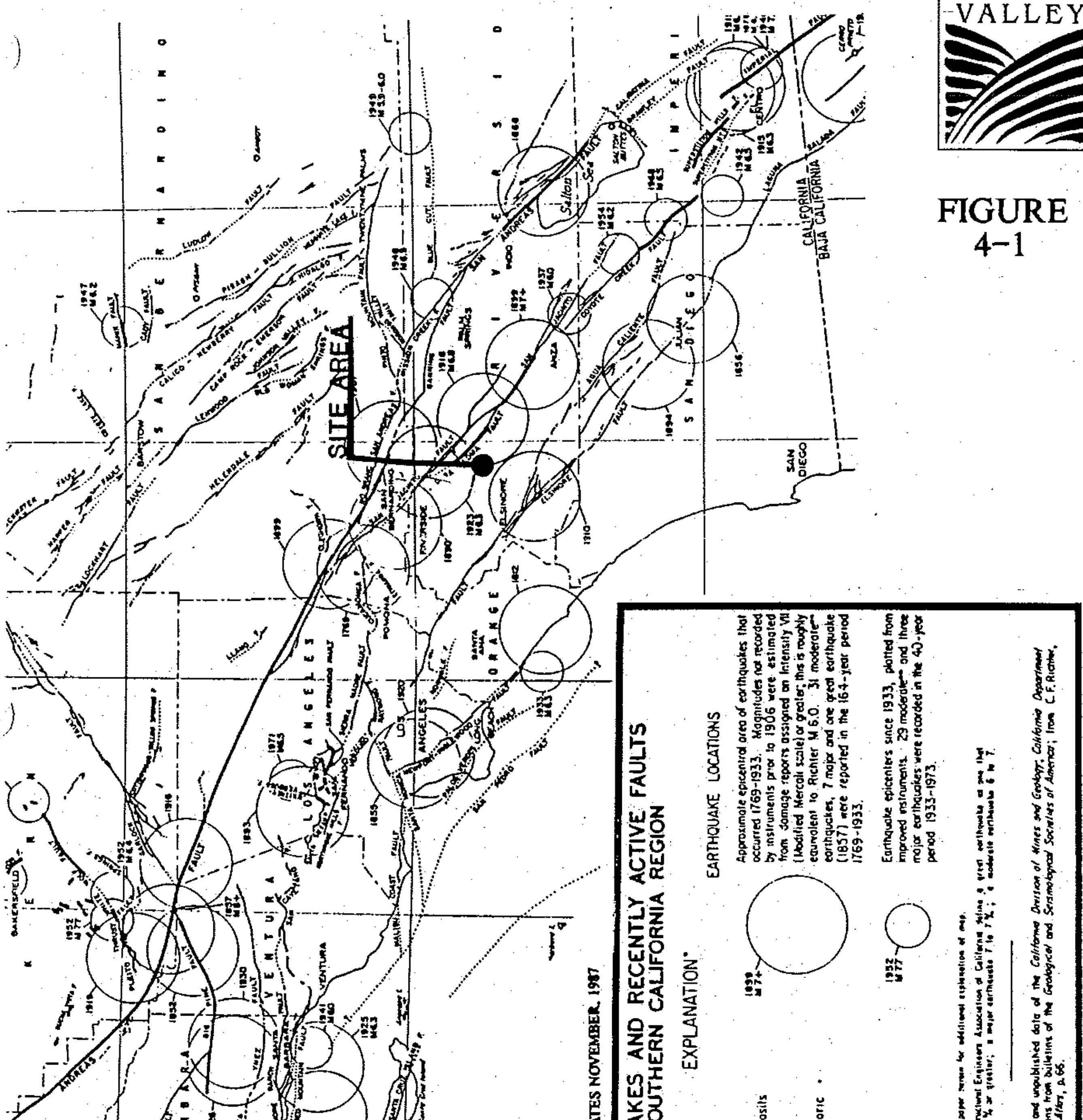
1. Seed and Idriss, 1982
2. Ploessel and Slosson, 1974
3. Gutenberg and Richter, 1956
4. All maximum probable earthquakes would produce groundshaking of Intensity VIII on the modified Mercalli scale.

A Magnitude 7.1 earthquake occurring on the San Jacinto Fault Zone in close proximity to the site, could produce a peak ground acceleration on the order of 0.37g (Seed and Idriss, 1982). The duration of strong motion is expected to exceed 30 seconds (Bolt, 1973).

FAULT LOCATION MAP

GREEN VALLEY

FIGURE 4-1



4.2.1.6 Other Seismic Hazards

Besides seismic shaking, there are secondary hazards associated with earthquakes, such as ground rupture, liquefaction, seismically induced settlement, seismically induced landslides, seiches and tsunamis, and inundation due to failure of large water storage facilities. These secondary hazards potentially could occur at the site to varying degrees as discussed below.

Liquefaction: Liquefaction occurs when soil become saturated with water during severe groundshaking. Soils lose their ability to support any weight during this phenomenon. Liquefaction is considered likely due to the existence of locally perched groundwater and saturated near surface soils adjacent to San Jacinto River.

Ground Rupture: Ground rupture normally occurs along pre-existing faults, triggered during a seismic event. No faults were observed on the project site, thus the possibility of ground rupture is considered low.

Seismically Induced Settlement: Generally, the on-site materials consist of medium to dense alluvial soils. The settlement potential under seismic loading conditions for these on-site materials is low to high.

Seismically Induced Landslides: Due to the flat lying topography, the potential for seismically induced landslides is considered nonexistent.

Tsunamis and Seiches: Tsunamis and seiches are seismically induced waves created during severe earthquakes in oceans and closed bodies of water, respectively. Depending on the water level of Lake Perris Dam and the intensity of ground shaking generated by a local earthquake, the possibility of seiches with some impact on the site is remote.

Flooding: According to Envicom (1976), the Perris area lies within the potential inundation plain of three reservoirs: Lake Perris Dam, Lake Hemet Dam and Pigeon Pass reservoir. Failure at one of the reservoir dams from ground shaking during a major earthquake would be expected to have a moderate to serious impact on the site. Among these facilities, Lake Perris Dam is considered to represent the greatest potential risk to public safety in the Perris Area.

4.2.1.7 Groundwater

Some of the on-site borings revealed groundwater at depths of about 13 to 19 feet. Elsewhere, groundwater was not encountered to the maximum boring depths of 40 feet. Well data for the portion of the site located east of Murrieta Road indicates groundwater levels of approximately 200 feet below the existing ground surface.

4.2.1.8 Hazardous Waste

Two underground fuel storage tanks are located within the former nursery area on the Green Valley site, and two more are located within the farm house area at the northeast corner of Watson Road and Murrieta Road. In addition, there are heavy concentrations of fertilizers in the surficial soils throughout the former nursery facility. It is not believed that cancer-causing or other hazardous-type fertilizers have been used. Several oil stains were noted within the maintenance area of the former nursery. Surficial oil staining was also observed at an abandoned wood processing area of the former nursery.

4.2.2 Environmental Impacts

4.2.2.1 Geology and Soils

Site soils are generally suitable for the proposed uses, however, certain significant constraints are present which must be mitigated. The predominant soil constraint is the expansion potential which ranges from very low to very high. Expansive soils can damage foundations, sidewalks and other paving.

An additional constraint is the existence of artificial fills of unknown origin. Placement of structures on these fills could have significant adverse structural impacts.

The construction of the project will require movement of a significant amount earth on-site. Up to 3,460,000 cubic yards of earth may require excavation and replacement on site. From the grading plan, it is assumed that undeveloped portions of the site (slated for later phases of development) may be used as borrow areas or soil storage areas for current phases of development. Use in this manner could result in significant adverse soil erosion and dust impacts. Specific control measures would have to be implemented to mitigate this impact.

4.2.2.2 Seismicity

The project is not located within any state or county special studies zone for active faulting. Therefore, the major seismic hazard with respect to the project site is seismic ground shaking. The possibility of severe ground shaking is considered high during the anticipated economic life of the proposed structures (50 - 100 years). The most severe seismic shaking of the site would originate from an earthquake generated from the Casa Loma branch of the San Jacinto Fault Zone. The maximum ground acceleration from a maximum probable earthquake of Richter Magnitude 7.1 would be approximately 0.37g. The possibility of severe ground shaking is a potentially significant adverse impact with respect to the project.

4.2.2.3 Other Seismic Hazards

Of the secondary seismic hazards previously discussed, seismically induced settlement and liquefaction potentially could have significant adverse impact on the project. Flooding due to dam failures also presents a hazard with potentially significant adverse consequences.

The Green Valley site consists of medium dense alluvial soils. The settlement potential during seismic activity is considered low to high. Soil liquefaction (the loss of soil strength during a significant seismic event) is considered probable in areas adjacent to the San Jacinto River, but also is probable in some areas across the site. The potential for liquefaction decreases to an unlikely condition as the groundwater drops lower than 40 feet from the surface. It is expected that the locally perched groundwater will diminish after the existing nursery ceases operation. Thus, liquefaction potential on this part of the site may not be a factor at some unknown point in the future.

4.2.2.4 Groundwater

As previously mentioned, the impact of perched groundwater is important from the standpoint of its contribution to liquefaction. No other direct impacts relative to groundwater are expected.

4.2.2.5 Hazardous Waste

The findings of the hazardous waste investigation conclude that it is unlikely that hazardous waste is present on the majority of the site. However, due to the existence of the former commercial nursery, underground fuel tanks, and the past agricultural use, there is a potential of localized hazardous waste contamination. Such contamination, if it occurs, could result in significant adverse impact on the proposed use of the site for human habitation, or could expose construction workers to hazardous conditions.

4.2.3 Mitigation Measures

4.2.3.1 Geology and Soils

- The Geological Feasibility Investigation contains specific recommendations to overcome adverse soil conditions which exist on-site. All grading and earthwork should be accomplished in accordance with standards and guidelines contained in that report.

- Additional geotechnical studies and field work will be performed during project design to further evaluate near surface conditions.

- Continuous observation and testing under direction of a qualified geotechnical engineer and/or engineering geologist shall be accomplished to verify compliance with the report recommendations and to confirm that the geotechnical conditions found are consistent with the report findings.

- Cut and fill onsite should be balanced. If not, aspects of material import must be approved by the City Engineer.

- Each tentative tract map for each phase of development shall include a detailed grading plan. The grading shall include the following information at a minimum:

  a. Preliminary quantity estimates for grading.
  b. Designation of areas of temporary borrowing or depositing of material.
  c. Techniques which will be utilized to prevent erosion and sedimentation during and after the grading process.
  d. Approximate time frames for grading including identification of areas which may be graded during the higher probability rain months of January through March.
  e. Preliminary pad and roadway elevations.
  f. Hydrology and hydraulic concerns and mitigation measures.

4.2.3.2 Seismic Groundshaking

- Proposed structures on the site are expected to perform satisfactorily if designed in accordance with Uniform Building Code or local building codes, whichever has precedence.

4.2.3.3 Secondary Seismic Phenomenon

- Regrading of the near surface soils as recommended in the geotechnical feasibility report should reduce seismic induced soil settlement to within tolerable limits.

- In liquefaction prone areas, the use of post-tensioned slabs is recommended. Alternately, a 3 foot thick fill mat underlain by a 1 foot thick gravel blanket could be used. Specific recommendations will be made on a site-by-site basis during final design.

- The potential inundation due to a dam failure should be analyzed by a qualified design civil engineer and any recommendations for site protection should be implemented.

4.2.3.4 Groundwater

- The level of perched groundwater in the vicinity of the nursery should be monitored indefinitely due to its potential contribution to liquefaction.

4.2.3.5 Hazardous Wastes

In order to reduce the impacts of potential hazardous wastes on the site, sampling and chemical analysis of on-site soils and any ponded waters are recommended. Prior to development of the site, each of the areas identified as having the potential for contamination will be thoroughly tested. The specific testing requirements should include at least the following;

- Sampling and chemical analysis of the surficial and near surface soils of the past agricultural areas of the site and within the former nursery facility.

- Sampling and chemical analysis of the surrounding subsurface soils within the immediate areas of the existing underground fuel tanks.

- Water sampling and testing within any ponded areas of the project site.

Should any contamination be discovered, the affected areas will be thoroughly cleaned prior to grading activities.

4.2.4 Significant Unavoidable Adverse Impacts

With the implementation of the mitigation measures described above, the significant and potentially significant geotechnical impacts will be reduced to the level of adverse but not significant. The potential impact of severe groundshaking is considered an unavoidable impact.

4.3 HYDROLOGY AND DRAINAGE

4.3.1 Environmental Setting

4.3.1.1 Hydrology and Drainage

The major drainage feature of interest in the project area is the San Jacinto River which flows southwesterly across the northwestern portion of the project site. Secondarily, the Romoland Wash (Line A channel) flows westerly along the southern property boundary eventually connecting to the San Jacinto River. Sheet flow drainage across the project site is toward the west and southwest at a very low gradient.

Some onsite drainage was formerly directed into holding ponds at the south and central portions of the site which were used by the former nursery operation for crop irrigation. Perched groundwater was encountered on-site at depths ranging from 13 to 19 feet near the San Jacinto Storm Channel. The regional groundwater depth is on the order of 125 +/- feet below the ground surface. The higher groundwater levels on portions of the site are believed to be due to the extensive nursery irrigation system.

The project site is presently within the inundation area of a 100-year flood event on either drainage. The Riverside County Flood Control and Water Conservation District's (RCFCDWCD) Master Drainage Plan for the San Jacinto River includes plans for channeling storm flow from the San Jacinto River Basin. The District's Homeland/Romoland Area Drainage Plan includes design for improvements necessary to protect lands within the Romoland Wash drainage.

Construction of these improvements will be accomplished by RCFCDWCD and will be financed through special assessment districts. The project site is within the San Jacinto River Improvement District 4-2, and has been assessed a fee by the County for the design and construction of the San Jacinto River flood control improvements. The project site is also within the pending Assessment District No. 4-4, which will provide the funding for construction of the Romoland Lateral A flood control channel. While the exact flood control assessment fee for the proposed development has not been established, it will be on the order of $5500 per developed acre. Once facilities are constructed, the site will no longer be subject to the 100-year flood event. The resultant 100-year flood plain after construction of all anticipated improvements is illustrated on Figure 4-2.

The project site is situated approximately six miles south of Lake Perris and is located within the Lake Perris Dam Inundation Area. The area of inundation in the event of a dam failure is shown on Figure 4-3, and encompasses all of the site. Though a catastrophic

FLOOD PLAIN MAP

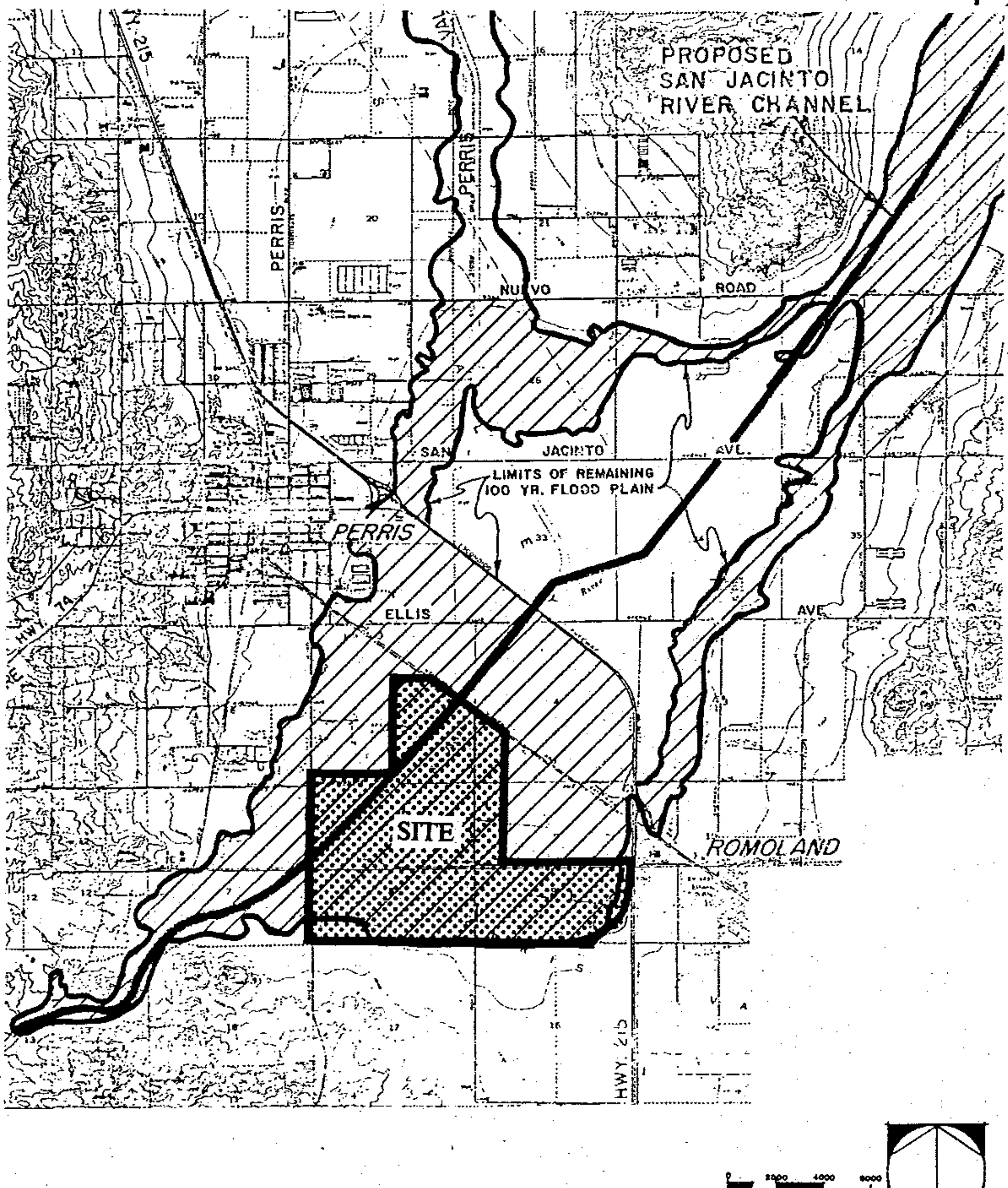
GREEN VALLEY

FIGURE 4-2

LEGEND

EX. FLOOD PLAIN LIMITS

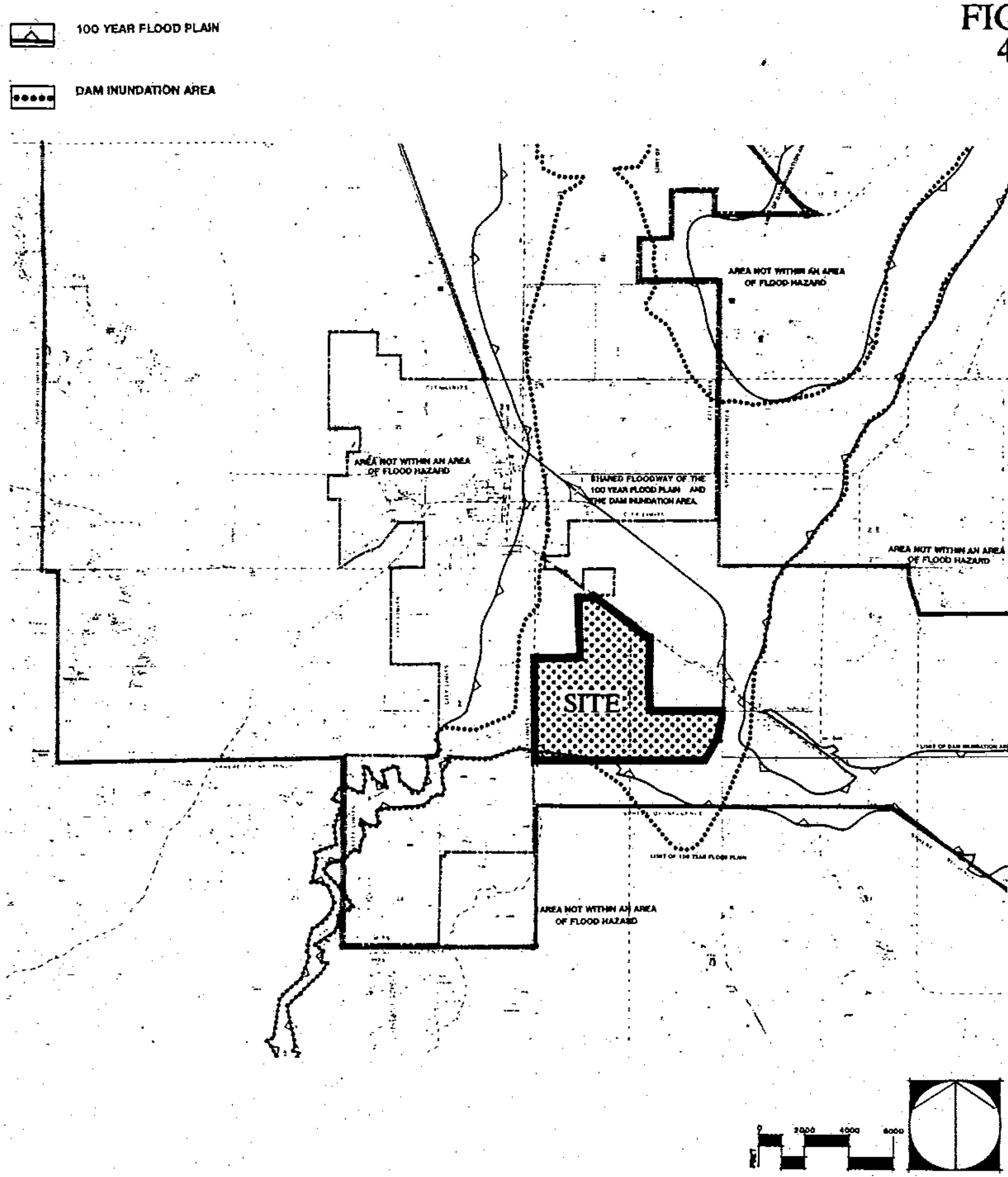
RECLAIMED ACERAGE SUBJECT TO ASSESSMENT



GREEN VALLEY

FIGURE 4-3

FLOOD DAM INUNDATION AREAS



earthquake could cause a failure of the earthen dam structure, recent engineering studies of the dam show it to be in a safe and stable condition (State of California, 1982). According to the recent engineering review, the dam is considered to be capable of withstanding a Magnitude 8.0 earthquake originating at a distance of 10 miles from the dam. It was also determined that a major seismic event would not cause impact from seiches or surges in the reservoir. The maximum seiche action would be approximately 2 feet whereas the reservoir normally has at least 12 feet of freeboard.

4.3.1.2 Water Quality

The San Jacinto River drains a relatively small area of Riverside County composed primarily of agricultural and rural lands. Water in the river is used for irrigation on a limited basis upstream of the site as well as providing wildlife with a source of water. Downstream of the site, river waters enter Canyon Lake which is used for domestic purposes as well as water contact recreation. Further downstream, the river eventually enters Lake Elsinore. Uses here include domestic and recreational. The overall quality of water in the drainage is characterized as good.

4.3.2 Environmental Impacts

Development of the project site will alter the existing drainage patterns of the site. Three parameters will be most affected; the average quantity of runoff after development, the peak quantity of runoff after development, and the quality of water after development. Further, the significant impact of erosion and sedimentation has a high probability of occurrence during construction activities.

4.3.2.1 Increase In Site Runoff

Site runoff may be increased by as much as 100 percent during peak runoff periods, compared to existing conditions, as water flows off of streets, sidewalks, dwellings and other impervious surfaces. Significant adverse impacts of this runoff are not expected, since the proposed project incorporates an onsite storm water collection system which has been designed to convey flows safely from the site. The project proposes to realign a portion of the Romoland Lateral A from its original position to the location shown on the project drainage plan (Figure 3-7). This realignment would allow runoff water to be channeled along greenbelt swales rather than across proposed private lots and has the additional benefit of providing a dedicated open area that could be used for aircraft emergency touchdown. The channel has been realigned along the extended centerline of the main runway of adjacent Perris Valley

Airport. The feasibility of this relocation has not been substantiated, but RCFCDWCD has commented that the concept of realignment appears viable pending further engineering refinement. No additional adverse impact would occur from the realignment.

In addition to the main channel improvements, site runoff will be channeled to a system of approximately 17,900 lineal feet of secondary drainage swales which will have a carrying capacity of approximately 50 to 150 cubic feet per second at a slope of 0.2 percent. These secondary swales are necessary since the San Jacinto River and Romoland Lateral A channels are presently designed to have a water surface level only 2 to 3 feet below normal ground level. In order for the surface runoff system to operate efficiently, portions of lines A11, A14A, A14B, and A15 as shown on the Homeland/Romoland Area Drainage Plan would need to be constructed.

It is further proposed that these swales be landscaped and serve a dual use function which includes limited recreational use. Landscaping will increase maintenance requirements and it is important that dual uses not interfere with the primary function of conveyance of site runoff, or localized flooding could occur.

In addition, the proposed project's drainage feasibility is predicated upon construction of regional improvements to the San Jacinto River. If these improvements are not constructed, the project site would continue to be subject to 100-year flooding. A major site redesign would be necessary to assure flood protection to onsite structures.

Current plans for the San Jacinto River improvements call for 450 feet of right-of-way for the channel and include a 100 foot riparian enhancement/wildlife migration corridor within the right-of way. However, mitigation agreements between the Flood Control District and responsible agencies are not finalized. It is possible that the RCFCDWCD would require a larger right-of-way and that riparian enhancement/mitigation would be appropriate adjacent to but outside of the channel. Consequently, the City of Perris established a moratorium on development within a 750-foot wide area (375 feet on each side of the river centerline). The proposed project acknowledges this moratorium area by designating it as a river study area.

From a regional perspective, site runoff will generally follow existing and improved patterns. Ultimate downstream facilities at full buildout are considered adequate to handle the increased flows from the project site, although this has not been demonstrated through engineering analysis.

A further result of project development is an unquantified reduction in groundwater recharge from the site. It is assumed that recharge opportunities exist downstream such that the net reduction in contribution to the basin would be insignificant.

The project site is subject to flooding from a catastrophic failure of Lake Perris Dam. This is a potentially significant impact which is reduced in magnitude of effect by the regional drainage improvements to the San Jacinto River.

4.3.2.2. Water Quality

The quality of waters which flow off of the site will change with urbanization. Existing runoff from the site probably contains silts, salts and various agricultural chemicals used on crops. Runoff from the site after development will additionally contain minor amounts of pesticides and fertilizers, but will include other urban pollutants such as oil and rubber residues, detergents, trace metals and hydrocarbon particles. These pollutants will be added to the existing levels of these substances in the San Jacinto and Romoland drainage systems and will incrementally increase levels in the San Jacinto River overall. This is considered a significant adverse impact.

4.3.2.3 Erosion and Sedimentation

Project construction will require movement of a significant quantity of earth. During grading, there is increased potential for soil erosion by both wind and water which is a potentially significant impact. It is possible that grading operations for one phase of the project will either borrow or store earth on another part of the site. The soil exposed under these conditions could cause significant erosion by both wind and water, although site soils are currently exposed as a result of agriculture a large part of the year. Nonetheless, the potential for soil erosion during construction is a significant adverse impact of the project.

4.3.2.4 General Plan Policy Analysis

The following general plan standards relate to hydrology. In each case, the general plan standard is given, and is immediately followed with a statement as to how the proposed project complies with the standard.

Natural Hazards and Public Safety

1. **Standard:** All proposed development within identified flood hazard areas will be required to comply with the provisions

of the Floodplain Management Ordinance No. 492, and the criteria of the Federal Flood Insurance Program.

Application: All development within the San Jacinto and Romoland flood areas is proposed to comply with the provisions of the Floodplain Management Ordinance No. 492, and the Federal Flood Insurance Program.

2. **Standard:** Prior to the approval of any development that is proposed to be located within an identified flood hazard area, it shall be found and demonstrated that the proposed development will not increase the danger to human life and health, and that the proposed development is justified in terms of adequate social and economic considerations in light of the probability for property loss or damage and the need for access by emergency services in the event of flooding.

Application: The construction of the San Jacinto Storm Drain Channel and the Romoland Lateral "A" by the Riverside County Flood Control and Water Conservation District will remove the remainder of the Green Valley site from the 100-year floodplain. Additionally, the site is within the assessment District for construction of flood control improvements and will contribute a pro-rata share of the costs of facilities.

3. **Standard:** Full consideration shall be given to the potential for danger to life and property in downstream areas that may be caused by the increased flood heights, stream velocities and debris that could result from additional construction in flood hazards zones, in determining the acceptability of such development.

Application: The proposed project will not increase flood heights in downstream areas or increase flood risks.

4. **Standard:** Each proposed land subdivision and development within floodplain areas shall be reviewed as to the appropriateness of anticipated densities and land uses in light of the need for and cost of providing relief services both during and after periods of inundation, and in view of alternate sites more suitable for such development not located in flood prone areas.

Application: The construction of the San Jacinto Storm Drain Channel and the Romoland Lateral "A" by the RCFCDWCD will remove the remainder of the Green Valley site from the 100-year floodplain.

5. **Standard:** Approved developments shall not result in the diversion of storm runoff into adjacent properties, nor cause any undue alteration of natural drainage courses that cannot

be handled by existing or proposed storm drainage and flood control improvements. In all cases, compliance with the recommendations and conditions of the RCFCDWCD shall be required prior to development approval.

Application: Construction of approximately 17,900 lineal feet of drainage swales within the site will provide positive drainage into the regional San Jacinto and Romoland drainage systems, also preventing storm runoff into adjacent properties.

6. **Standard:** Higher and medium density residential developments shall be strongly disapproved within the 100-year floodplain boundaries. Commercial, industrial and recreational uses that are proposed within floodplain areas must be restricted to an intensity and scale that remains in character with the limitations of a flood prone site in view of the overall requirements of public safety, protection of property and the need for evacuation in the event of flooding.

Application: The construction of the San Jacinto Storm Drain Channel and the Romoland Lateral "A" by the RCFCDWCD will remove the remainder of the Green Valley site from the 100-year floodplain.

Storm Drainage and Flood Control Facilities

1. **Standard:** All proposed subdivisions and development projects shall include local storm drainage improvements as well as abutting flood control channel improvements to the satisfaction of the City Engineer and the RCFCDWCD prior to the occupancy of any structures. Culverts and bridges that are required within the local street system must also be provided at the developer's expense.

Application: The Green Valley Drainage Plan provides for the local storm drainage improvements. The San Jacinto River and Romoland channels will be improved per the RCFCDWCD Master Plan. The property owner is a participant in the San Jacinto River Improvement District 4-2 and the pending Assessment District No. 4-4, which will provide funding for these flood control improvements.

2. **Standard:** The design of all new subdivisions and developments should allow for drainage and flood control requirements through the use of environmental "greenbelt" channels to conduct natural runoff where feasible and justified to provide an adequate degree of safety to residents and surrounding properties. This concept can allow for a linked system of open space providing an attractive natural

setting for developments, as well as for a network of recreational trails.

Application: The Green Valley Specific Plan uses the San Jacinto River, Romoland and local drainage swales as a unifying greenbelt theme. These flood control facilities also act as passive and active recreational amenities and contain the backbone of the non-vehicular circulation system.

4.3.3 Mitigation Measures

Site Runoff

Site runoff impacts and drainage control feasibility will be addressed in a detailed project drainage plan to be prepared during final design and subject to review by the City of Perris Department of Public Works and the RCFCDWCD. All flood control channels shall convey the 100-year flow and shall be developed according to specific City standards including landscaping, fencing, access and maintenance. Local drainage channels shall incorporate multi-purpose trails. The plan should also address and mitigate any downstream flooding impacts.

Measures should be incorporated into project design to reduce runoff where feasible. Such measures could include use of pervious paving materials to achieve a measure of infiltration. Mulch can be used extensively in landscaped areas as a means of improving the water-holding capacity of the soil. Use of detention storage has the benefit of accomplishing some infiltration as well as reducing the peak runoff volume.

It is noted that the grading of the site appears to allow for the sports complex area to be inundated under certain high runoff conditions. Flooding is thus avoided in residential areas.

No permits shall be issued until flood control facilities to be constructed by the RCFCDWCD are sufficiently complete as determined by the City Engineer and the RCFCDWCD.

If RCFCDWCD modifies plans for the flood control improvements along the San Jacinto River, appropriate modifications shall be made to the specific plan through the amendment process.

Water Quality

Urban runoff impacts can be mitigated by employing the program outlined in the "Water Pollution Aspects of Street Surface Contaminants", published by the Environmental Protection Agency. This program provides recommendations for street cleaning and

This program provides recommendations for street cleaning and sweeping, and prevention of pollutant generation. Implementation of such measures is the responsibility of the local agency and other organizations such as Homeowners Associations. CC & R's for commercial and industrial developments should include provisions for cleaning of paved surfaces.

Erosion and Sedimentation

As part of the final grading plan, a comprehensive erosion and sedimentation control plan should be prepared detailing the measures to be implemented to control erosion from construction sites. Erosion control measures to be implemented include, but are not limited to, scheduling major grading activities during the dry season, revegetation of graded areas where possible, use of site watering or dust blankets to control fugitive dust, and utilization of temporary drainage and sediment control devices. The erosion control plan will be subject to review and approval by the City of Perris and the California Regional Water Quality Control Board.

4.3.4 Significant Unavoidable Adverse Impacts

With full implementation of the measures listed above, the impacts remain adverse but are reduced to insignificance.

4.4 BIOLOGICAL RESOURCES

This summary of the biological resources present at the Green Valley site is based on a biological assessment performed by Tierra Madre Consultants. The complete Biological Resources report can be found in the Technical Appendices, Appendix C.

4.4.1 Environmental Setting

4.4.1.1 Existing Biological Resources

The entire Green Valley site has been under agricultural cultivation for many years. This has resulted in the elimination of all native plant communities and original wildlife habitat. The existing vegetation consists primarily of alfalfa and grain crops, and an extensive nursery operation on the southwest portion of the site. Other plants and animals found onsite during biological field surveys are listed in the Technical Appendices, Appendix C.

The major feature of biological interest on the site is the San Jacinto River channel. This river acts as a corridor of movement for birds and larger mammals, and at one time supported an alkaline wetland community along its banks. On the Green Valley site, the channel has been degraded by unauthorized off-road vehicle use and the banks are nearly denuded of vegetation. Water is present in the channel during releases to Canyon Lake, which can occur at anytime of year, and during and immediately after significant rainfall. When water is present it serves as an important drinking source for wildlife.

A small marsh habitat exists adjacent to Murrieta Road. This wetland is approximately one acre in size and is fed by agricultural drain water. It furnishes a temporary nesting habitat for a large colony of redwinged blackbirds. About 1,000 birds were counted during the field survey in the Spring of 1989. A subsequent site visit in August of 1989 revealed that the blackbirds had move on. The adjacent agricultural land uses provide feeding areas for these birds, and the nearby eucalyptus windrow (along Murrieta Road) are used for roosting.

An extensive wholesale nursery was formerly located on the southwestern portion of the Green Valley site. This nursery grew many kinds of potted plants and flowers. Several basins were excavated in this area to act as water reservoirs for the nursery. These ponds, some of which contained water year around, provided good artificial habitat for wildlife, especially birds. However, the basins are no longer fed water since the nursery vacated the site.

4.4.1.2 Historical Plant Communities

Historically, the clay soils formed within the San Jacinto River floodplain were known to support an interesting flora, including several plants now considered rare and endangered. These include the thread-leaved brodiaea, tarweed, and crownscale, all plants tolerant of the alkaline clay soils. Vernal pools with narrowly-adapted annuals, including Orcutt's grass and prostrate spineflower, have been reported by the Data Base from this area in the past, though no vernal pools now exist within the Perris Valley.

Portions of the project site east of the Perris Airport contain the degraded remnants of the alkali sink community, although many of the indicator species are still present. These include pickleweed, sea blight and frankenia. Several crownscale were also observed in this area (these are discussed further below).

This part of western Riverside County is well-known for its large populations of birds of prey, especially during the winter. The San Jacinto Valley and the Gavilan Hills, which are found to the east and to the west of the Perris Valley, have been designated by the Department of Fish and Game as "Areas of Special Biological Importance" due to the outstanding raptor foraging habitat.

4.4.1.3 Sensitive Biological Species

A review of the Data Base, CNPS, Inventory and recent surveys by Tierra Madre Consultants (TMC) revealed that project site is within the known range of several plant and animal species considered sensitive by resource agencies and conservation organizations. Other animal species, namely resident and wintering raptors, that have been designated as "species of special concern" by the California Department of Fish and Game were considered as well.

Sensitive species and communities are so called because of their limited distribution, restricted habitat requirements, particular susceptibility to human disturbance, or a combination of these factors. Sensitive species known from the area of the subject property are presented in Table 4.4-1. The protected species from Table 4.4-1 are discussed below.

The San Diego horned lizard frequents a variety of habitat types including coastal sage scrub and grasslands. It is common in areas where there is loose sandy soil with low-growing brush nearby. Ants are the primary food of this species, although it also takes beetles and other insects. Populations of this lizard are declining due to extensive collecting on wildlands near urban development areas and as a result of its habitat being converted to agricultural and urban lands. San Diego horned lizards are

TABLE 4.4-1
SENSITIVE SPECIES CONSIDERATIONS IN PROJECT AREA

Scientific Name (Common name)	Status *	Habitat
Reptiles:		
<u>Phrynosoma coronatum blainvillei</u> San Diego horned lizard	1. C2 2. CSC 3. B2.1	Chaparral Coastal sage scrub Sandy washes
<u>Cnemidophorus hyperythrus</u> Orange-throated whiptail	1. C2 2. CSC 3. B3.1	Coastal sage scrub Riparian Dry washes
Birds:		
<u>Buteo regalis</u> Ferruginous hawk	1. C2	Farmland, grassland (Winter visitor)
<u>Polioptila melanura californica</u> Calif. black-tailed gnatcatcher	1. C2 2. CSC 3. B2.2	Coastal sage scrub Rocky hillsides (nests)
Mammals:		
<u>Dipodomys stephensi</u> Stephens kangaroo rat	1. E 2. CT 3. B1.2	Level grassland
Plants:		
<u>Caulanthus simulans</u> Payson's caulanthus	1. C2 3. B1.2 4. List 1 R2, E1, D3	Chaparral Rocky hillsides Fire follower
<u>Brodiaea filifolia</u> Thread-leaved brodiaea	1. C2 2. CE 3. A2.1 4. List 1B R3, E3, D3	San Jacinto River floodplain

* Status definitions are on the following two pages.

STATUS DESIGNATIONS

1) FEDERAL DESIGNATIONS
- E = Federally listed, endangered
- T = Federally listed, threatened
- C1 = Category 1 candidate species. Enough data are on file to support the federal listing.
- C2 = Category 2 candidate species. Threat and/or distribution data are insufficient to support federal listing.
- C3a = Extinct
- C3b = Taxonomically invalid
- C3c = Too widespread and/or not threatened. No longer considered as a federal candidate for listing.

TABLE 4.4-1, cont.
SENSITIVE SPECIES CONSIDERATIONS IN PROJECT AREA

2) STATE DESIGNATIONS
- CE = State listed, endangered
- CT = State listed, threatened (previously listed as rare)
- CP = Fully protected under California Fish and Game Code, Sections 3511, 4700, 5050, 5515
- CSC = California Department of Fish and Game Species of Special Concern

3) CALIFORNIA NATURAL DIVERSITY DATA BASE

Data Base Priority Codes were developed for use by the California Department of Fish and Game as a ranking system with respect to the status of sensitive biological elements. These codes are not intended to imply protection under legislation. The Federal and California Endangered Species Acts provide legal protection for listed species.

- A1.1 Extremely rare, endangered and unprotected species
- A1.2 Extremely rare and threatened species
- A2.1 Very rare, endangered and unprotected species
- A2.2 Very rare and threatened species

- B1.1 Rare and endangered species <u>or</u> extremely rare, endangered or threatened subspecies.
- B1.2 Rare and threatened species <u>or</u> very rare, endangered or threatened subspecies.
- B2.1 Uncommon and threatened species <u>or</u> rare and endangered subspecies.
- B2.2 Rare but not threatened <u>or</u> peripheral and endangered species in California only, <u>or</u> rare and threatened subspecies.
- B3.1 Uncommon and declining <u>or</u> peripheral and threatened species in California only, <u>or</u> uncommon or threatened, or peripheral and endangered subspecies in California only.

4. CALIFORNIA NATIVE PLANT SOCIETY (CNPS)
- List 1 - Plants rare and endangered in California and elsewhere.
- List 2 - Plants rare or endangered in California, but more common elsewhere.
- List 3 - Plants about which we need more information.
- List 4 - Plants of limited distribution (a watch list).

R-E-D CODE:

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 one extended population.
- 3 - Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)
- 1 - Not endangered
- 2 - Endangered in a portion of its range
- 3 - Endangered throughout its range

D (Distribution)
- 1 - More or less widespread outside California
- 2 - Rare outside California
- 3 - Endemic to California (i.e., does not occur outside California).

known to occur in the region, and historic records indicate the species existed within 5 miles of the project site. However, no suitable habitat now exists onsite and the horned lizard is believed to be absent.

The orange-throated whiptail occupies washes and other sandy areas where there are rocks and patches of brush nearby. This species is common in coastal chaparral, thornscrub, and streamside growth. This reptile feeds on insects, especially termites, and spiders. Populations of this species are declining as a result of habitat loss due to land conversion for agriculture and development. This species is known from the Mott Reserve and from just west of Steele Peak. One was recently sighted (1989) near Lake Perris.

Because of the disturbance to the ground surface from agriculture operations over the past 50 years, very few reptiles of any kind now exist on the site. The orange-throated whiptail is presumed absent.

The ferruginous hawk is an uncommon but regular winter visitor to southwestern Riverside County. It hunts the agricultural lands from October until March, then migrates to the northern plains to breed. The ferruginous hawk may be observed in winter throughout the agricultural and natural lands within the Perris area. Although not observed during the field surveys, the Green Valley site is undoubtedly occupied on occasion by the ferrunginous hawk in winter.

The California black-tailed gnatcatcher is a small songbird native to the coastal sage scrub plant community of southern California and northern Baja. A recent review of the status to this species (Atwood, 1980) revealed severely reduced population levels and a major loss of suitable habitat in recent times. This study estimated a remaining population of this race of about 1335 pairs. Approximately 400 pairs are estimated in Riverside County. A substantial amount of coastal sage scrub has been developed in Riverside County since Atwood's 1980 study. None of the project site contains adequate stands of coastal sagebrush, white sage, black sage and California buckwheat to support nesting pairs of this species. Because suitable habitat is lacking, this bird is presumed to be absent.

The Stephens kangaroo rat is listed by the state of California as threatened and by the U. S. Fish and Wildlife Service as endangered. This species is endemic to the San Jacinto Valley and nearby valleys of western Riverside and northern San Diego counties. Level to slightly sloping terrain with vegetative cover limited primarily to annual grasses and/or herbaceous plants is the species' preferred habitat. This species is known to be sympatric with the Pacific kangaroo rat, a similar species with a much more widespread distribution.

The limited range of the Stephens kangaroo rat and the conversion of its habitat to agricultural lands and developed areas are the primary factors which have contributed to its decline and led to its listing as an endangered species.

The trapping survey performed for the Riverside County Flood Control District resulted in 35 captures of the Stephens kangaroo rat near the San Jacinto River, about 2 to 5 miles west of the project site. This rodent is also known from the Motte Reserve. All of Perris and its sphere are within the historic range of this species, and most of the lands were formerly suitable habitat. The Green Valley site was probably not suitable habitat in the past because of its predominantly dense clay, rather than alkaline soils. No habitat for the Stephens kangaroo rat is now present and the species is presumed to be absent from the site.

Payson's caulanthus is an annual plant which inhabits granitic soils in chaparral and coastal sage scrub areas following fire. It has been reported in the Motte Reserve in Perris, and can be expected on hillsides with chaparral vegetation throughout western Riverside County. However, suitable habitat for this species does not now exist on the site.

Thread-leaved brodiaea is a perennial herb of the Amaryllis family. Apparently, the species' historical range extended from the base of the San Gabriel and San Bernardino Mountains to the interior valley region of central San Diego County. The species is probably extirpated from Los Angeles and San Bernardino Counties. A 1979 rare plant status report from the California Native Plant Society states that the only known recent collections are from:

Santa Rosa Plateau - Riverside County
San Jacinto River near Perris - Riverside County
West of Murrieta - Riverside County
San Marcos industrial area - San Diego County

A population of this species was located along a 3,000 foot reach of the San Jacinto River in April, 1988. This population is restricted to the southerly side of the river, and its numbers total approximately 275 plants.

Associated vegetation at that site is composed of dropseed bunchgrass (Sporobulus airoides) and introduced annual grasses including red brome (Bromus Rubens), soft chess (Bromus mollis), and cheat grass (Bromus tectorum). Thread-leaved brodiaea was found growing at the edge of clumps of dropseed bunchgrass and intermixed with the introduced annual grasses.

The channel of the San Jacinto River is virtually denuded of vegetation where it crossed the Green Valley project site, and no brodiaea plants were observed or are expected. The Easton survey of 1988 did not locate any brodiaea plants in this reach of th river. Although this endangered plant is presumed absent from this site, conditions suitable for its establishment and growth are present, and the river channel might some day become an area where the thread-leaved brodiaea could be transplanted.

Two plant species occurring in the nearby area are not yet recognized as rare by federal or state agencies, but are known to local botanists to be very uncommon and/or declining in numbers. These plants,, which have recently been collected from natural lands on the San Jacinto River floodplain, are described below:

Crownscale (Atriplex coronata var. notatior) is an annual member of the saltbush genus which is restricted to the San Jacinto River floodplain in alkaline soils, according to Muna (1974). Although not listed as rare or threatened by state and federal agencies, local botanists Mike Hamilton and Andy Sanders have reported that this species has declined drastically from its former range due to dryland farming within the floodplain. It has recently been listed as a local endemic that is threatened throughout its range in the new edition of the Rare and Endangered Plant Inventory.

Crownscale is known from the San Jacinto Wildlife Area and from scattered localities within the San Jacinto River floodplain from San Jacinto to Elsinore. Most records of this species are historic. One plant was observed in 1988 near Lakeview, and suitable habitat exists for this species on all natural lands remaining in the San Jacinto River floodplain.

In the north eastern portion of the site adjacent to the San Jacinto River, approximately 25 plants were counted and it is estimated that over 100 plants were present on the site. About 25 percent of the plants were within the 450 foot right-of-way for river flood control improvements. The great majority of the remaining plants were within the 750 foot City river moratorium area. Though the plant is now threatened with extinction, it is not listed as rare, threatened or endangered by state or federal resource agencies.

Tarweed is a common name given to several species of the genus Hemizonia. Hemizonia laevis is a plant of the inland valleys with a range extending from San Diego to Kern county. Little is known of its preferences, but most reported localities have been from low elevation grasslands. UCR botanist Andy Sanders reports that few records of this plant exist in herbarium collections, and that a review of its rarity is in order. Tarweed is potentially found throughout the natural lands within the floodplain, and in the less-disturbed sites with annual grassland. None were found during the field survey, but an additional late spring or early summer search for this plant would be necessary to prove its absence from the less-disturbed pond areas of the site northeast of the nursery.

4.4.1.4 San Jacinto River Mitigation Program

The RCFCDWCD is presently conducting negotiations with the California Department of Fish and Game, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service relative to required wildlife mitigation for the San Jacinto River flood control project. Present river improvement plans call for a 450 foot total right-of-way which includes a 100 foot riparian enhancement area. The Metropolitan Water District of Southern California is also a party to the negotiations since it wishes to provide wildlife enhancement along the river as part of the mitigation requirements for the Eastside Reservoir Project. Resource agencies report that the extent of required mitigation has not been determined and that a larger area of right-of-way may be required to accommodate all mitigation needs. Additionally, the City of Perris has implemented a moratorium on development adjacent to the river within 375 feet of the river centerline. This has been done so as to preserve opportunities for river-related amenities through the City.

4.4.2 Environmental Impacts

The rapid urbanization of this part of western Riverside County has resulted in a diminishing of foraging habitat for the large number of wintering and nesting birds of prey. Where the development proposals impinge on the San Jacinto Valley, the impacts to raptors are judged to be significant. In other areas, such as the Green Valley project site, the loss of farmland and open space poses a rather large contribution to the cumulative impacts of development on raptor habitat. Because of the airspace disturbance near the airport, the loss of raptor foraging habitat is not as great at this location as at other more protected sites in the Perris and San Jacinto Valleys. Conversely, the loss of the rows of large eucalyptus trees along Murrieta Road does represents an adverse impact on wildlife, particularly raptors, since these trees provide good vantage points from which to forage for food. The trees also provide good roosting habitat for raptors. Since few large trees occur in the area, loss of these trees contributes to significant adverse impact on raptor foraging.

Projects impacting wetland habitat or altering a stream course designated as a blueline on the USGS topographic maps are required to obtain a permit from the California Department of Fish and Game under Sections 1601-3 of the Fish and Game Code, and from the Corps of Engineers under Section 404 of the federal Clean Water Act. Mitigation requirements imposed by these agencies for loss of wetlands may differ from those required by the City of Perris or

County of Riverside. It is expected that the loss of the approximately one acre wetland area along Murrieta Road will require a Nationwide permit under Section 404 of Clean Water Act administered by the Army Corps of Engineers. From that standpoint, the impact is considered potentially significant. Wildlife values lost from elimination of the wetland include loss of a water source for wildlife and loss of roosting habitat for the current flock of blackbirds utilizing the marsh. The blackbirds, however, are seasonal visitors.

Other wetlands on the site are associated with the San Jacinto River. The proposed project will follow the flood control improvements to be constructed by the RCFCDWCD. Further, the project construction initially will not occur within the 750 foot moratorium area. Consequently, the proposed project will have no direct impact on river wetland areas. Subsequent construction within the 750 foot moratorium area (if it is lifted) could have significant adverse impact on river habitat values.

The project will not have direct adverse impact on any rare, threatened or endangered species. High interest species such as crownscale, occur on the site and will be adversely affected by regional flood control improvements along the San Jacinto River or development within the 750 foot moratorium area.

4.4.3 Mitigation Measures

The RCFCDWCD has been negotiating with the permitting agencies to determine mitigation requirements for its San Jacinto River Channel Improvement Project. The project will comply and conform with the resulting mitigation plan as it affects the project site. Specific measures applicable to the project site include:

- All lands within 375 feet of the center line of the San Jacinto River (750 feet total moratorium area) which are also on the Green Valley site shall be left in an undeveloped and unaltered condition until a San Jacinto River Mitigation Plan is approved by the Army Corps of Engineers, Cal Fish and Game and RCFCDWCD.

- Subsequent to the approval of the regional river mitigation plan, any development within 375 feet of the river centerline must be consistent with areawide mitigation plans and is limited to stormwater conveyance connections to the river, bridge abutments, landscape/restoration modifications and recreational facilities consistent with the river mitigation plan.

- Any subsequent restoration or construction within the 375 foot area must be accomplished in accordance with necessary permits and approvals of the appropriate agencies such as California Department of Fish and Game, Army Corps of Engineers, U.S. Fish and

Wildlife Service, RCFCDWCD and the City of Perris. Evidence of consultations and permit conditions must be submitted to the City of Perris prior to issuance of any permit for development in the moratorium area.

Permit requirements may be established by the Army Corps of Engineers relative to construction which affects wetlands. These requirements will become enforceable upon granting of the necessary permit.

Because this site is within the historic range of the Stephens kangaroo rat, mitigation measures designed to save this endangered rodent from extinction may be imposed on the Green Valley project even though no kangaroo rats are now present. The County of Riverside is currently preparing a Habitat Conservation Plan which will result in imposition of mitigation fees for all developments within the historic range of the species. The fees will be used to purchase lands as preserves for the Stephens kangaroo rats. The City of Perris has been invited to join in the regional plan, and impose the same mitigating measures being contemplated by the County. Payment of the mitigation fees and participation in the Habitat Conservation Plan is recommended.

Mitigation of crownscale impacts rests with the RCFCDWCD within the established San Jacinto River right-of-way and mitigation area. Any applicant prepared plans for restoration/and or construction in the moratorium area must consider mitigation for crownscale.

4.4.4 Significant Unavoidable Adverse Impacts

With adoption of the above mitigation measures, significant adverse impacts on biological resources of the San Jacinto River are avoided. The requirement for avoidance of the river moratorium area keeps open options for riparian habitat enhancement irrespective of whether the project goes forward. The impact of reduction in raptor foraging habitat is not mitigatable and, therefore, is considered significant and unavoidable.

4.5 CULTURAL, HISTORIC AND PREHISTORICAL RESOURCES

The cultural, historical and prehistorical portion of this environmental assessment is based on three studies: The most recent was conducted in January of 1989, on 160 acres of the Green Valley site by Hatheway and McKenna. The other two were conducted by the Archaeological Research Unit (ARU) at the University of California, Riverside in 1978/1979 on 1,150 acres of the property, and in 1976 on 350 acres. These studies, which are included in the Technical Appendices, Appendix D, included records searches, field surveys, and ethno-historical identification. The results of these studies are summarized below.

4.5.1 Environmental Setting

4.5.1.1 Records Searches

Preparatory record searches were completed at the Eastern Information Center of the California Archaeological Inventory to review any archaeological, historic and ethnographic literature pertinent to the 1,194-acre study area. These record searches would reveal if any portion of the site had been previously surveyed, and the results of any such survey. The earliest survey on the Green Valley site was found to be the 1976 study conducted for the Eastern Municipal Water District by ARU. This research did not locate any existing archaeological resources. Additionally, very few resource sites have been located within a seven-mile radius of the property. The nearest identified site is CA-RIV-805, which consists of a possible plant processing/gathering station, including a small scatter of 15 flakes located 0.5 mile northeast of the Green Valley site. Two other sites located within a mile of the project site were presumably destroyed by contemporary agricultural activity.

4.5.1.2 Ethnographic Information

Historically, ethnographers believed that the territory surrounding the project area was occupied by the Luiseno (so called after the Mission San Luis Rey). New evidence, however, including archaeological data, has shown that the area was more likely inhabited by the Cahuilla aboriginally. Luiseno probably moved into the area sometime in the 1800s after being forced out of their more westerly territory. Linguistically, both Luiseno and Cahuilla speak a Shoshonean language (Kroeber 1925), but material evidence from archaeological sites show they differed in culture (Talley 1984).

To briefly summarize, the Cahuilla were hunters and gatherers although in at least some areas agriculture was beginning to be practiced. Principle foods were the acorn, mesquite, pinon nut, and animals such as deer and rabbit. The Cahuilla lived in permanent villages, with the land in its immediate vicinity being owned communally and other outside lands being owned by families or individuals. They had much contact with their neighbors through trade, intermarriage, ritual and war. Trade routes are known that bisect Cahuilla territory, the most important being the Cocopa-Maricopa Trail. For further ethnographic information, see Bean 1978, White 1963, and Kroeber 1925.

4.5.1.3 Field Surveys

The majority of the site is, or has recently been, under agricultural cultivation. Approximately 100 acres of the site formerly was used by NPI Nursery. In this area, the ground surface has been graded and covered with gravel and potted plants. An extremely early "Settlers house" was mapped within this area on a Government Land Office map dated 1965.

Systematic on-foot surveys were conducted on the Green Valley site on December 13, 1978 (ARU) and on February 3, 1989 (Hatheway and McKenna). No prehistorical or historic resources were identified. This was not unexpected since the conditions of the property were not those with which archaeological sites are usually associated.

4.5.2 Environmental Impacts

Although implementation of the proposed project will result in landform alteration, the absence of known historic and/or prehistoric resources, as documented in the records and field surveys, suggests that such modification of the existing environment will result in no significant impacts to cultural or historical resources. Though not believed to be present, project construction could potentially impact remnants of the Settlers House which are undiscernible at this time. This potential is considered a significant impact of the project.

4.5.3 Mitigation Measures

In spite of the low probability of encountering undetected cultural resources on the project site, discovery of such previously unknown or buried cultural resources during construction is common in southern California. Also, cultural resources are protected by various laws and are an important cultural aspect of California history. As a means of mitigating damage to unknown cultural or historical resources, the following measures will be implemented.

o Prior to grading and excavation activities, a grading conference should be held with equipment operators to brief them on the nature of cultural materials which are common to the area.

o Upon discovery of suspected cultural or historical resources, the equipment operator or contractor will redirect the current excavation activity and will contact the designated project archaeological coordinator.

o Sufficient time will be allowed for qualified individuals to evaluate the resource in the field before restarting grading operations.

In addition, it is recommended that a qualified archaeological historian monitor grading activities in the area of the possible "Settlers house" under what was formerly the NPI Nursery. The monitor should have the authority to stop excavations in the area should historical resources be unearthed.

4.5.4 Significant Unavoidable Adverse Impacts

With implementation of the mitigation measures listed above, all potential adverse impacts can be reduced to a level of insignificance.

4.6 LAND USE

4.6.1 Existing Conditions

4.6.1.1 Onsite Land Use

The project site is used extensively for farming, with active production of alfalfa, and non-irrigated grains. Sheep are grazed intermittently in the general area. Approximately 100 acres in the southwestern portion of the site was formerly used by the NPI nursery for growing numerous kinds of potted plants and flowers. The nursery had considerable acreage used for irrigation ponds and debris storage, however, the it has recently moved off of the site. The nursery and an existing farm house together have four underground fuel storage tanks. Other onsite uses include an EMWD pumping station (in the southern portion adjacent to Murrieta Road) and a farm house and complex (also adjacent to Murrieta Road). The San Jacinto River is another significant feature onsite, the nature of which has been discussed previously.

4.6.1.2 Surrounding Land Uses

The lands immediately surrounding the project site have varied uses. Figure 4-4 illustrates the predominant surrounding uses as well as the important onsite uses.

Agriculture

On the west and south sides of the project site, agricultural uses are predominant. However, uses on the south side (west of Murrieta) are characterized by relatively small lot rural agricultural developments. Many of the dwellings in this area are mobile homes. Numerous horse corrals are apparent. Large acreage crop production (alfalfa) occurs on the west and on the south sides of the property.

The northern portion of the site is bordered by the open space (fallow agricultural land) and productive agricultural land. Case Road forms a portion of the northern border as does the AT & SF railroad track. Additionally, I-215 borders the extreme eastern portion of the project site.

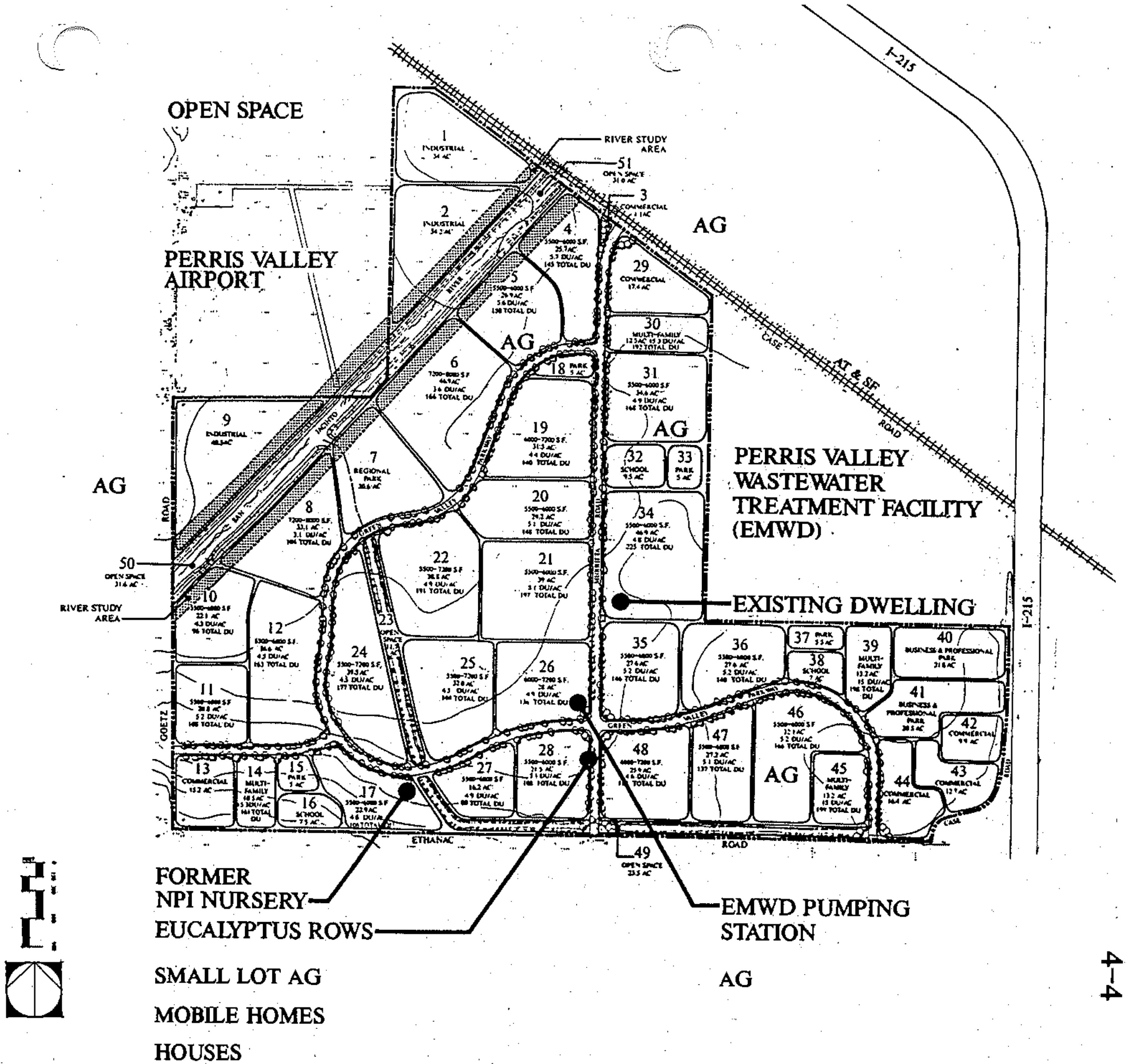
Perris Valley Airport/Sportpark

Perris Valley Airport is designated as a private use airport by Caltrans Division of Aeronautics and the FAA, and is designated as such on applicable aeronautical charts. Permission to land is subject to prior approval by airport management. The airport supports private recreation-oriented flying activities including sky-diving, ultra-light aircraft, gliders and ballooning.

SURROUNDING LAND USES

GREEN VALLEY

FIGURE 4-4



The information included below is taken from a report on airport land use compatibility which is contained in Section 4 of the Finalizing Addendum. Airport activities are illustrated on Figure 4-5.

Sky-diving

The Perris Valley Airport supports one of the largest parachuting centers in the world. As a result of this, the airport is visited by persons (jumpers) from many other counties as well as people from all over the U.S. Statistics on sky-diving for 1988 provided by the airport manager's office indicate that approximately 61,039 parachute jumps were made from the facility. Total aircraft operations associated with those jumps in 1988 included 264 flights by DC-3's, 2,120 flights by otters, 895 flights by Cessnas and 811 flights by other craft for a total of 4,090 flights. During the peak week in 1988, 157 flights occurred, however, the average was about 79 flights per week.

In 1989, a total of 61,333 jumps had been made up through the first week in November. The total aircraft operations associated with those jumps included 582 flights by DC-3's, 2,239 flights by otters, and 469 flights by Cessnas for a total of 3,290 flights. During the peak week, 158 flights occurred. If we use 1988 November and December data to extrapolate the remainder of the 1989 operations, it is estimated that 1989 will have over 70,000 jumps and 3,750 flights (72 flights per week). The 70,000 jumps in 1989 represents about a 15 percent increase from 1988. The lower number of flights in 1989 compared to 1988 is partially explained by more frequent use of the DC-3 aircraft which holds more jumpers than the other available aircraft.

Each flight has a takeoff and a landing, and current practice is to take off to the south over the Green Valley site when possible (counter to prevailing wind) and to land from the south consistent with prevailing wind.

According to the airport manager, the DC-3 aircraft currently stationed at Perris will be moved to another field after the first of the year and will no longer be used on a regular basis for transporting parachuters. Replacing the DC-3's will be another twin otter and a Beech King Air. In addition, it is also reasonable to expected a 20 percent increase in jumping activity in the next few years. The projected 84,000 annual jumps would require approximately 5,600 flights, assuming 15 jumpers per flight. The average flight per week would be 108.

Ultralights

There are approximately 150 ultralight aircraft stored at the airport. On saturdays and sundays typical activity is Reserved for

AIRPORT STUDIES

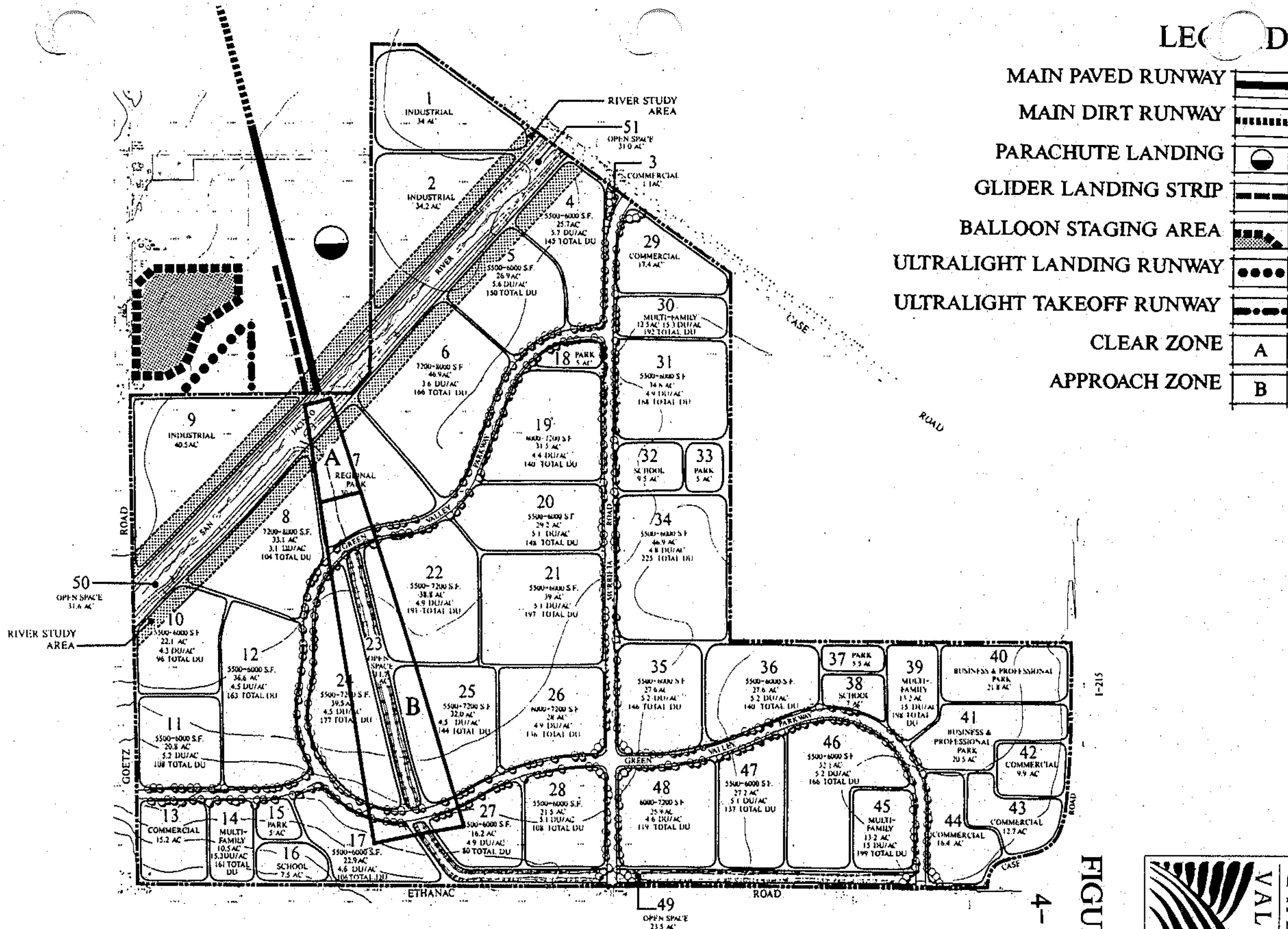


FIGURE 4-5

GREEN VALLEY

approximately 100 flights per day. During weekdays it is approximately 30 flights per day. Based on these averages, there are about 18,200 flights per year. Ultralights are limited to operation during daylight hours and limited to flying over open land, however, these aircraft or their pilots are not certified by FAA.

The ultralight craft use separate runways for take-off and landing. The dirt takeoff runway is oriented north/south. The normal procedure is to take off to the south and turn southwesterly at the river channel. The dirt landing runway is oriented southwest/northeast where the normal landing procedure is to approach from the southwest. Perris Valley Airport is one of a few airports that allow ultralight activity in Southern California.

According to one of the ultralight FBO's, another 38 ultralight craft are expected to be added in the next three years. The popularity of ultralights appears to be growing, particularly among people who were in general aviation and wish to keep flying but for less expense. Based on this rate of growth, approximately 22,500 flight per year could occur.

Gliders

The glider runway is a dirt strip which is adjacent to the main runway on the south end of the airport facility. Testimony at the previous public hearing indicated that there are 50 to 60 soaring operations (takeoffs and landings) per week from the facility or about 2,860 operations annually.

Ballooning

Ballooning peaks on the weekend with approximately 50 operations. The balloon staging area is on the southwest part of the airport adjacent to the ultralight area. Balloons are certified aircraft under FAA regulation as are the pilots.

No significant increases in glider or balloon activity is foreseen.

Airport Operating/Hazard Zones

There are three principal operating zones or hazard areas related to the airport as follows.

Clear Zone: The Clear Zone is nearest the end of the runway and safety concerns are greatest in this area due to the possibility of crashes on takeoff and landing. The clear zone area, as dictated by FAA Part 77 regulations, is shown on Figure 4-5. It begins approximately 200 feet from the end of the runway and extends out approximately 1000 feet. According to the Airport Land Use Planning Handbook (Association of Bay Area Governments, 1983), no structures should occur in the clear zone and park and recreational uses should not attract large crowds (greater than 10 persons per acre).

Approach Airspace: The approach airspace establishes imaginary surfaces, including approach and departure slopes, for determining when the height of natural or man-made objects may present a safety hazard for aircraft. The approach airspace for an airport like Perris Valley continues outward from the end of the clear zone another 4000 feet as shown in Figure 4-5. Also, a 20:1 approach/departure slope is recommended. The Airport Land Use Planning Handbook has gathered data from numerous airports large and small relative to appropriate residential density under the approach airspace. It indicates that appropriate densities may range from 1 DU per 5 acres to 4 DU's per gross acre. The Airport Land Use Planning Handbook also recommends establishment of emergency touchdown zones under the approach airspace consisting of retaining a large area open and free of structures.

Overflight Area: There is no established aircraft pattern at the airport (ie. such pattern it is not designated in published airport material such as the California Airport Directory). However, typical pattern procedures at pattern altitudes (500 to 800 feet above ground) as specified in FAA circulars (AC 90-66) are commonly observed.

Typical traffic pattern size for Perris Valley Airport is as follows;

- Final Approach Segment - 1/4 to 1/2 mile from runway.
- Base Leg - 1/2 to 1 mile from runway.
- Departure Segment - 1/4 to 1/2 mile from runway.

As has been discussed in the public hearing testimony, certain aircraft such as the DC-3's have different operating parameters from the more modern aircraft that use the facility, normally fly extended approach and departure segments, and have a slower climb rate. Other aircraft normally using the facility should be able to negotiate typical pattern procedures.

Upon taking off in a southerly direction, pilots report that they usually turn left (pattern to east) before reaching Ethanac, although the will occasionally turn right as well. The normal procedure for parachuting transports is to continue spiralling up generally over the airport until near the usual jumping altitude of 12,500 feet. After reaching 12,500 feet, the aircraft will set up for the approach to the jump zone. Based on these activities, a large part of the Green Valley project site lies within the limits of the airport pattern. However, this does not result in the entire site being overflown.

Future plans for the use of the airport are uncertain. The airport owner has indicated that an increase in activity is planned, amounting to about a 20 percent increase from current activity. Sport flying activities will continue to be in high demand at Perris and may expand as indicated above. In addition, converting the airport to a public use facility has some support within the community. There is presently no existing proposal or plan for expansion of the airport or conversion to public use.

Wastewater Treatment Facility

On the eastern side of the site, Eastern Municipal Water District operates their new 1 MGD wastewater treatment facility. EMWD sources report that the existing facility is presently being expanded to 2 MGD and that all of the new capacity is committed. In addition, EMWD views this site as the possible location of a facility of between 50 and 100 MGD ultimately. Such a facility would encompass the entire wastewater facility site and would meet the needs of a large area of the Perris Valley. The district is preparing a master plan of sewer facilities which will further delineate the future plans for wastewater facilities on the site.

Other Uses

Other land uses of interest in the surrounding area include the City of Perris "Old Town" Civic Center and Business District which is approximately one mile northwest of the site, and March Air Force Base which is approximately 7 miles north of the site.

4.6.1.3 Pertinent Land Use Plans

General Plan and Zoning

The City of Perris general plan and zoning map designates the project site as appropriate for Agricultural use. This zoning has been carried over from the County land use plan upon recent annexation of the project site to the City of Perris. The land use element of the City's general plan is in a policy format and provides for a continuation of agricultural, open space and flood plain uses. It should be noted that the city's general plan is presently being extensively revised and is slated for consideration for adoption toward the end of 1990.

An analysis of the proposed project's relationship to the overall policies contained in the existing general plan is contained in Section 4.6.2.1 below.

Airport Land Use Plans

The Riverside County Airport Land Use Commission has adopted an Airport Land Use Plan (ALUP) and has established an Interim Influenced Area for March Air Force Base. The Interim Influenced Area defines the compatible land uses for areas around the base affected by aircraft operations. The project site is not located in any of the three designated areas.

In addition, the 1984 Air Installation Compatible Use Zones Report, March Air Force Base indicates that the project site is not within the planning area.

The Perris Valley Airport is a private use facility and therefore is not under the jurisdiction of the Riverside Airport Land Use Commission.

4.6.1.4 Agricultural Resource Considerations

The project site soils are characteristic of productive farmland. Agricultural capability classifications include predominantly Class II soils. Such soils have low to moderate limitations for a range of truck crops, specialty crops, and field crops.

The Riverside County General Plan identifies several classifications of agricultural land occurring onsite. These classifications include prime farmlands, farmland of statewide significance, farmland of local importance and urban lands. The location of these various classifications are shown on Figure 4-6.

Two small areas of Prime Farmland occur onsite. Prime Farmland has physical characteristics conducive to the production of a wide range of agricultural products. A substantial portion of the site (about 25 percent) is classified as Statewide Important Farmland. This designation is for land other than prime farmland that has a good combination of physical and chemical characteristics needed to produce food, fiber, or animals. The majority of the site (about 50 percent) is classified as Farmland of Local Importance. Locally important farmlands are defined as non-irrigated Prime and Statewide soil mapping units, dry land grain, dairies, and zoned agricultural land not included in other categories. The agricultural lands onsite are leased to agricultural operators who produce alfalfa and other crops (or plants in the case of the nursery). The project site is not operated under an agricultural contract as provided for by the Williamson Act.

The agricultural designations described above are based primarily on the quality of soils on the site as well as associated agricultural uses. The designation does not consider other factors

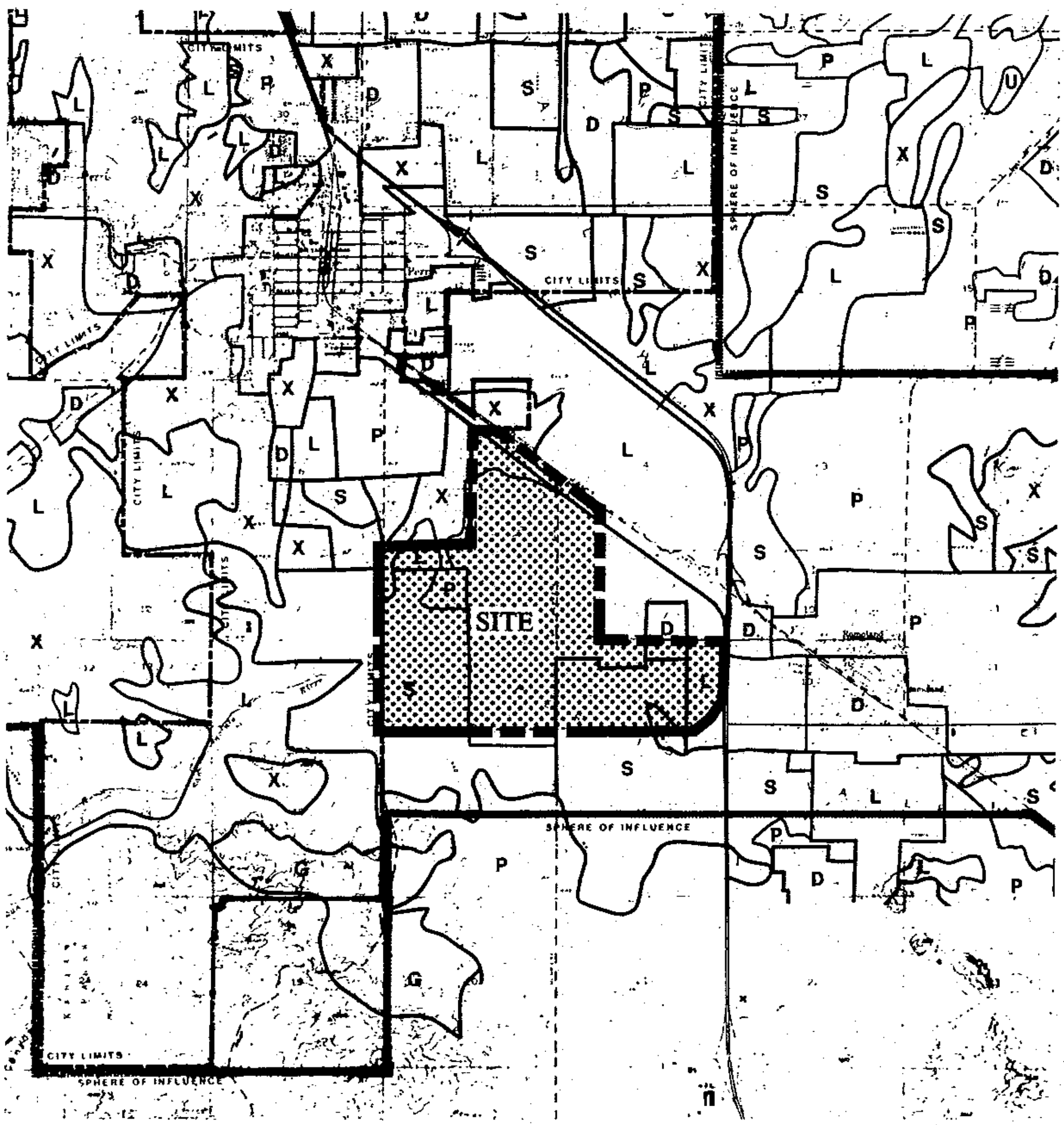
LEGEND

P	PRIME FARMLAND
S	FARMLAND OF STATEWIDE IMPORTANCE
U	UNIQUE FARMLAND
L	FARMLAND OF LOCAL IMPORTANCE
G	GRAZING LAND
D	URBAN AND BUILT-UP LAND
X	OTHER LAND

GREEN VALLEY

FIGURE 4-6

FARMLAND MAP



of importance to the viability of agriculture such as water availability, cost of production or other external factors that affect yield. A number of these external factors presently adversely affect the continued viability of agricultural operations on the project site, in the Perris Valley and in the greater area of western Riverside County. These are briefly described below.

Cost of Water

The most significant factor affecting the viability of agricultural land use in the Perris Area is the cost of water. The western Riverside County groundwater basin is not well developed and only limited supplies are available. Consequently, most water for agriculture is imported from northern California or the Colorado River. Since 1974, the cost of agricultural water purchased from imported sources has risen about 730 percent, from about $33.00 per acre foot to about $240.00 per acre foot. This is about twice as much as water costs in the San Joaquin Valley and about 20 times as much as water costs in the Imperial and Coachella Valleys.

Use of reclaimed water holds some potential to assist agricultural viability by reducing water costs. Though edible products cannot be irrigated with reclaimed water, such crops as lawn sod, landscape plants, seed and fodder crops can be. Care must be taken however, so that reclaimed water does not enter water courses used for potable supplies.

Rise in Production Costs

Agricultural viability has been affected by increasing costs in areas other than cost of water. The cost of energy for such activities as well operation, tractor use, and crop transportation has increased greatly in the past few years. Labor costs have also increased dramatically, while food prices for the most part have remained stable.

Market Competition

Other areas in the southern United States and in Northern Mexico have increased crop production and represents a significant source of market competition. In recent years, agricultural activities in the Imperial Valley, Coachella Valley and in northern Mexico have been boosted by inexpensive land (relatively), cheap labor, and lower water cost. These factors make it more and more difficult for operators in western Riverside County to produce agricultural crops on a profitable basis.

4.6.2 Environmental Impacts

4.6.2.1 Onsite Land Use

Approval of the proposed Specific Plan will initiate a phased conversion of site land use from the existing agricultural-related uses to an urbanized use consisting of residential, commercial, industrial, park and open space uses. A direct effect of this conversion will be the physical and institutional changes which take place onsite to implement the project.

An effect of the project has been the displacement of the NPI nursery on the southwestern portion of the site. The lessee's nursery operation was not necessarily tied physically to the site. It is presumed that this operation can be viable on another agriculturally-zoned parcel, with the only negative aspect being loss of improvements made to the site and the cost of moving.

Indirectly, the project will attract residents and businesses, create demands for additional business and community services, and utilities. The land use change will alter the tax revenues available to the local governments and will establish long-term demands for supporting natural resources such as water and energy.

4.6.2.2 Surrounding Land Use

The urban-related land uses proposed in the Green Valley Specific Plan are marginally compatible with the existing surrounding uses common to these agricultural areas (see Agricultural Resource Considerations below for more discussion on this). As the area appears to be undergoing a gradual conversion to more urban use, some of these incompatibilities (related to agricultural land use conflicts) may be temporary.

The land use plan has several aspects which potentially could result in significant adverse impacts due to land use related conflicts as discussed below.

Perris Valley Wastewater Facility

Residential and school site planning areas 30, 31, 32, 34, 36, 38 and 39 are adjacent to the treatment plant site. Significant adverse impacts on these land uses will include potential odors, nuisance impacts from sludge farming and other co-related agricultural activities, and aesthetic impacts. There may be noise impacts as well.

Future expansion of the wastewater facility will bring facilities close to the boundary with Green Valley. From this, it appears that land use conflicts could increase in the future as the uses merge near the property line. Land use compatibility impacts from aesthetics and odors are considered significant and adverse.

Perris Valley Airport

Land uses proposed within the Green Valley Specific Plan will have impact on and be impacted by the adjacent Perris Valley Airport. Several improvements to the land use plan originally contained in the Draft EIR have been made in response to airport issues. These changes are discussed below for specific impact areas.

Clear Zone

The FAA clear zone at the southerly extension of the airport runway overlies the proposed community park. Clear zone requirements have been adequately incorporated into the proposed plan such that no residences or structures will occur within this area. The land use plan for the community park has been modified so that the area in clear zone will not contain activities that attract significant persons to this area or provide spectator sports. Appropriate park design includes passive recreation, non-team, or non-spectator activities in the portion of the park which also lies in the clear zone. The proposed plan is compatible with these restrictions.

Approach Zone Emergency Touchdown Area

The proposed site plan has included the realigned the Romoland Channel along the extended centerline of the runway through the area under the approach airspace. This provides dedicated open area which could be used for emergency touchdown. This area, at 176 feet wide (plus additional width from adjacent streets) is reasonable and provides an added measure of safety to aircraft operators and future residents compared to the previous plan. Larger lots have been place adjacent to the channel which further reduces the developed density in the area under the approach airspace. The resulting developed density within this zone is about 2.8 units per acre which is within the recommended range of the Airport Land Use Planning Handbook. The overall project density is about 3.3 units per gross acre. It is noted that use of the channel for emergency touchdown, rather than a flat open area, will increase the potential for damage to an aircraft should it need to land in the area. However, the channel has the benefit of being a dedicated area whose use is established and not easily changed.

The present plan incorporates an added margin of safety to the airport and future residents by providing this open space emergency safety area. This margin of safety is beneficial and appears adequate based upon the nature of airport operations and the relatively low number of annual operations conducted over the Green Valley site. It should be noted that Division of Aeronautics safety analyses will still need to be conducted for all project school sites since they are located within two miles of an active airport runway.

Aircraft Overflight Area

Nearly the entire Green Valley site will be subject to overflight. The project density of 3.3 units per gross acre and 5.4 units per net residential acre is on the high side of the recommended density for the pattern area. This is considered an aspect of the project with lower compatibility.

Changes in Airport Operating Procedures

Implementation of the project will require several changes in existing airport operating procedures which may be considered adverse from an impact standpoint. First, pilots report that with development, they would not initiate a turn upon take-off until completely past the project site. Therefore, the airport pattern will be extended in a southerly direction to at least Ethanac and possibly beyond. Large lot residential uses south of Ethanac could experience greater levels of pattern traffic than at present.

A second operational procedure will require realignment of the ultralight landing strip. Ultralights presently approach landing over Planning Area 9 (Industrial) of the proposed Green Valley project. After development, ultralights could no longer overfly this area. According to the Perris ultralight FBO, the landing strip would need to be relocated to avoid overflying the site. This would require grading a new runway and trimming several of the large Eucalyptus trees that would obstruct the landing approach.

Additionally, implementation of the Green Valley project could require several changes in skydiving procedures which have been alluded to in public meetings. Such changes in procedures would involve compliance with FAA guidelines on approach to the drop zone over developed areas. For example, there may be some wind conditions at jump altitude that would limit jumps due to the increased likelihood of parachute landings on the project site.

Human Health and Safety (Risk)

The operation of aircraft and parachuting activities involve certain risks which could affect land uses surrounding the airport. These risks to future residents include aircraft accidents and skydiving accidents.

Accident statistics from the National Transportation Safety Board have been obtained for Perris Airport for years 1965 to 1987. These statistics are not necessary representative of current operations but are of interest from an historical perspective. During the period reported, there were 9 reported off-airport accidents. Five of the 9 accidents occurred in the airport vicinity and could potentially have been a risk to the project site. While this is not conclusive of unacceptable risk, it does indicate that the actual accident rates at the airport are somewhat higher than published general accident rates for types of aircraft using the facility.

Historically, there have been several parachuting accidents which resulted in fatalities to skydivers. Some of the fatalities have occurred on the Green Valley site. However, it is difficult to make predictions about future accidents based on these historic trends. The trend in parachuting is toward safer equipment, safer aircraft and better training programs which correlates to fewer accidents. Also, procedures will be implemented to avoid as much as possible the potential of landing on the Green Valley site. These aspects indicate low potential for an accident. However, it cannot be said with certainty that there will or will not be an accident on the site during the life of the project.

As has been stated previously, there are no accepted land use standards applicable the kinds of activity at Perris Airport. However, there is a general relationship between land use density and risk in the airport vicinity; lower density results in lower on the ground risk. As stated in the Airport Land Use Planning Handbook, "the density of uses permitted within an airport safety zone is an expression of local policy regarding the level of risk each jurisdiction feels is appropriate in response to airport operational considerations". When considering the amount of aircraft activity and other activities, the risk of an aircraft or skydiving accident involving the Green Valley site is considered low. Irrespective of this, the risk exposure is slightly greater than that which occurs at sites not in the airport vicinity. Therefore the risk exposure to future residents from these hazards is considered a significant adverse impact of the project.

This significant impact remains as long as the airport continues in its current operating mode. Should operations formally change to a different use, such as strictly gliders, balloons, and parachuting, the existing hazard zone designations may not be applicable. If the airport ceases operation, then any subsequent use of airport land would have to be evaluated for impact on the proposed project site. It is also noted that a change in operation of the airport, including a change to public use, may result in different impacts and require a separate environmental study to evaluate the regional air traffic and facility land use implications of such an action.

4.6.2.3 Agricultural Resource Considerations

Implementation of the proposed project will eliminate agricultural uses on about 1194 acres of the project site. Prime agricultural soils will be removed from production which will contribute to their decline in the State of California, Riverside County and the Perris Valley. The impact is considered a significant unavoidable adverse impact of the project.

As has been discussed previously, agriculture does not represent a long-term, economically viable use within the City due to urbanization pressures, unfavorable farming economics, and the increasing costs of labor, utilities and water.

An unfavorable result of the proposed action could be the creation of development pressure on nearby agricultural lands that are marginally viable and are not within the City. Such pressures can be exerted through the creation of land use conflicts, such as annoyances and complaints of new residents during spraying of pesticides and application of fertilizers, complaints about agricultural odors and insects, traffic conflicts between farm vehicles and other vehicles and crop vandalism. This impact is considered potentially significant.

4.6.2.4 General Plan and Zoning Considerations

Approval of the proposed Specific Plan would require a general plan amendment to allow a more intense development of the site than is allowed under existing zoning. While individual aspects of the Specific Plan vary from existing zoning regulations and the project proposes distinctive development standards, a review of specific general plan standards indicates that the project can be made generally consistent with the applicable land use policy. The project's relationship to the applicable City General Plan goals and policies is discussed in the subsections below. Other general plan goals are discussed under specific resource issue sections.

Overall General Plan Goals

The following goals are set forth in the Perris General Plan for the purpose of representing the policies and implementation measures to which the General Plan is directed.

1. Standard: The enhancement and preservation of the small town atmosphere that is presently enjoyed by the residents of the City of Perris, and the maintenance of the rural character of life in those sparsely populated areas of the City that are not yet appropriate for accommodating higher densities of residential development.

Application: The Green Valley Specific Plan seeks to create a community character which is complementary to the existing lifestyle in the City of Perris. Specific design standards have been formulated toward this end.

2. Standard: The encouragement of an orderly, contiguous development pattern sufficient to handle the City's expected population growth, in a manner that will preserve the City's fiscal capacity to provide the expanded public services that will be required by both the present and future residents.

Application: Green Valley is located on the edge of current development within the City of Perris. Its construction represents a contiguous development of the growth pattern of the City, while offering fiscal stability both internally and externally through the tax base established by the commercial, business park and industrial land uses. Infrastructure improvements, such as roads, water and sewer connections are already present on the site.

3. Standard: The expansion of the City's central business areas in order to maintain Perris' role as the economic and retail trade center of the surrounding Perris Valley; and the encouragement of the location of smaller self-contained retail convenience centers within the outlying residential neighborhoods in order to serve the daily shopping needs of the residents while minimizing the number of auto trips needed on the City's arterial streets.

Application: The various commercial land uses within the Green Valley Specific Plan, along with the larger, more regionally-focused business park, offers business areas which will serve the Green Valley residents, as well as continue to attract business from throughout the Perris Valley. Green Valley's location adjacent to I-215 offers the opportunity for serving other communities without adding additional cars to the City's existing arterial street system. Green Valley is designed to create a positive jobs-to-housing balance, by providing the opportunities for commercial, industrial, and professional development within easy access of residents.

4. Standard: The encouragement of a sound economic base for the City of Perris and the surrounding region by designating specific areas that are appropriate for the location of future light industrial plants.

Application: Green Valley offers 108.7 acres of industrial parks, located adjacent to the Perris Valley Airport. This location is specifically mentioned in the Perris General Plan as a desirable location for such development.

5. Standard: The preservation of the City's natural and open space land resources in a manner consistent with the phased urban growth of the City; the directing of future development away from areas that are subject to geological and flood inundation hazards; and the prevention of incompatible land uses in areas exposed to excessive noise levels and aircraft crash hazards.

Application: The Green Valley Specific Plan preserves the San Jacinto River and Romoland channels as a useable open space, preserving their function as regional drainage and flood protection facilities. Industrial land uses are located next to the Perris Valley Airport. Special measures will be implemented where noise and safety impacts from the Perris Airport, railroad tracks or freeway could be significant.

6. Standard: The provision of a system of open space and recreational facilities that is adequate for the needs of the City's residents by maintaining and enhancing existing parks and facilities, as well as insuring an open space form of natural areas in conjunction of the City's future physical growth.

Application: Approximately 34 acres of flood control channels within Green Valley has been preserved as open space. These open spaces, along with the four public parks and one public sports complex, offer recreational opportunities in excess of that which is required by the Quimby Act.

7. Standard: The encouragement of continued economic viability of existing agricultural uses within the City, especially within those areas identified as hazardous for urban development, due to periodic flooding or noise impacts, while recognizing the continued importance of agricultural operations to the local economic base.

Application: The Green Valley site is currently being used for agriculture in a limited way. Since this standard was adopted, the viability of agricultural operations within the City limits has decreased. The improvements of the San Jacinto River and Romoland channels, as called for in Riverside County Flood Control and Water Conservation District's Master Plan, will remove the majority of the site from the 100-year floodplain. In addition, the commercial and industrial land uses provided will more than offset the small loss of local economic base caused by the removal of this land from agricultural uses.

8. Standard: The provision of a safe and efficient network of local streets and arterial highways to provide for the efficient movement of inter-regional traffic through the region as well as providing a logical system of routes to connect the various sectors of the City and the Central business district with a minimum of traffic and safety conflicts.

Application: The Green Valley Specific Plan recognizes the importance of Case, Ethanac, Murrieta and Goetz Roads in the regional circulation system. In accordance with this understanding, these thoroughfares are retained, and improved as necessary to provide an enhanced level of service, commensurate with the increased population of the area. The internal circulation system of the Green Valley development will convey residents and visitors to the various land uses on-site, without jeopardizing the flow of traffic through and around the site.

9. **Standard:** The retention and enhancement of those cultural and recreational attractions that are presently unique to the Perris area, such as the Orange Empire Trolley Museum and the privately-operated Perris Valley Airport, while minimizing the conflicts that the expansion of these uses may exert on neighboring areas.

Application: The planned interface between the airport and the Green Valley community is designated as industrial development and open space, in keeping with the desires expressed in the General Plan. These land uses would allow for the operation of airport-related business, and the adjacent San Jacinto River recreational area and sports complex will provide further opportunities for visitors to the area. Special measures will be implemented to mitigate identified noise and hazard impacts that are likely to occur from continued airport operations in Planning Areas 7, 6, 8, 9, 22, 23, 24 and 25.

Agricultural Preservation

1. **Standard:** The continued viability of agricultural uses within the City shall be enhanced by discouraging the premature expansion of urban land uses into areas that are presently devoted to large-scale agriculture production, and that are beyond the present range of urban infrastructure such as sewer collection facilities and improved roads. Future residential and urban growth should occur in a logical and contiguous pattern, so as not to exert an undue influence on agricultural land values and operations.

Application: The Green Valley site is located adjacent to existing development within the City of Perris. Infrastructure improvements, such as sewer collection lines and improved roads, are available at the site. The land is currently used for agricultural only to a limited degree and is not part of an agricultural preserve contract.

2. Standard: Undeveloped lands within the City's boundaries that are located within the 100-year floodplain as shown on the Federal Flood Insurance Rate Maps and Floodway Boundary Maps should be placed in an Agricultural-Open Space land use designation. This action will further the General Plan goals of protecting future development from the hazards of flood inundation as well as encouraging the continuation of agricultural uses in suitable areas and ensuring a system of open space lands within the City.

Application: The construction of the San Jacinto Storm Drain Channel and the Romoland Lateral "A" by the Riverside County Flood Control and Water Conservation District will remove the remainder of the Green Valley site from the 100-year floodplain.

Land Use

Land Use Category Policies: The City of Perris lists ten (10) land use categories which could be delineated for land within the city. The ten categories are:

1. Rural Residential
2. Low-Density Residential
3. Medium-Density Residential
4. Professional Commercial/Mixed Use
5. Neighborhood Convenience
6. General Commercial
7. Industrial
8. Open Space
9. Commercial Recreation and Visitor Center Industrial
10. Public Facilities

For the purposes of the Green Valley Specific Plan, the only applicable land use designations are:

2. Low-Density Residential
3. Medium-Density Residential
4. Professional Commercial/Mixed Use
6. General Commercial
8. Open Space
9 Commercial Recreation and Visitor Center Industrial
10. Public Facilities

The following discussion relates the proposed Green Valley land uses to the City's land use classification system.

1. **Standard:** <u>Low-Density Residential:</u> This designation is intended for the majority of the land area in the City that is allocated by the Plan for residential uses, typically single family homes, as well as mobile home subdivisions. Development in the low density category should occur in a contiguous manner that is consistent with the phased extension of the physical infrastructure of services needed by development of this type. Individual development proposals should only be approved where they are adjacent to areas that are already built up to similar density levels, have the required public utilities and possess improved local street systems. Prior to the approval of development in this land use category, the full range of public utilities and services should be available to the site, including domestic water and natural gas lines as well as a public sewage system that is connected to existing collection and treatment facilities. The site must be adjacent to a presently existing network of improved public streets, and must not be dependent for access upon the possible future extension of roads or streets across intervening, undeveloped property.

Application: The majority of the residential areas proposed in the Green Valley Specific Plan are consistent with the Low Density Residential category. Single family dwelling units are proposed which are on 7,200, 6,000 and 5,500 square foot lots. Densities in these residential areas will range from 2.8 to 5.4 dwelling units per acre. Infrastructure improvements are proposed to be simultaneously phased to coincide with the residential development. The Green Valley site is bordered by and bisected by public arterial streets, which will be improved and supplemented in phases concurrent with residential development. A full range of public utilities are available in the immediate area.

2. **Standard:** <u>Medium-Density Residential:</u> This category is appropriate for those areas which are within or adjacent to the City's 'core area' where the public service infrastructure that is required by higher density developments is already in place. This designation included multiple family developments consisting of duplex, triplex or fourplex structures, garden style apartments as well as the zero lot line design concept. Developments that are approved in the Medium-Density Residential category should exhibit a spacious appearance incorporating landscaped recreational open space as well as required off-street parking facilities for the benefit of the project residents. This type of development should be located in proximity to collector streets and traffic arterials so as not to place undue traffic burdens on local streets that serve

adjacent lower density developments. These projects should also be located within reasonable distance of shopping facilities as well as schools in order to provide a reasonable level of convenience for the residents.

Application: Approximately 49.4 acres of the Green Valley Specific Plan is proposed for multi-family development, at an overall density of 15 dwelling units per acre. Development standards established for these land uses require open space and off-street parking facilities. These developments are located adjacent to major arterials and commercial developments for the convenience of the residents.

3. Standard: Professional Commercial Mixed Use: This category allows commercial uses of a limited nature to complement the central commercial district while providing a buffer use to enhance the liveability of the surrounding vicinity. The types of business uses allowed under this mixed use concept would include medical and dental offices, real estate firms, accountants and financial services, and other professional services that are limited in scale and rely on direct personal contact. Projects that locate within this development category must comply with high standards of site design and incorporate adequate buffering measures to protect residents from the concentrated impacts of nearby commercial activities and traffic.

Application: A 42.3 acre business, professional, and office park is proposed in the Green Valley Specific Plan. This land use will act as a buffer between the Interstate 215 freeway and the residential areas located to the west. High standards of site design will be incorporated into this area to protect residents from concentrated impacts of the on-site activities and traffic.

4. Standard: General Commercial: This category is intended to provide for the full range of retail, service, professional and financial concerns that are essential to the City's local economy as well as to serve the surrounding trade market area in the Perris Valley. This land use should be sufficient to accommodate the foreseeable need for additional major commercial uses to serve the projected increases in population within the ten to twenty year planning period. Development within this area should be controlled by incorporating landscaping and the planting of street trees. Adequate off-street parking and proper traffic controls must be implemented in order to minimize conflicts with through traffic. Strict measures should be taken to locating less desirable, though necessary, commercial uses of a service nature (auto repair and body shops, contractors storage and work yards, machine shops and warehouses) to areas where their adverse impacts can

be mitigated. Maintaining a high standard of site design and providing good access from major circulation routes is also recommended.

Application: Commercial land uses totalling 72.7 acres (not including the professional commercial park) will be located within the Green Valley development. These facilities will be necessary to provide the goods and services for the expanding Perris area population. Strict design standards have been established by the specific plan to provide sufficient parking and allow for essential services in an aesthetically pleasing manner. These measures include landscaping, parking, setbacks, architectural standards, and similar requirements. All of these commercial land uses are located at major arterial intersections.

5. **Standard:** <u>Open Space:</u> This land use designation is intended for those areas which possess unique characteristics in terms of land forms or wildlife habitat, are hazardous or unsuited for development due to steep slopes, geologic hazards or flooding, or are devoted to long term agricultural production. The Open Space Category should also be applied to lands that exhibit particular hazards for substantial development activity, such as areas that are subject to 100 year flood inundation as indicated on the Federal Flood Insurance Administration maps. These include areas of the city paralleling the Perris Valley Storm Drain and the San Jacinto River Channel.

Application: The construction of the San Jacinto Storm Drain Channel and the Romoland Lateral "A" by the Riverside County Flood Control and Water Conservation District will remove the most of Green Valley site from the 100-year floodplain. The channel areas themselves will then be the only portions of the site which will be consistent with this land use category. These areas will be devoted to recreational land uses.

The City of Perris has established a moratorium on development adjacent to the San Jacinto River covering an area 375 feet on both sides of the centerline of the river. This 750 foot moratorium area has the purpose of reserving sufficient area for incorporation of regional river habitat enhancement programs and to provide river related amenities within the City. The project plan designates this area as a river study area.

6. **Standard:** <u>Commercial Recreation and Visitor Centers - Industrial:</u> This land use category comprises those areas that have particular historic or recreational importance which is unique to the Perris area, such as the Orange Empire Trolley Museum and the Perris Valley Airport. Since these places

attract many out-of-town visitors and constitute an important segment of the local economy, General Plan policies should be directed towards preserving these enterprises which are a special attribute of the Perris Valley region from incompatible adjacent land uses, while allowing for the reasonable expansion of their facilities over the long range planning period. Special studies directed toward the issue of the privately-owned Perris Valley Airport will be needed in light of its predominant role as a center for air sports such as sky-jumping and glider flights and because of the potential conflicts which may arise with surrounding land uses as a result of increased recreational activities as well as associated aircraft operations in the future. In light of the existing industrial uses, certain industrial uses are compatible with these facilities. Future industrial uses can be governed by a conditional use review process, whereby proposals could be assessed in the light of performance standards to be prepared by the staff. For instance, some industrial uses may be more compatible than other uses in the land areas immediately bordering the Perris Valley Airport, due to safety factors, relating to air navigation and the associated noise impacts. The entire area comprised by this land use category should be the subject of a Specific Plan, which would outline the precise land areas which should be designated for commercial, visitor or industrial uses, based on appropriate studies as well as existing land use patterns.

Application: The Green Valley project includes three areas of proposed industrial land uses located adjacent to the Perris Valley Airport. Low density, low profile industrial and office uses compatible with the air field use are proposed for these areas. Access is to be achieved from major arterials, and not through residential neighborhoods. Strict development standards have been established in the Specific Plan to protect the surrounding areas from unsightly development, noise, emissions, and other impacts associated with industrial land uses.

Specific study of the compatibility of the proposed action with the Perris Valley Airport has been undertaken and it has been determined that the project has a good degree of compatibility based upon most recent site plan revisions. Uncertainties relative to the airport exist particularly relative to future expansion and possible public use.

7. Standard: Public Facilities - Educational Use: This land use category is used to designate existing publicly-owned facilities such as the City and County Administrative Center, public school sites and publicly-owned operations and maintenance centers. The ultimate location of any new schools, fire stations, or parks depends on the specific actions by the agency responsible for funding acquisition and construction. Any future facilities that are proposed by any governmental agency in the planning area should be referred To the Planning Commission of the City of Perris for determination of consistency with the General Plan goals and policies.

Application: The Green Valley Specific Plan includes 24 acres of schools and 51.1 acres of parks which will comply with local and state plans, policies and programs. These facilities are proposed in quantity, location and configuration required by the respective agencies.

Based upon the information above, the proposed project responds positively to the goals of the existing general plan.

4.6.3 Mitigation Measures

4.6.3.1 Onsite and Surrounding Land Use

With respect to the compatibility of the proposed project with surrounding land uses, the following measure is proposed (specific measures are included under each applicable resource discussion);

Perris Valley Wastewater Facility

o In accordance with EMWD Ordinance NO. 66, service to residential and commercial properties within one quarter mile of the facility cannot be initiated without recorded acknowledgement that the uses are subject to substantial odor impacts from the facility. Thus, all lands within 1/4 mile of the existing treatment facility shall have notice recorded of the presence of the facility. All homeowners shall be notified in writing prior to purchase that the treatment plant is located in close proximity to their home. and potential odors and noise may occur. A copy of such notification signed by each property owner shall be provided to the Planning Department prior to issuance of any occupancy permit.

o Prior the recordation of any final map, the applicant shall install a 60 foot wide heavily landscaped buffer zone immediately adjacent to the common boundary of the project and the Perris Valley Wastewater Treatment Plant. A landscape plan for this buffer prepared by a licenced landscape architect shall be submitted to the City of Perris for review. If the 60 foot wide buffer falls entirely or partially on properties owned by EMWD, an agreement shall be executed by EMWD and the City to place any EMWD land so affected in a permanent open space easement for maintenance by the landscape maintenance district. If the required buffering plans demonstrate with certainty that something less than a 60 foot wide buffer will provide an acceptable separation between the residential/treatment plant uses, a reduced buffering strip may be illustrated in the required Design Manual and submitted to the Planning Commission for approval.

Perris Valley Airport

Based on the identified impacts and considering that the Perris Airport will continue to support sport flying activities, the following measures are recommended;

o Avigation easements shall be given to the owner of the Perris Valley Airport, and so noted on each final map. Avigation easements shall not restrict airport operations, but shall specify the types of activities included within the easement designation. Avigation easements will specifically include reference to an airport vicinity effects, noise impact, accident potential, fly-overs, miscellaneous effects such as potential damage from accidental fuel spills and airport expansion. Suggested wording of avigation easements description will be provided in the Final EIR.

o The Department of Real Estate Report and property title reports shall include avigation easement information. All properties within the Green Valley project shall be subject to the avigation easement restrictions. Avigation easements are attached to the title of properties and hence are transferred to subsequent owners.

o Residential structures, and other hazards to aviation (such as light standards), shall meet FAA Part 77 requirements (the zone has been previously defined in the EIR Finalizing Addendum). The regional park (Planning Area 7) shall be designed to prohibit spectator activities such as little league and soccer games within the clear zone. Passive recreation activities and non-spectator activities are appropriate within that portion of Planning Area 7 within the Clear Zone.

o Height limits within the clear and approach zones shall recognize the 20:1 approach and departure slope which is a condition of airport operation as permitted by California Department of Transportation, Division of Aeronautics.

o The applicant will reimburse the airport owner for all work including permits required to relocate the ultralight runway, trim trees and provide safe operating conditions. Final alignment of the runway shall be established by the ultralight FBO's and airport owner.

o It is suggested that the appropriate documentation be established to support the Perris Airport's designation on aeronautical charts as an established parachute drop zone. This measure is not the responsibility of the applicant.

4.6.3.2 Agricultural Resource Considerations

The impact of the project on agricultural operations is not mitigatible. However, the following measures can reduce land use conflicts which occur with urban encroachment to agricultural areas.

o Vegetative barriers and buffers should also be provided between the specific plan area and active agricultural operations to the south and west. The Department of Conservation recommends that buffers be at least 300 feet in width.

o As an additional measure, the City's general plan revision process should consider other mechanisms to enhance agricultural land use activity, either permanently or temporarily. Such mechanisms would include right-to-farm ordinances, establishment of farmland trusts, creation of Williamson Act ag preserves, and enactment of transfers of development rights. Another mechanism may be a development fee which subsidizes the cost of water or labor for farm activities.

o The project includes a phasing aspect. The site owner should, through development agreements, be encouraged to retain agricultural use onsite for as long as feasible and compatible.

4.6.4 Significant Unavoidable Adverse Impacts

The following impacts remain significant after implementation of the measures described above;

The impact of elimination of agricultural land uses.

The impact of odors from the adjacent wastewater facility which are likely to remain a nuisance to residences within one quarter mile of the wastewater plant. This impact is not entirely mitigated by the vegetative buffer or notification and remains a significant adverse impact of the project.

The exposure of future residents to risks from aircraft operating out of the airport as well as potential future skydiving accidents. The risk is considered very low but is greater at the site than other areas of the city.

4.7 POPULATION AND HOUSING

4.7.1 Existing Conditions

The population of the City of Perris was 8288 persons on January 1, 1984, and consisted of 2891 households. By 1987, the estimated population had increased to about 29,156 persons (FMA, 1989). By 1992, when the initial phases of the proposed project begin to come on-line, the projected City population will be 34,715 persons consisting of 11,769 households (Ibid.). Available demographic information is given in Table 4.7-1.

TABLE 4.7-1
POPULATION CHARACTERISTICS

	1987	1992
Total Population	29,156	34,715
Total Households	9,827	11,769
Population by Age Group		
0-4	2,599	3,210
5-11	3,204	4,017
12-16	2,447	2,733
17-21	2,396	2,624
22-29	3,413	4,232
30-44	5,107	6,222
45-54	2,820	3,377
55-64	2,983	3,229
65+	4,186	5,072
Median Age	31.52	31.31
Average Age	35.69	35.49

Source: FMA, 1989

Lower cost of housing is a major factor attracting population to western Riverside County and the City of Perris.

4.7.2 Environmental Impacts

Implementation of the proposed project will increase the City's housing stock by 4,210 units. Projected population from the development is estimated at 11,740 persons at full buildout (2000) based on an average occupancy rate of 2.79 persons per dwelling unit. The projected dwelling unit occupancy rate is based on current trends in the regional area. Projected population growth by land use type and by project phase is shown on Tables 4.7-2 and 4.7-3.

TABLE 4.7-2

ESTIMATED PROJECT POPULATION BY RESIDENTIAL PRODUCT TYPE

	No. of Units	Population Per Unit	Population
5,500 S.F. Homes	2,562	3.00	7,686
6,000 S.F. Homes	395	2.90	1,146
7,200 S.F. Homes	503	2.80	1,408
Multi-Family Units	750	2.00	1,500
Total	4,210	2.79 (Average)	11,740

Source: FMA, 1989

Table 4.7-3

ESTIMATED PROJECT POPULATION BY PROJECT PHASE

Phase	Year On-line	Dwelling Units	Population per Phase	Population Cumulative
1	1991	1,436	4,090	4,090
2	1993	1,246	3,490	7,580
3	1995	714	1.980	9,560
4	1997	814	2,180	11,740
Totals		4,210	11,740	

Source: FMA, 1989

The proposed project will account for a significant percentage of the population and housing units within the City. If it is assumed that a 6 percent City growth rate can be maintained through project buildout, the estimated 2000 City population would be approximately 55,400 persons. The project would account for about 21 percent of the estimated population at buildout.

The SCAG GMA4 Modified Growth Forecast is used to determine regional population growth for purposes of planning regional air quality management and transportation strategies. SCAG forecasts for the City and surrounding area were recently revised based on changing assumptions about population distribution in the Perris Valley. The SGAG GMA4 growth rate for RSA 47, within which the City of Perris lies, is estimated to be slightly over 5 percent per year for the 10 year period between 1990 and 2000 (Riverside County Planning Department, 1989). The City of Perris projects 6 percent growth, which seems reasonable when compared to SCAG since the RSA includes large non-urban territory and development tends to center around existing urban areas.

4.7.3 Mitigation Measures

No significant population impacts were identified, thus, no specific mitigation for the increases in population and housing stock is proposed.

4.7.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts will occur.

4.8 TRANSPORTATION AND CIRCULATION

The information included in this section is based on a detailed traffic report entitled, "Traffic Impact Study for Green Valley In The City of Perris", dated May 1989 and prepared by the transportation engineering firm of Basmaycian-Darnell, Inc. The entire traffic report is included in the Technical Appendices, Appendix E. In response to changes in the site plan for Green Valley, Mohle, Grover and Associates, the City's traffic engineering consultant, updated the text provided below.

4.8.1 Existing Conditions

4.8.1.1 Roadway Characteristics and Existing Traffic Volumes

The circulation system in the vicinity of the project site currently consists primarily of two-lane undivided roadways with unimproved, dirt shoulders. Most intersections in the area are stop-sign controlled with stop signs on the minor streets only.

Regional access to the project area is provided by the Escondido Expressway, State Route 215 (SR 215), and State Route 74 (SR 74). SR 74 currently interchanges with SR 215 at the Case Road interchange located in the northeast corner of the project site. Construction will begin on or before October 1990 to up grade SR 215 to interstate standards. This project will include a new interchange at Ethanac Road. Local circulation is provided by Ethanac Road, Case Road, Murrieta Road, and Goetz Road. Existing traffic volumes in the vicinity of the project are generally quite low, with the exception of SR 215 and SR 74, which carry through traffic, as well as local traffic.

The existing roadway system is shown on Figure 4-7, with the number of lanes on each roadway segment, and type of traffic control at each intersection depicted. Also shown are the typical weekday traffic volumes. These daily traffic volumes were derived by assuming the highest peak hour traffic total at the adjacent intersections to be ten percent of the daily volume.

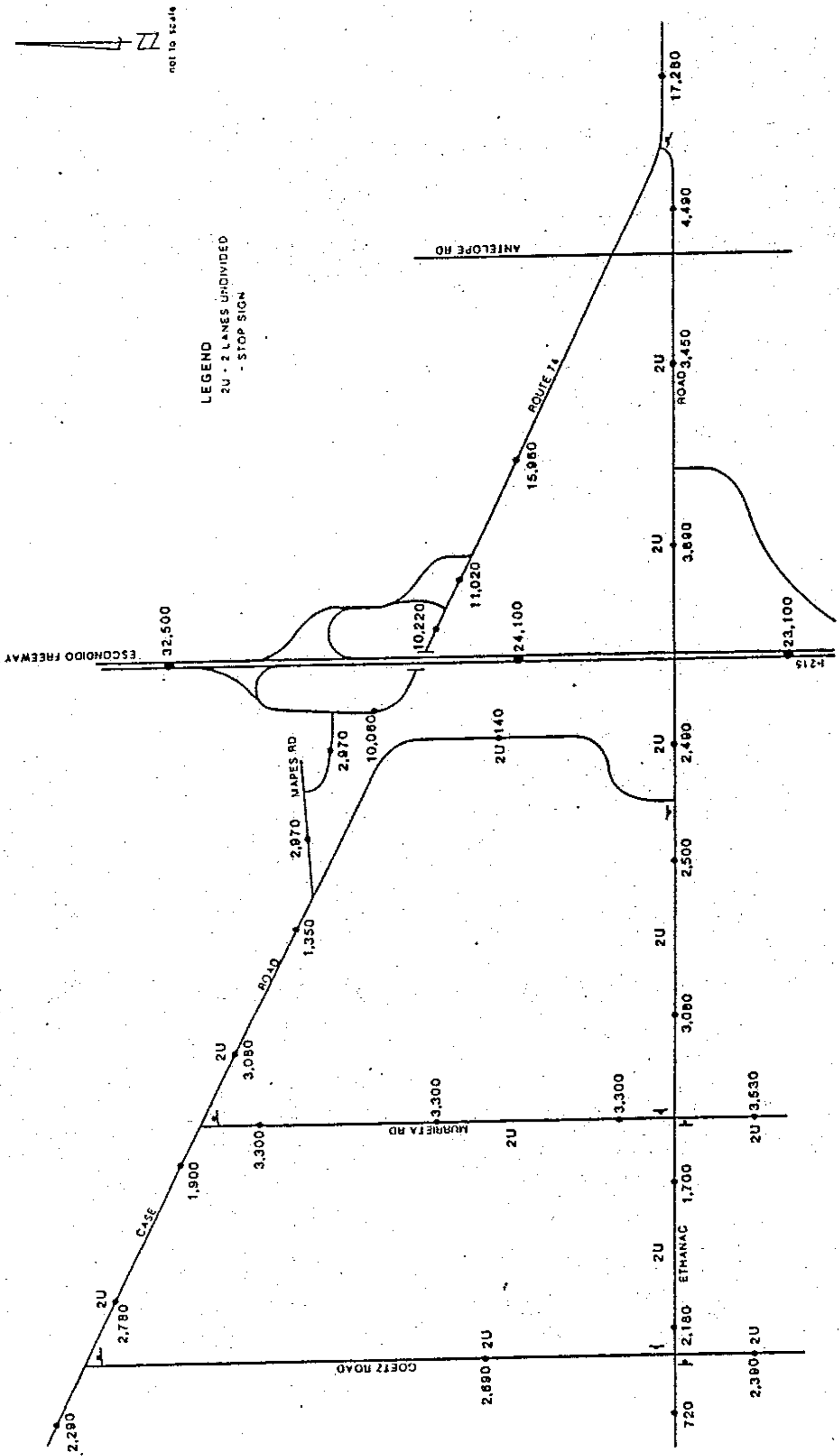
Existing peak hourly traffic turning movement volumes were collected at twelve intersections in the project vicinity in Spring 1989, and are depicted on Figure 4-8.

4.8.1.2 Operating Conditions

The existing roadway system is presently operating with minimal intersection stopped time delay due to the present rural characteristics of the general project area. This assessment is

GREEN VALLEY

FIGURE 4-7



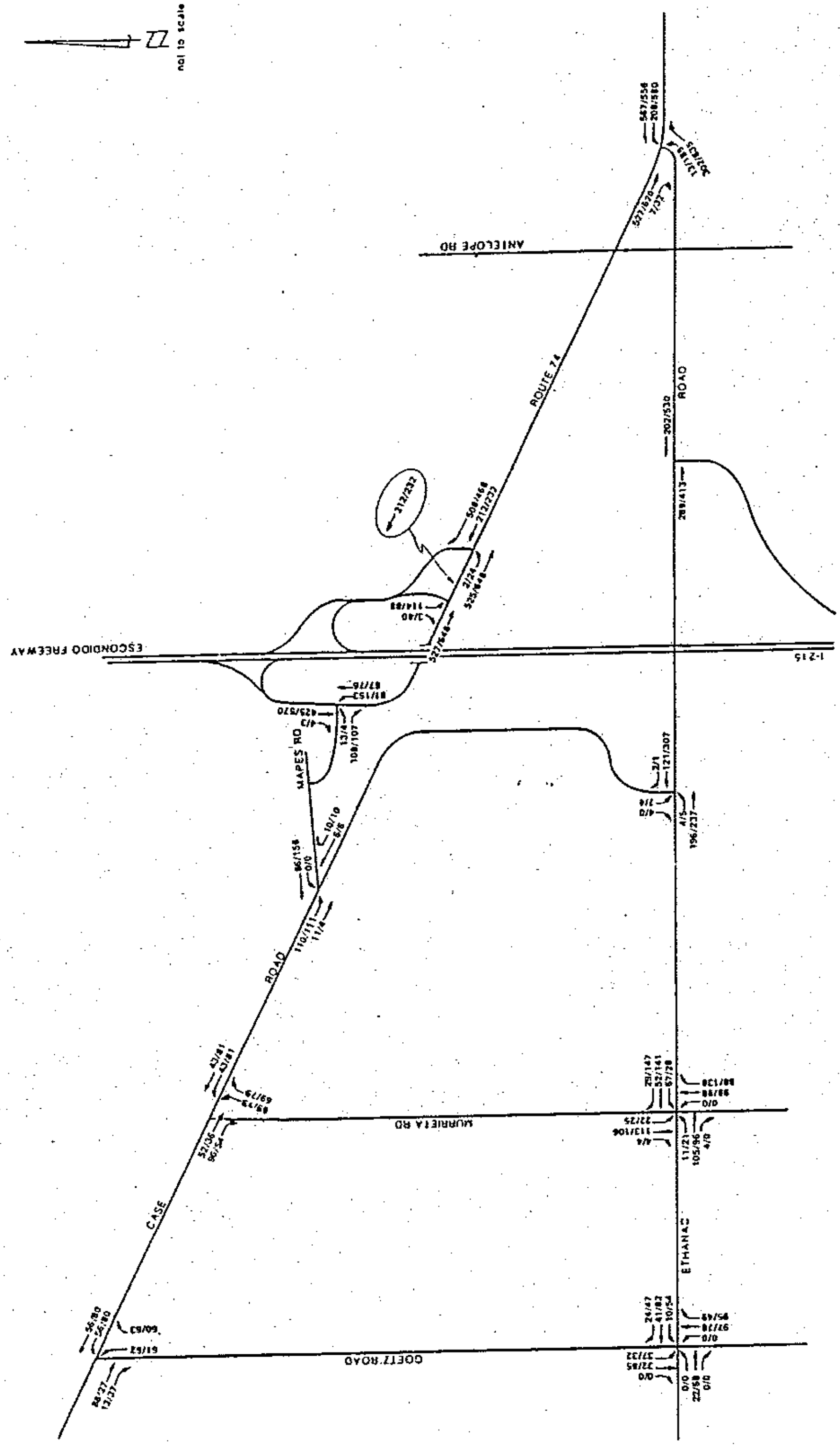
SOURCE: BASMACTYAN-DARNELL, INC.

EXISTING ROADWAY CHARACTERISTICS & AVG DAILY TRAFFIC VOLUMES

EXISTING AM/PM PEAK HOURLY TRAFFIC VOLUMES

GREEN VALLEY

FIGURE 4-8



SOURCE: BASMACTYAN-DARNELL, INC.

based on a review of the peak hour turning movement counts and a field review by the City's traffic consultant.

4.8.2 Environmental Impacts

4.8.2.1 Project-Related Trip Generation

Trip generation rates for the project were derived from the Institute of Transportation Engineers Trip Generation Manual, Fourth Edition. Resulting trip generation characteristics for the project are shown on Table 4.8-1. The project is estimated to generate approximately 104,174 trips on a daily basis, with 3,229 trips inbound and 2,939 trips outbound in the morning peak hour and 4,823 outbound and 4,803 inbound in the evening peak hour.

Because of the mixed-use nature of the development, a portion of the trips will be assumed to be internal to the project, and therefore will not impact the surrounding roadway system. For example, the majority of trips to the elementary schools and other home-to-work or home-to-shopping trips oriented to the employment and shopping opportunities within the project will not use the surrounding road network. Of the 104,174 trips to be generated by the project per day, it is estimated that approximately 20% of those trips will remain internal to the project.

4.8.2.2 Trip Distribution and Assignment

The distribution and assignment of project traffic throughout the project's internal circulation system and onto the surrounding roadway system was accomplished through a traffic modeling process using the QRS program developed by AJH Associates and MONITOR developed by Mohle, Grover and Associates.

The resulting project-related daily trips on roadway segments are shown on Figure 4-9, and morning and evening peak hourly turning movement volumes at intersections are shown on Figure 4-10.

4.8.2.3 Other Project Trip Generation and Distribution

Tripmaking from the other projects surrounding the Green Valley project were also taken into account in the analysis process. Tripmaking assumptions for these areas were derived from the Southern California Association of Governments (SCAG) RIVSAN II Traffic Model. Future traffic generation from six traffic zones around Green Valley was considered. Traffic from other projects is anticipated to be approximately 135,092 trips per day, or

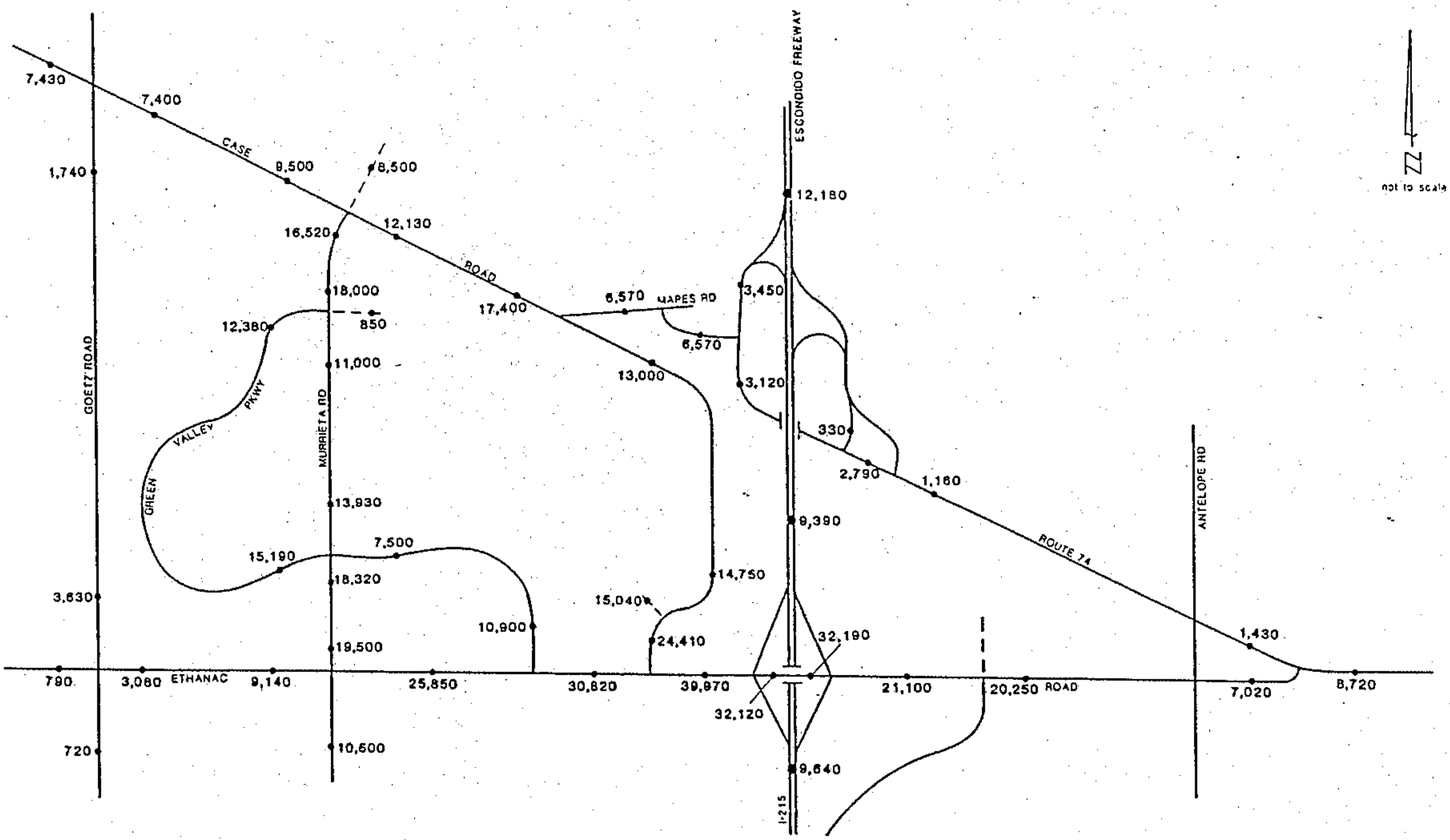
TABLE 4.8-1
TRIP GENERATION
GREEN VALLEY REVISED LAND USE PLAN

ZONE	LAND USE	SIZE	UNIT	TRIP RATES AM IN	TRIP RATES AM OUT	TRIP RATES PM IN	TRIP RATES PM OUT	TRIP RATES 24 HOUR	TRIP ENDS AM IN	TRIP ENDS AM OUT	TRIP ENDS PM IN	TRIP ENDS PM OUT	TRIP ENDS 24 HOUR
1	INDUSTRIAL	34	AC	6.41	1.32	1.63	5.8	51.8	217	44	55	197	1761
2	INDUSTRIAL	34.2	AC	6.41	1.32	1.63	5.8	51.8	219	45	55	198	1771
3	COMMERCIAL	12	KSF	2.86	1.22	8.45	8.79	156.1	34	14	101	105	1873
4	RESIDENTIAL	149	DU	.2	.55	.64	.37	10.06	29	81	95	55	1498
5	RESIDENTIAL	154	DU	.2	.55	.64	.37	10.06	30	84	98	56	1549
6	RESIDENTIAL	169	DU	.2	.55	.64	.37	10.06	33	92	108	62	1700
7	PUBLIC PARK	29	AC	0	0	0	0	0	0	0	0	0	0
8	RESIDENTIAL	118	DU	.2	.55	.64	.37	10.06	23	64	75	43	1187
9	INDUSTRIAL	40.5	AC	6.41	1.32	1.63	5.8	51.8	259	53	66	234	2097
10	RESIDENTIAL	96	DU	.2	.55	.64	.37	10.06	19	52	61	35	965
11	RESIDENTIAL	108	DU	.2	.55	.64	.37	10.06	21	59	69	39	1086
12	RESIDENTIAL	161	DU	.2	.55	.64	.37	10.06	32	88	103	59	1619
13	COMMERCIAL	166	KSF	1	.43	2.39	2.49	62.2	166	71	396	413	10325
14	RESIDENTIAL	161	DU	.07	.38	.38	.18	5.9	11	61	61	28	949
15	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
16	SCHOOL	7.5	AC	10	6	1	2	60	75	45	7	15	450
17	RESIDENTIAL	80	DU	.2	.55	.64	.37	10.06	16	44	51	29	804
18	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
19	RESIDENTIAL	140	DU	.2	.55	.64	.37	10.06	28	77	89	51	1408
20	RESIDENTIAL	148	DU	.2	.55	.64	.37	10.06	29	81	94	54	1488
21	RESIDENTIAL	197	DU	.2	.55	.64	.37	10.06	39	108	126	72	1981
22	RESIDENTIAL	191	DU	.2	.55	.64	.37	10.06	38	105	122	70	1921
24	RESIDENTIAL	146	DU	.2	.55	.64	.37	10.06	29	80	93	54	1468
25	RESIDENTIAL	172	DU	.2	.55	.64	.37	10.06	34	94	110	63	1730
26	RESIDENTIAL	136	DU	.2	.55	.64	.37	10.06	27	74	87	50	1368
27	RESIDENTIAL	86	DU	.2	.55	.64	.37	10.06	17	47	55	31	865
28	RESIDENTIAL	108	DU	.2	.55	.64	.37	10.06	21	59	69	39	1086
29	COMMERCIAL	185	KSF	.96	.41	2.18	2.46	59.9	177	75	403	455	11081
30	RESIDENTIAL	192	DU	.07	.38	.38	.18	5.9	13	72	72	34	1132
31	RESIDENTIAL	168	KSF	.2	.55	.64	.37	10.06	33	92	107	62	1690
32	SCHOOL	10	AC	10	6	1	2	60	100	60	10	20	600
33	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
34	RESIDENTIAL	225	DU	.2	.55	.64	.37	10.06	45	123	144	83	2263
35	RESIDENTIAL	146	DU	.2	.55	.64	.37	10.06	29	80	93	54	1468
36	RESIDENTIAL	140	DU	.2	.55	.64	.37	10.06	28	77	89	51	1408
37	PUBLIC PARK	5.5	AC	0	0	0	0	0	0	0	0	0	0
38	SCHOOL	7	AC	10	6	1	2	60	70	42	7	14	420
39	RESIDENTIAL	198	DU	.07	.38	.38	.18	5.9	13	75	75	35	1168
40	BUSINESS PK	21.8	AC	17.25	2.89	3.33	14.7	159.7	376	63	72	320	3481
41	BUSINESS PK	20.5	AC	17.25	2.89	3.33	14.7	159.7	353	59	68	301	3273
42	COMMERCIAL	108	KSF	1.19	.51	2.94	3.06	72.33	128	55	317	330	7811
43	COMMERCIAL	138	KSF	1.08	.46	2.62	2.72	66.4	149	63	361	375	9163
44	COMMERCIAL	179	KSF	.97	.42	2.21	2.5	60.61	173	75	395	447	10849
45	RESIDENTIAL	199	DU	.07	.38	.38	.18	5.9	13	75	75	35	1174
46	RESIDENTIAL	166	DU	.2	.55	.64	.37	10.06	33	91	106	61	1669
47	RESIDENTIAL	137	DU	.2	.55	.64	.37	10.06	27	75	87	50	1378
48	RESIDENTIAL	119	DU	.2	.55	.64	.37	10.06	23	65	76	44	1197
								TOTAL	3229	2939	4803	4823	104174

PROJECT RELATED TRAFFIC VOLUMES

GREEN VALLEY

FIGURE 4-9

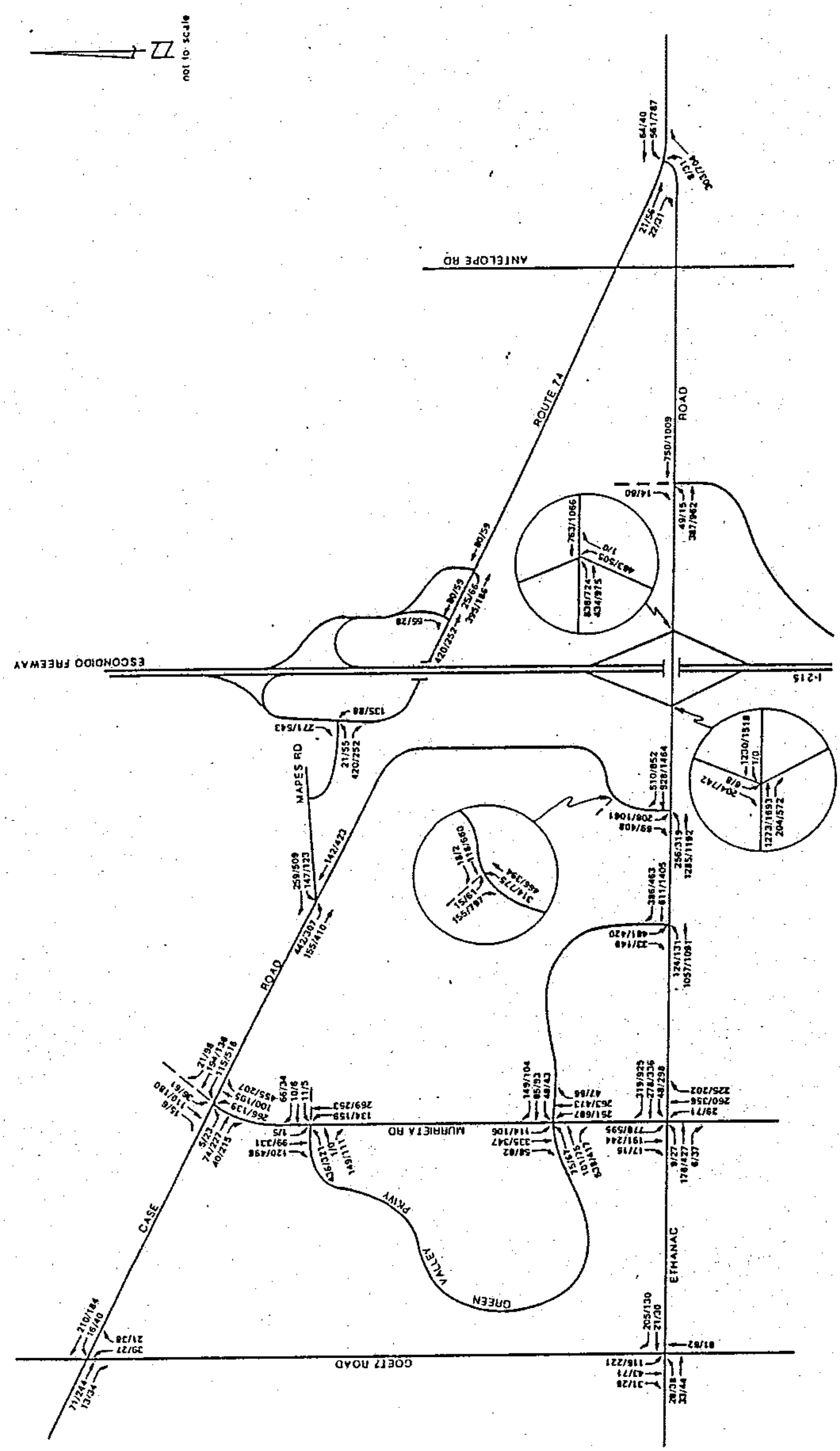


SOURCE BASMACIYAN-DARNELL, INC.

PROJECT RELATED AM/PM PEAK HOURLY TRAFFIC VOLUMES

GREEN VALLEY

FIGURE 4-10



SOURCE BASMACIYAN-DARNELL, INC.

238,959 trips generated from other projects plus the proposed project. Green Valley represents about 44 percent of this local traffic.

The resulting cumulative daily traffic volumes (Existing plus Green Valley plus other projects) are shown on Figure 4-11, and the peak hourly turning movements at intersections are shown on Figure 4-12.

4.8.2.4 Traffic Impacts

In order to determine the level of impact of the Green Valley project itself on the roadway system, a number of steps were taken. First, the percentage of traffic that Green Valley contributes to cumulative traffic volumes on each roadway segment and at each intersection was calculated. It has already been established that Green Valley traffic represents approximately 44 percent of the total local traffic to be added to the roadway system by cumulative projects. This indicates that the Green Valley project is a major contributor of future traffic growth in the area, but that other projects will also have a major impact on the local roadway system, as well. The paths taken by Green Valley project traffic to and from destinations will help to determine a "fair share" contribution to roadway system improvements, and determining the project's percentage contribution of traffic will assist in establishing the extent and nature of that fair share.

The percentage that Green Valley daily traffic represents of total cumulative daily traffic on each roadway segment was calculated, and is shown on Table 4.8-2. The results are also shown graphically on Figure 4-13. Review of Table 4.8-2 and Figure 4-13 shows that Green Valley traffic represents the greatest proportion of cumulative traffic on roadways adjacent to and directly serving the project, and that its percentage decreases as the roadway serves other projects and distance from the project increases. From these data, it can be concluded that Green Valley will have a significant adverse impact on the local circulation system.

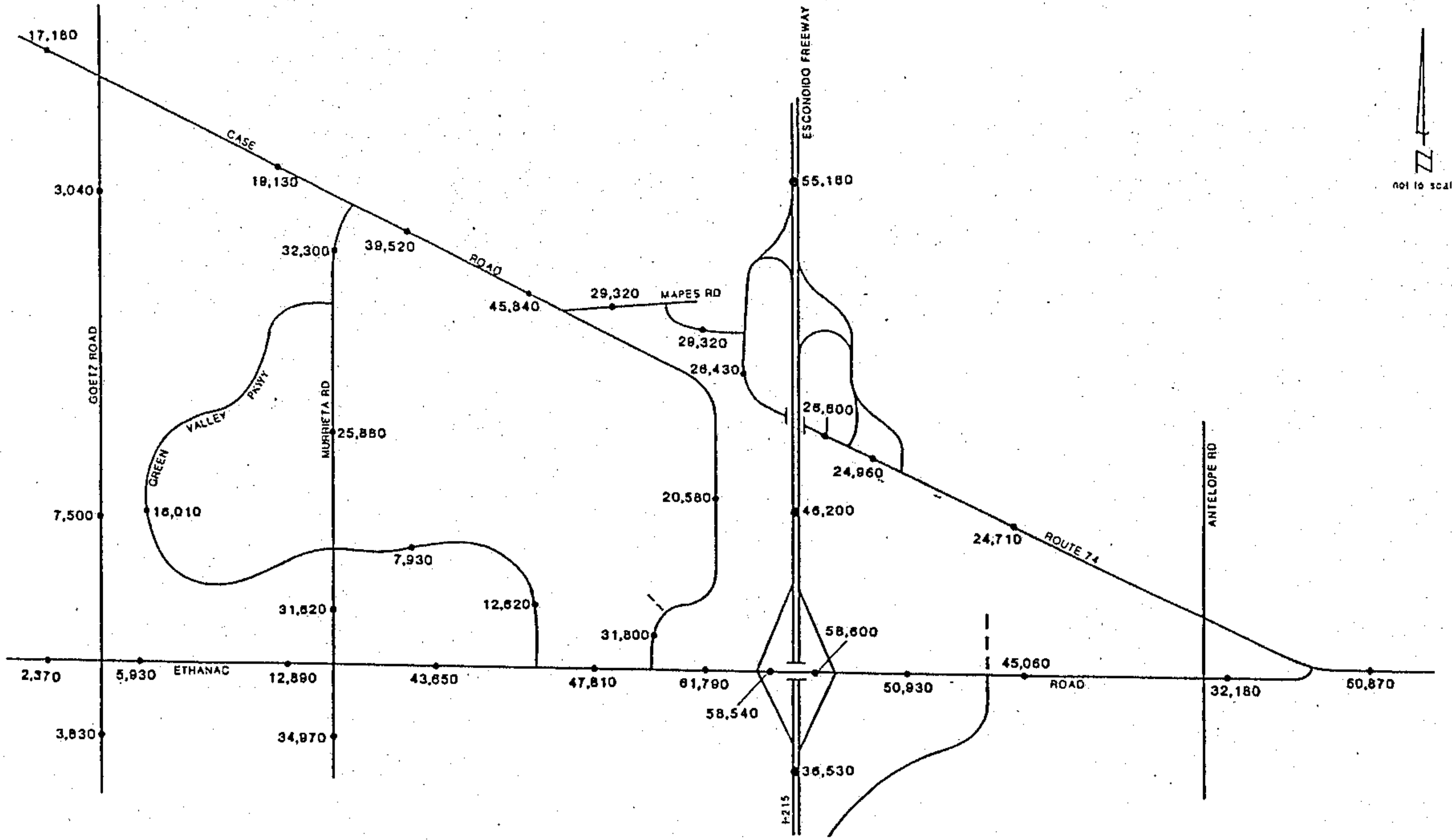
4.8.2.5 Signalized Intersection Analyses for Areawide Cumulative Development

Signalized intersections are the locations in an arterial street system that limit or determine the system-wide traffic performance or "level of service". For purposes of this analysis, the following are the "ground rules" or criteria used to develop the minimum required signalized intersection geometrics.

CUMULATIVE DAILY TRAFFIC VOLUMES

FIGURE 4-11

GREEN VALLEY

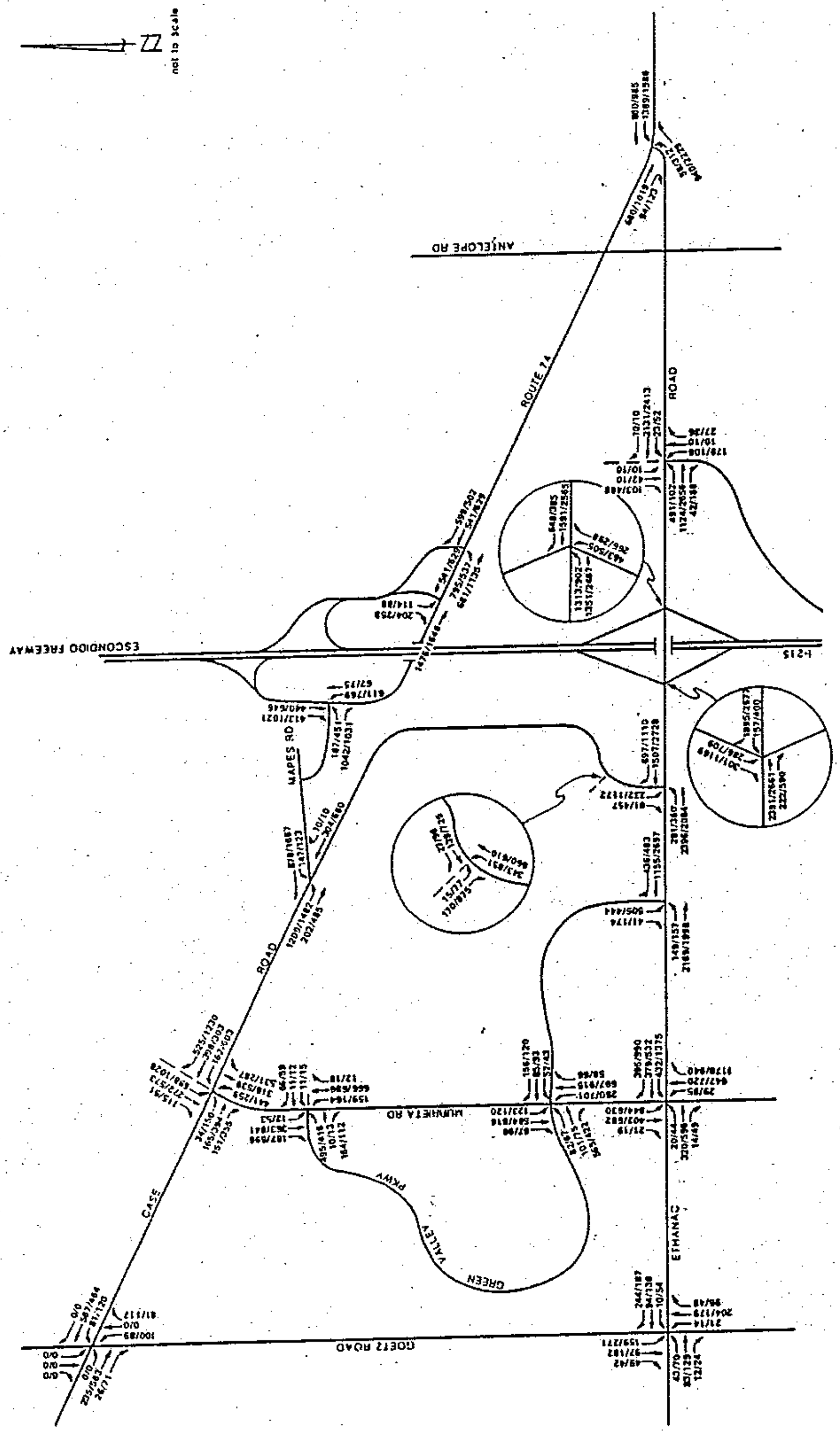


SOURCE BASMACIYAN-DARNELL, INC.

GREEN VALLEY

FIGURE 4-12

CUMULATIVE AM/PM PEAK HOURLY TRAFFIC VOLUMES



SOURCE: BASMACTYAN-DARNELL, INC.

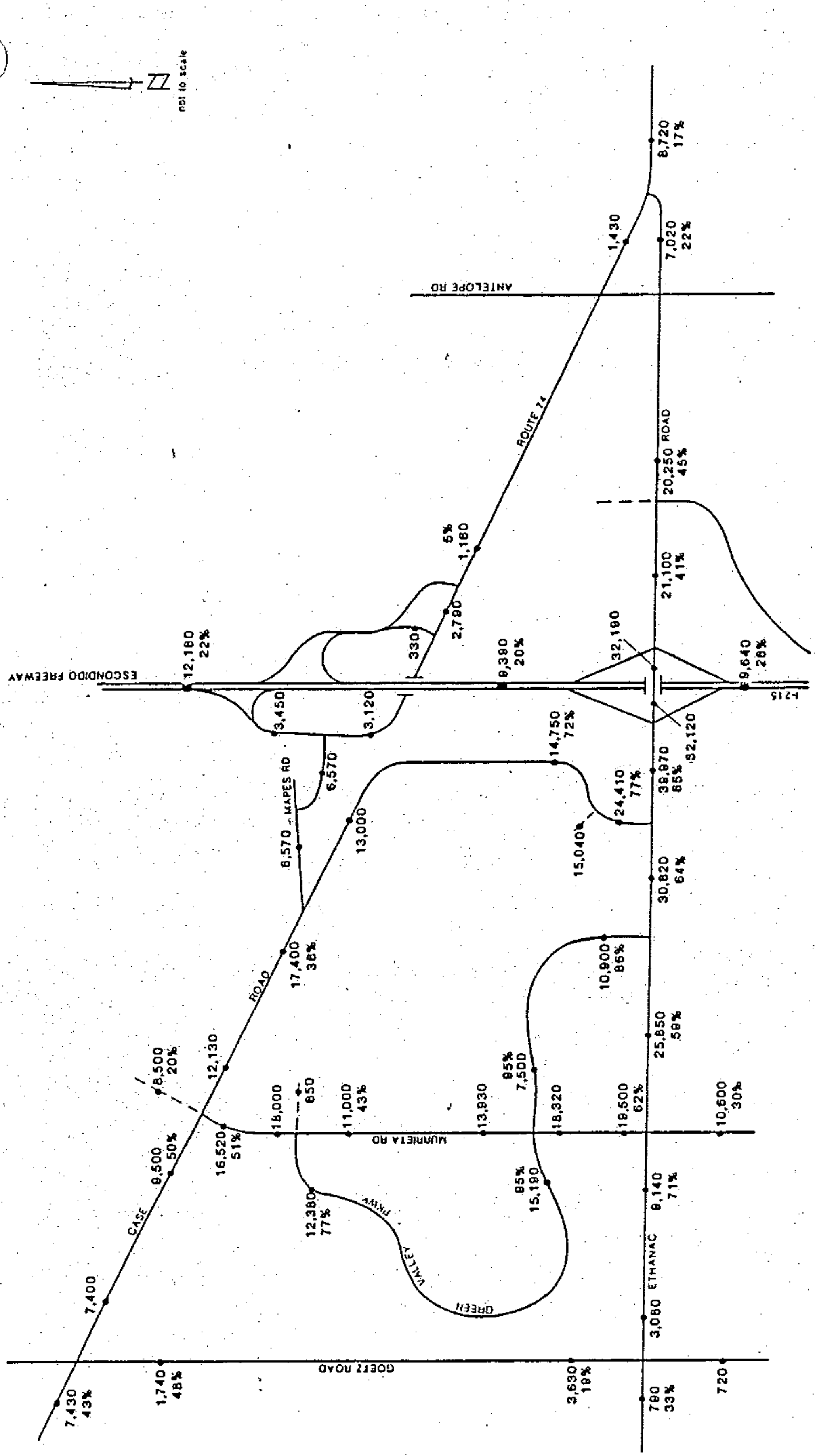
TABLE 4.8-2
GREEN VALLEY TRAFFIC
PERCENTAGE OF CUMULATIVE DAILY TRAFFIC

Roadway Segment	Cumulative Traffic	Green Valley Traffic	Green Valley Percent of Cumulative
ETHANAC ROAD:			
West of Goetz	2,370	790	33%
Goetz to Murrieta	12,890	9,140	71%
Murrieta to Grn Vly	43,650	25,850	59%
Grn Vly Pkwy to Case	47,810	30,820	64%
Case to I-215	61,790	39,970	65%
I-215 to Encanto	50,930	21,100	41%
Encanto to Antelope	45,060	20,250	45%
Antelope to Rt. 74	32,180	7,020	22%
GOETZ ROAD:			
Case to Ethanac	7,500	3,630	48%
South of Ethanac	3,830	720	19%
MURRIETA ROAD:			
North of Case	41,830	8,500	20%
Case to Grn Vly N.	32,300	16,520	51%
Grn Vly N to Grn Vly S	25,800	11,000	43%
Grn Vly to Ethanac	31,620	19,500	62%
South of Ethanac	34,970	10,600	30%
CASE ROAD			
West of Goetz	17,180	7,430	43%
Goetz to Murrieta	19,130	9,500	50%
Murrieta to Mapes	45,840	17,400	38%
Mapes to Watson	20,580	14,750	72%
Watson to Ethanac	31,800	24,410	77%
GREEN VALLEY PARKWAY:			
West of Murrieta (N)	16,010	12,380	77%
West of Murrieta (S)	16,010	15,190	95%
East of Murrieta	7,930	7,500	95%
North of Ethanac	12,620	10,900	86%
ESCONDIDO FREEWAY (I-2			
North of Route 74	55,160	12,180	22%
Route 74 to Ethanac	46,200	9,390	20%
South of Ethanac	36,530	9,640	26%
ROUTE 74:			
I-215 to Ethanac	24,710	1,160	5%
East of Ethanac	50,870	8,720	17%

GREEN VALLEY

FIGURE 4-13

PROJECT RELATED DAILY TRAFFIC VOLS & % OF CUM DAILY TRAFFIC



SOURCE BASMACIYAN-DARNELL, INC.

CITY OF PERRIS LEVEL OF SERVICE POLICY

GOAL: To establish a signalized arterial street system that will at build-out provide an acceptable level of service during peak hours.

The following criteria are given to establish general traffic signal operational parameters for use in conducting traffic studies for new land use developments. The parameters may be changed for apecific circumstances based on the judgment of the study author and with the approval of the City Traffic Engineer.

- Level of Service: "D" or better as defined by the 1985 "Highway Capacity Manual."
- Relative Saturation: "X" (ICU) = 0.90 or lower based on use of the following parameters.
- Lost Time: 2 seconds per phase as defined by the 1985 "Highway Capacity Manual."
- Saturation Flow Rates: (NOTE: These are not capacity values.)
  - Single thru lane - 1800 vph
  - Double thru lanes - 3600 vph
  - Triple thru lanes - 5400 vph
  - Left turn lane (single) without separate left turn phasing - use Tanner's Curve (see attachment)
  - Left turn lane (single) with separate left turn phasing - 1700 vph
  - Left turn lane (double) with separate left turn phasing - 3400 vph
  - Right turn only lane (single) - 1800 vph
- Cycle Length Range: 60 to 90 seconds.
- Assume signal intersection operation when PM peak hour volume meets "Peak Hour Volume Warrant."
- Assume separate left turn phasing when product of thru times opposing left turn peak hour exceeds 100,000.
- Assume a "Progression Adjustment Factor" (PAF) of 1.0 unless a signal network is being simulated with optimum system timing.
- The number of off-site intersections to be analyzed shall be determined for the specific project by the City Traffic Engineer.

NOTE: If requested, CAPSSI Version 2.12 or newer program will be furnished at no cost to facilitate intersection operational calculations.

Using MGA's MONITOR program, 17 intersections were analyzed using peak hour (for the PM period) estimated cumulative traffic and the "level of service" criteria described above. Table 4.8-3 provides the analysis results for each intersection.

In addition to determining the minimum intersection geometrics and "level of service" for the intersections, the analysis included the determination of the percentage of the intersection traffic volumes that are generated by the Green Valley project. Figure 4-14 shows a summary of the intersection analysis results.

4.8.2.6 Project Phasing

The development of Green Valley Specific Plan is anticipated to be built out over the next ten (10) years. There are four phases of development insofar as traffic impacts are concerned.

The planned development and resulting trip generation for the four development phases are presented on Table 4.8-4. Review of Table 4.8-4 shows that Phase 1 development will result in 30,769 daily vehicle trips generated by the project. Phase 2 development will generate 123,194 daily vehicle trips with a cumulative total of 42,963 daily vehicle trips generated by Phase 1 and 2 development.

Phase 3 will generate an additional 19,160 daily trip ends with a resulting cumulative total of 62,123 daily project related trip ends. Phase 4 will complete build-out of the project, with 42,051 daily trip ends. Significant adverse traffic circulation impacts are apparent at each phase of development. However, mitigation strategies will be tied to each phase of development as discussed below.

4.8.2.7 Access And Internal Circulation

Access to and from the various residential planning units within Green Valley Specific Plan were evaluated to determine the adequacy of the proposed access locations. In addition, criteria for access to and from the non-residential planning areas has been developed to be used in preparing specific site plans. The traffic report in Technical Appendices, Appendix E gives a number of recommendations concerning internal circulation which should be used in finaı design of the site plan. These recommendations will not change the overall density or level of development of the Green Valley Specific Plan.

TABLE 4.8

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
AS PART OF
THE TRAFFIC GROWTH MONITORING PROGRAM
MONITOR

INTERSECTION # 1 - CASE RD @ GOETZ RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBT	110	1800	45	575	1181	49	1.0	2.5	A	6	74	72	0	1-----	110	EBT	*
	EBR	112	-	-	126	259	49	1.0	2.5	A	-	74	72	0	1-----	112	EBR	
	WBT	130	1800	45	471	1440	33	1.0	1.9	A	2	74	72	0	1-----	130	WBT	
	WBL	131	800	45	94	640	15	1.0	1.6	A	0	74	72	0	1-----	131	WBL	
*	NBL	141	1700	45	126	264	48	1.0	27.5	D+	3	16	14	74	-2----	141	NBL	*
	NBR	142	1800	45	79	280	28	1.0	25.7	D+	2	16	14	74	-2----	142	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 1471   WEIGHTED AVERAGE DELAY = 5.6   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .49/A   WEIGHTED AVERAGE DELAY = 6.3   DELAY LOS = B

INTERSECTION # 2 - CASE RD @ MURRIETA RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBT	210	1800	45	418	460	91**	1.0	40.9	E+	10	25	23	19	-2----	210	EBT	*
	EBL	211	1700	45	120	321	37	1.0	24.6	C	2	19	17	0	1-----	211	EBL	
	EBR	212	1800	45	304	460	66	1.0	25.4	D+	7	25	23	19	-2----	212	EBR	
	SBT	220	3600	45	314	513	61	1.0	27.3	D+	4	18	16	72	---4--	220	SBT	
*	SBL	221	3300	45	847	953	89	1.0	31.1	D	10	28	26	44	--3---	221	SBL	*
	SBR	222	-	-	78	127	61	1.0	27.3	D+	-	18	16	72	---4--	222	SBR	
	WBT	230	1800	45	315	460	68	1.0	26.0	D+	7	25	23	19	-2----	230	WBT	
*	WBL	231	3300	45	564	623	90	1.0	39.7	D-	7	19	17	0	1-----	231	WBL	*
	WBR	232	1800	45	1028	1800	57	1.0	.3	A	0	90	90	0	1234--	232	WBR	
	NBT	240	3600	40	273	640	43	1.0	25.3	D+	3	18	16	72	---4--	240	NBT	
	NBL	241	1700	40	209	491	43	1.0	20.1	C	5	28	26	44	--3---	241	NBL	
*	NBR	242	1800	45	274	320	86	1.0	41.6	E+	7	18	16	72	---4--	242	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 4744   WEIGHTED AVERAGE DELAY = 24.9   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .89/D   WEIGHTED AVERAGE DELAY = 36.7   DELAY LOS = D-

2010 LAND USE - INTERCHANGE VICINITY
VEHICLE TRIP ASSIGNMENT
P.M. PEAK HOUR
NODE #6
RIO RANCHO RD @ AUTO CENTER DR

08/ '8

ZONE	EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	N
1	24	0	0	0	0	9	35	0	0	0	18	
2	42	0	0	0	0	19	37	0	0	0	44	
3	18	0	0	0	0	9	28	0	0	0	23	
4	37	0	0	0	0	14	47	0	0	0	41	
5	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	0	0	
7a	0	0	0	0	0	0	0	0	0	0	0	
7b	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	3	0	0	0	0	0	0	0	3	
9	8	0	0	0	1	0	13	0	0	0	0	
10	13	0	0	0	3	0	14	0	0	0	0	
11	0	0	97	7	0	0	0	0	0	11	100	
12	0	0	3	0	0	0	0	0	0	0	3	
13	3	0	0	0	1	0	3	0	0	0	0	
14	0	0	0	0	0	2	0	0	0	0	4	
15	0	0	0	0	0	0	0	0	0	0	0	
16	3	0	0	0	1	0	3	0	0	0	0	
17	18	0	0	0	3	0	19	0	0	0	0	
18	6	0	0	0	1	0	8	0	0	0	0	
19	23	0	0	0	4	0	26	0	0	0	0	
20	0	0	0	0	1	0	0	0	0	0	0	
21	0	0	0	0	0	1	52	0	5	0	0	
22	0	0	0	0	0	3	0	0	8	0	0	
23	0	5	9	0	0	1	0	0	0	0	0	
24	0	0	0	0	0	7	0	0	0	0	12	
25	0	0	0	0	0	0	0	0	0	0	0	
26	0	0	0	0	0	0	0	0	0	0	0	
27	0	0	0	0	0	4	1	0	0	0	6	
28	0	0	0	0	0	4	0	0	0	0	10	
29	0	0	0	0	0	0	0	0	0	0	0	
30	21	0	0	0	1	0	30	5	3	0	0	
31	114	0	0	0	3	0	171	28	15	0	0	
32	7	0	0	0	1	0	12	0	0	0	0	
33	22	0	0	0	4	0	26	0	0	0	0	
34	0	0	0	0	5	0	0	0	0	0	0	
35	77	0	0	0	11	0	105	0	0	0	0	
36	176	39	115	0	0	29	214	0	0	0	80	
37	0	0	0	0	1	0	0	0	4	0	0	
38	12	0	0	0	0	5	21	0	0	0	18	
39	32	0	0	0	3	0	43	0	4	0	0	
40	0	0	5	0	0	0	0	0	0	2	24	
41	62	0	0	0	4	0	80	13	5	0	0	
42	0	317	0	43	79	305	0	0	77	24	0	
43	0	0	2	0	0	0	0	0	0	0	3	
44a	0	0	0	0	0	0	0	0	0	0	0	
44b	0	0	0	0	0	0	0	0	0	0	0	
44c	0	0	0	0	0	0	0	0	0	0	0	
OT ZONE TRIPS	719	362	236	51	126	413	988	46	120	37	390	
XISTING VOL	892	44	12	8	84	68	340	4	36	8	4	

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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MONITOR

INTERSECTION # 3 - CASE RD @ MAPES RD — GREEN VALLEY — P.M.peak — CUMULATIVE TRAFFIC LEVEL OF SERVICE — 06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	310	1800	45	210	1560	13	1.0	.7	A	1	80	78	0	12----	310	EBT	
*	EBL	311	3300	45	1598	2017	79	1.0	11.8	B	15	57	55	0	1-----	311	EBL	*
*	SBL	321	1700	40	129	151	85	1.0	55.3	E-	3	10	8	80	--3---	321	SBL	*
	SBR	322	3600	45	1867	2600	72	1.0	6.2	B	13	67	65	0	1-3---	322	SBR	
*	WBT	330	1800	45	335	408	82	1.0	33.8	D	8	23	21	57	-2----	330	WBT	*
	WBR	332	-	-	10	12	82	1.0	33.8	D	-	23	21	57	-2----	332	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 4149 WEIGHTED AVERAGE DELAY = 11.9 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .81/D WEIGHTED AVERAGE DELAY = 18.1 DELAY LOS = C

INTERSECTION # 4 - MAPES RD @ I-215 S/B — GREEN VALLEY — P.M.peak — CUMULATIVE TRAFFIC LEVEL OF SERVICE — 06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBL	411	1700	35	447	604	74	1.0	22.8	C	9	34	32	56	--3---	411	EBL	*
	EBR	412	3600	45	1151	2560	45	1.0	4.3	A	6	66	64	0	1-3---	412	EBR	
*	SBT	420	3600	45	648	880	74	1.0	26.2	D+	7	24	22	32	-2----	420	SBT	*
	SBR	422	3600	45	1153	2240	51	1.0	7.4	B	8	58	56	32	-23---	422	SBR	
	NBT	440	1800	45	75	1080	7	1.0	5.7	B	1	56	54	0	12----	440	NBT	
*	NBL	441	3300	45	843	1100	77	1.0	22.9	C	9	32	30	0	1-----	441	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 4317 WEIGHTED AVERAGE DELAY = 14.0 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .75/C WEIGHTED AVERAGE DELAY = 24.0 DELAY LOS = C

ADDITIONAL LAND USE DEVELOPMENT

in CITY of PERRIS by YEAR 2010

CENTROID		ADDITIONAL DEVELOPMENTS **
287 *	Rancho Nuevo -	450 dwelling units
	Riverpark -	5200 " "
	Stoneridge -	2725 " "
	Priessman Property -	3100 " "
	May Ranch -	503 " "
	McCanna Ranch -	745 " "
	total	12,723 dwelling units
288		3200 dwelling units
	May Ranch -	3380 " "
	McCanna Ranch -	745 " "
	total	7,325 dwelling units
	May Ranch -	77 acres (839 ksf) commercial retail
	zone change 8870 -	58 acres (589 ksf) commercial retail
	zone change 8747 -	24 acres mixed development: a) 96 ksf commercial retail; b) 17 ksf office
	TR 24045 -	13 acres (139 ksf) commercial retail
		1770 ksf light industrial
	totals	140 acres (1524 ksf) commercial retail
		163 acres (1770 ksf) light industrial
293	Annexation 30 -	496 dwelling units
296		32 acres business park
297	New Perris -	114 SF dwelling units
		874 MF dwelling units
		828 ksf commercial retail
		1873 ksf office
		727 ksf regional commercial
		435 ksf research & industrial
		700 room hotel
298	Green Valley -	3712 SF dwelling units
		750 MF dwelling units
		751 ksf commercial retail
		40 acres business park
		81 acres industrial
		100 room hotel
		40 acres schools
	Annexation 32 -	240 dwelling units
		45 acres general commercial

* - centroid numbers based on SCAG Riv-San II model.

** - these projects, together with existing land use and other proposed developments, will occupy the City of Perris by the year 2010.

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 5 - RT 74 @ I-215 N/B OFF RAMP   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBT	510	3600	45	1770	2520	70	1.0	6.8	B	13	65	63	0	1-----	510	EBT	*
	SBL	521	1700	45	88	434	20	1.0	20.1	C	2	25	23	65	-2----	521	SBL	
*	SBR	522	1800	45	315	460	68	1.0	26.0	D+	7	25	23	65	-2----	522	SBR	*
	WBT	530	1800	35	647	1260	51	1.0	5.2	B	13	65	63	0	1-----	530	WBT	

INTERSECTION SUMMARY : TOTAL FLOW = 2820   WEIGHTED AVERAGE DELAY = 9.0   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .70/B   WEIGHTED AVERAGE DELAY = 9.7   DELAY LOS = B

INTERSECTION # 6 - RT 74 @ I-215 N/B ON RAMP   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	610	1800	35	1157	1800	64	1.0	.6	A	15	90	90	0	12----	610	EBT	
*	EBL	611	1700	35	637	831	77	1.0	17.5	C	8	46	44	0	1-----	611	EBL	*
*	WBT	630	1800	45	647	840	77	1.0	18.5	C	12	44	42	46	-2----	630	WBT	*
	WBR	632	1800	45	507	840	60	1.0	14.5	B	9	44	42	46	-2----	632	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2948   WEIGHTED AVERAGE DELAY = 10.6   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .77/C   WEIGHTED AVERAGE DELAY = 18.0   DELAY LOS = C

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COMPARATIVE VEHICLE TRIP GENERATION

for PERMITTED LAND USES in CENTRAL BUSINESS DISTRICT

← 61 → per ARTICLE 13, SECTION 9-4.1302 of CITY ZONING ORDINANCE ← 20 →

LAND USE ALTERNATIVE	A.M. PEAK HOUR (7 - 8 A.M.) ENTER	EXIT	TOTAL	ESTIMATED PASS - BY TRIP ENDS (%)	EXISTING C of C TRIP ENDS	EXISTING BODY SHOP TRIP ENDS	NET CHARGEABLE TRIP ENDS
1. SPECIALTY RETAIL	2	1	3	0	1	3	0
2. APPAREL STORE	0	0	0	0	1	3	0
3. SAVINGS and LOAN (walk-in)	3	2	5	0	1	3	1
4. BANK (walk-in)	18	11	29	0	1	3	25
5. BANK (drive-thru)	14	10	24	14	1	3	16
6. HARDWARE / PAINT STORE	3	1	4	8	1	3	0
7. PROFESSIONAL OFFICE	10	1	11	0	1	3	7
8. PUBLIC UTILITIES	2	0	2	0	1	3	0
9. HIGH - TURNOVER RESTAURANT	38	30	68	0	1	3	64
10. QUALITY RESTAURANT	3	0	3	0	1	3	0
11. CONVENIENCE MARKET	0	0	0	45	1	3	0
12. SUPERMARKET	1	1	2	28	1	3	0

* - All land use alternative types were referenced from Article 13, Section 9-4.1302 of City of Arroyo Grande zoning ordinance.

** - All trip ends were referenced from Institute of Transporation Engineers Trip Generation Manual, fourth edition, 1987.

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 7 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	710	1800	45	10	37	27	1.0	22.2	C	2	22	20	0	1-----	710	EBT	
*	EBL	711	1400	45	244	311	78	1.0	33.8	D	6	22	20	0	1-----	711	EBL	*
	EBR	712	-	-	99	363	27	1.0	22.2	C	-	22	20	0	1-----	712	EBR	
*	SBT	720	1800	40	587	744	79	1.0	8.3	B	23	68	66	22	-2----	720	SBT	*
	SBL	721	1700	40	62	1247	5	1.0	2.5	A	1	68	66	22	-2----	721	SBL	
	SBR	722	-	-	455	576	79	1.0	8.3	B	-	68	66	22	-2----	722	SBR	
	WBT	730	1800	45	10	105	9	1.0	21.2	C	1	22	20	0	1-----	730	WBT	
	WBL	731	1400	45	10	311	3	1.0	20.9	C	0	22	20	0	1-----	731	WBL	
	WBR	732	-	-	28	295	9	1.0	21.2	C	-	22	20	0	1-----	732	WBR	
	NBT	740	1800	40	429	1267	34	1.0	3.3	A	2	68	66	22	-2----	740	NBT	
	NBL	741	1700	40	143	1247	11	1.0	2.7	A	0	68	66	22	-2----	741	NBL	
	NBR	742	-	-	18	53	34	1.0	3.3	A	-	68	66	22	-2----	742	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2095   WEIGHTED AVERAGE DELAY = 10.7   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .79/C   WEIGHTED AVERAGE DELAY = 13.1   DELAY LOS = B

INTERSECTION # 8 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBT	810	1800	45	19	22	87	1.0	34.9	D	10	27	25	0	1-----	810	EBT	*
	EBL	811	1400	45	19	389	5	1.0	18.1	C	0	27	25	0	1-----	811	EBL	
	EBR	812	-	-	417	478	87	1.0	34.9	D	-	27	25	0	1-----	812	EBR	
	SBT	820	3600	40	663	838	79	1.0	27.9	D+	8	24	22	66	--3---	820	SBT	
	SBL	821	1700	40	51	699	7	1.0	12.3	B	1	39	37	27	-2----	821	SBL	
	SBR	822	-	-	33	42	79	1.0	27.9	D+	-	24	22	66	--3---	822	SBR	
	WBT	830	1800	45	29	220	13	1.0	18.6	C	1	27	25	0	1-----	830	WBT	
	WBL	831	1400	45	45	389	12	1.0	18.5	C	1	27	25	0	1-----	831	WBL	
	WBR	832	-	-	37	280	13	1.0	18.6	C	-	27	25	0	1-----	832	WBR	
*	NBT	840	3600	40	733	807	91**	1.0	35.0	D-	10	24	22	66	--3---	840	NBT	*
*	NBL	841	1700	45	643	699	92**	1.0	32.3	D	15	39	37	27	-2----	841	NBL	*
	NBR	842	-	-	66	73	91**	1.0	35.0	D-	-	24	22	66	--3---	842	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2755   WEIGHTED AVERAGE DELAY = 31.4   DELAY LOS = D   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .90/E   WEIGHTED AVERAGE DELAY = 34.1   DELAY LOS = D

COMPARATIVE V

for PERMITTED LAND USE

per ARTICLE 13, SECT 9

LAND USE ALTERNATIVE	A.M. PEAK HOUR (7 - 8 A.M.) ENTER	EXIT	TOTAL	ESTI PASS TRIP (
1. SPECIALTY RETAIL	2	1	3	
2. APPAREL STORE	0	0	0	
3. SAVINGS and LOAN (walk-in)	3	2	5	
4. BANK (walk-in)	18	11	29	
5. BANK (drive-thru)	14	10	24	
6. HARDWARE / PAINT STORE	3	1	4	
7. PROFESSIONAL OFFICE	10	1	11	
8. PUBLIC UTILITIES	2	0	2	
9. HIGH - TURNOVER RESTAURANT	38	30	68	
10. QUALITY RESTAURANT	3	0	3	
11. CONVENIENCE MARKET	0	0	0	
12. SUPERMARKET	1	1	2	

* - All land use alternative types were referenced from Article 13, Section 9-4.1302 zoning ordinance.

** - All trip ends were referenced from Institute of Transporation Engineers Trip Gene fourth edition, 1987.

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 13 - ETHANAC RD @ I-215 S/B   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
*	EBT	1310	5400	40	2522	2460	103**	1.0	40.7	E+	30	43	41	13	-2----	1310	EBT	*
	EBR	1312	1800	45	707	820	86	1.0	23.7	C	16	43	41	13	-2----	1312	EBR	
	SBL	1321	3300	45	653	1173	56	1.0	18.2	C	6	34	32	56	--3---	1321	SBL	
*	SBR	1322	3600	45	1310	1280	102**	1.0	49.0	E	32	34	32	56	--3---	1322	SBR	*
	WBT	1330	5400	40	2363	3240	73	1.0	10.4	B	16	56	54	0	12----	1330	WBT	
*	WBL	1331	3300	40	407	403	101**	1.0	68.5	F	10	13	11	0	1-----	1331	WBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 7962   WEIGHTED AVERAGE DELAY = 31.2   DELAY LOS = D   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.02/F   WEIGHTED AVERAGE DELAY = 45.9   DELAY LOS = E
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

INTERSECTION # 14 - ETHANAC RD @ I-215 N/B   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	1410	5400	40	2145	4080	53	1.0	3.5	A	5	70	68	0	12----	1410	EBT	
*	EBL	1411	3300	40	1019	1063	96**	1.0	37.1	D-	11	31	29	0	1-----	1411	EBL	*
*	WBT	1430	5400	40	2142	2220	96**	1.0	29.3	D+	17	39	37	31	-2----	1430	WBT	*
	WBR	1432	1800	45	411	740	56	1.0	16.2	C	8	39	37	31	-2----	1432	WBR	
*	NBL	1441	3300	45	629	660	95**	1.0	45.6	E	7	20	18	70	--3---	1441	NBL	*
	NBR	1442	1800	45	305	360	85	1.0	38.6	D-	7	20	18	70	--3---	1442	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 6651   WEIGHTED AVERAGE DELAY = 23.3   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .96/E   WEIGHTED AVERAGE DELAY = 34.1   DELAY LOS = D

COMPARATIVE VEHICLE TRIP GENERATION

for PERMITTED LAND USES in CENTRAL BUSINESS DISTRICT

per ARTICLE 13, SECTION 9-4.1302 of CITY ZONING ORDINANCE

LAND USE ALTERNATIVE	A.M. PEAK HOUR TRIP ENDS (7 - 8 AM) ENTER	EXIT	TOTAL	ESTIMATED PASS - BY TRIP ENDS (%)	EXISTING C of C TRIP ENDS	EXISTING BODY SHOP TRIP ENDS	NET CHARGEABLE TRIP ENDS
1. SPECIALTY RETAIL	2	1	3	0	1	3	0
2. APPAREL STORE	0	0	0	0	1	3	0
3. SAVINGS and LOAN (walk-in)	3	2	5	0	1	3	1
4. BANK (walk-in)	18	11	29	0	1	3	25
5. BANK (drive-thru)	14	10	24	14	1	3	16
6. HARDWARE / PAINT STORE	3	1	4	8	1	3	0
7. PROFESSIONAL OFFICE	10	1	11	0	1	3	7
8. PUBLIC UTILITIES	2	0	2	0	1	3	0
9. HIGH - TURNOVER RESTAURANT	38	30	68	0	1	3	64
10. QUALITY RESTAURANT	3	0	3	0	1	3	0
11. CONVENIENCE MARKET	~~0~~ 121	~~0~~ 120	0	~~45~~ 70%	1	3	0
12. SUPERMARKET	1	1	2	28	1	3	0

* - All land use alternative types were referenced from Article 13, Section 9-4.1302 of City of Arroyo Grande zoning ordinance.

** - All trip ends were referenced from Institute of Transporation Engineers Trip Generation Manual, fourth edition, 1987.

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INTERSECTION # 15 - ETHANAC RD @ E FRONTAGE RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

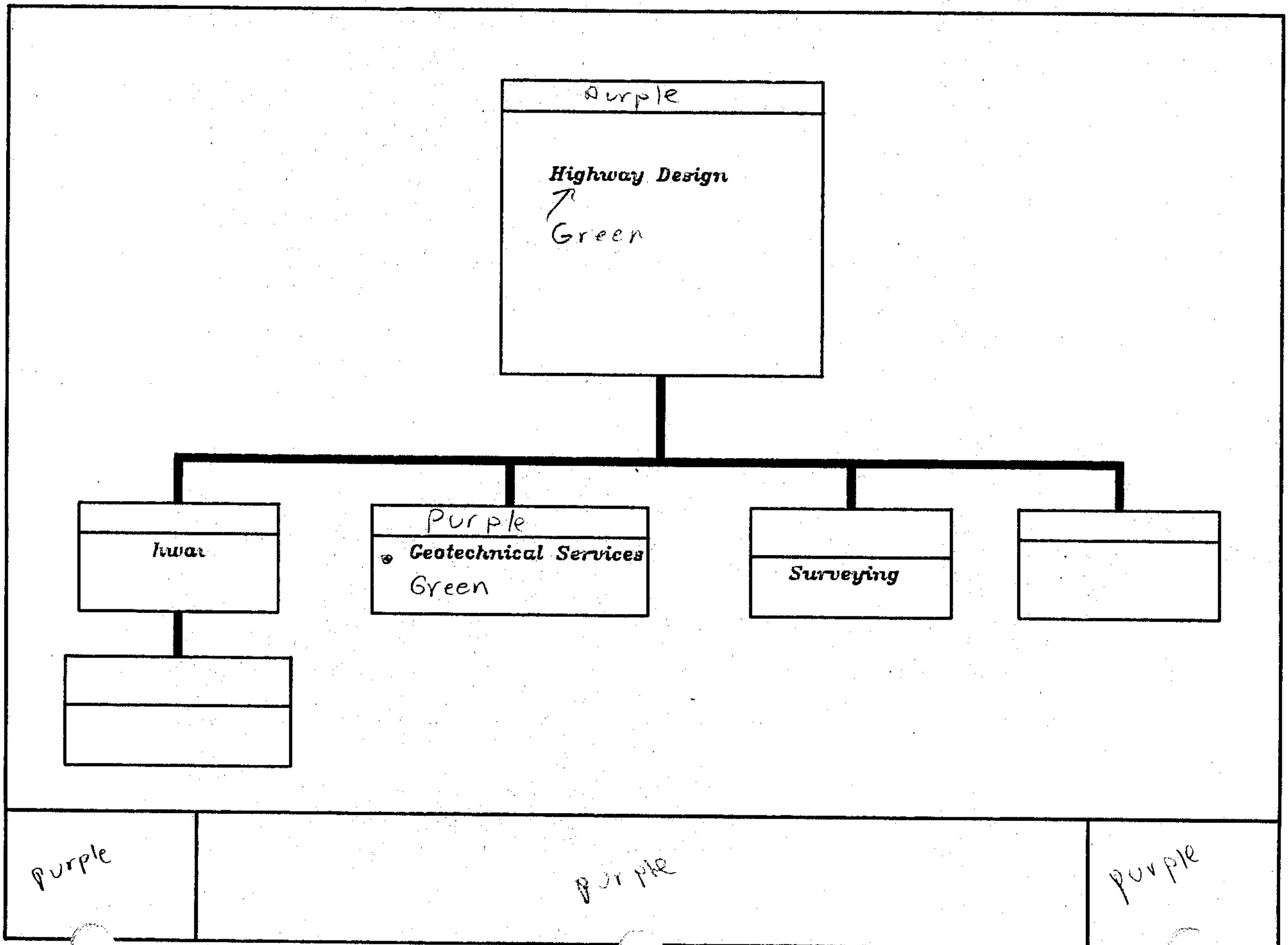
APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)
* EBT	1510	5400	40	2370	3286	72	1.0	9.9	B	13	57	55	5	-2----	1510	EBT *
* EBL	1511	3300	40	90	110	82	1.0	57.8	E-	1	5	3	0	1-----	1511	EBL *
EBR	1512	-	-	10	14	72	1.0	9.9	B	-	57	55	5	-2----	1512	EBR
* SBT	1520	1800	45	10	14	71	1.0	25.0	D+	8	28	26	62	--3---	1520	SBT *
SBL	1521	1400	45	10	404	2	1.0	17.4	C	0	28	26	62	--3---	1521	SBL
SBR	1522	-	-	359	506	71	1.0	25.0	D+	-	28	26	62	--3---	1522	SBR
WBT	1530	5400	45	2147	3285	65	1.0	9.0	B	11	57	55	5	-2----	1530	WBT
WBL	1531	1700	45	10	57	18	1.0	32.3	D	0	5	3	0	1-----	1531	WBL
WBR	1532	-	-	10	15	65	1.0	9.0	B	-	57	55	5	-2----	1532	WBR
NBT	1540	1800	45	10	260	4	1.0	17.5	C	0	28	26	62	--3---	1540	NBT
NBL	1541	1400	45	10	404	2	1.0	17.4	C	0	28	26	62	--3---	1541	NBL
NBR	1542	-	-	10	260	4	1.0	17.5	C	-	28	26	62	--3---	1542	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 5046   WEIGHTED AVERAGE DELAY = 11.6   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .72/C   WEIGHTED AVERAGE DELAY = 13.4   DELAY LOS = B

INTERSECTION # 16 - RT 74 @ ETHANAC RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)
* EBT	1610	5400	45	1019	1080	94**	1.0	39.2	D-	8	20	18	59	-2----	1610	EBT *
EBR	1612	1800	45	123	360	34	1.0	23.8	C	3	20	18	59	-2----	1612	EBR
WBT	1630	3600	45	985	3080	32	1.0	1.0	A	2	79	77	0	12----	1630	WBT
* WBL	1631	3300	45	1986	2090	95**	1.0	19.8	C	23	59	57	0	1-----	1631	WBL *
* NBL	1641	3300	45	312	330	95**	1.0	57.4	E-	4	11	9	79	--3---	1641	NBL *
NBR	1642	3600	45	1807	3600	50	1.0	.1	A	0	90	90	0	123---	1642	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 6232   WEIGHTED AVERAGE DELAY = 16.3   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .95/E   WEIGHTED AVERAGE DELAY = 29.3   DELAY LOS = D+


Purple
Highway Design
Green
Purple
Geotechnical Services
Green
Hwar
Surveying
purple
Purple
purple

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
AS PART OF
THE TRAFFIC GROWTH MONITORING PROGRAM
MONITOR

INTERSECTION # 17 - W FRONTAGE RD @ ACCESS RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBL	1711	1700	45	48	397	12	1.0	20.7	C	1	23	21	67	--3---	1711	EBL	
*	EBR	1712	1800	45	722	940	77	1.0	15.9	C	14	49	47	0	1-3---	1712	EBR	*
*	SBT	1720	1800	45	561	709	79	1.0	20.8	C	13	41	39	26	-2----	1720	SBT	*
	SBR	1722	-	-	56	71	79	1.0	20.8	C	-	41	39	26	-2----	1722	SBR	
	NBT	1740	1800	40	323	1300	25	1.0	3.3	A	2	67	65	0	12----	1740	NBT	
*	NBL	1741	3300	45	707	880	80	1.0	27.4	D+	8	26	24	0	1-----	1741	NBL	*

INTERSECTION SUMMARY :   TOTAL FLOW = 2417   WEIGHTED AVERAGE DELAY = 18.9   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY :   ICU = .78/C   WEIGHTED AVERAGE DELAY = 21.4   DELAY LOS = C

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
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MONITOR

INTERSECTION # 9 - ETHANAC RD @ GOETZ RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)
EBT	910	1800	45	142	839	17	1.0	8.6	B	2	49	47	0	1-----	910	EBT
EBL	911	1200	45	68	627	11	1.0	8.3	B	1	49	47	0	1-----	911	EBL
EBR	912	-	-	17	101	17	1.0	8.6	B	-	49	47	0	1-----	912	EBR
SBT	920	1800	45	231	628	37	1.0	13.2	B	5	41	39	49	-2----	920	SBT
* SBL	921	1200	45	244	520	47	1.0	14.4	B	4	41	39	49	-2----	921	SBL *
SBR	922	-	-	56	152	37	1.0	13.2	B	-	41	39	49	-2----	922	SBR
WBT	930	1800	45	152	429	35	1.0	9.7	B	3	49	47	0	1-----	930	WBT
* WBL	931	1200	45	293	627	47	1.0	10.8	B	1	49	47	0	1-----	931	WBL *
WBR	932	-	-	181	511	35	1.0	9.7	B	-	49	47	0	1-----	932	WBR
NBT	940	1800	45	190	407	47	1.0	14.2	B	6	41	39	49	-2----	940	NBT
NBL	941	1100	45	14	477	3	1.0	11.1	B	0	41	39	49	-2----	941	NBL
NBR	942	-	-	174	373	47	1.0	14.2	B	-	41	39	49	-2----	942	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 1762   WEIGHTED AVERAGE DELAY = 11.9   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .47/A   WEIGHTED AVERAGE DELAY = 12.4   DELAY LOS = B

INTERSECTION # 10 - ETHANAC RD @ MURRIETA RD   GREEN VALLEY   P.M.peak   CUMULATIVE TRAFFIC LEVEL OF SERVICE   06/16/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)
EBT	1010	5400	45	738	1338	55	1.0	22.0	C	5	26	24	26	-2----	1010	EBT
EBL	1011	1700	45	38	453	8	1.0	18.8	C	1	26	24	0	1-----	1011	EBL
EBR	1012	-	-	56	102	55	1.0	22.0	C	-	26	24	26	-2----	1012	EBR
SBT	1020	3600	40	543	624	87	1.0	36.5	D-	7	18	16	72	---4--	1020	SBT
* SBL	1021	3300	40	614	660	93**	1.0	42.0	E+	7	20	18	52	--3---	1021	SBL *
SBR	1022	-	-	14	16	87	1.0	36.5	D-	-	18	16	72	---4--	1022	SBR
WBT	1030	3600	45	836	960	87	1.0	30.5	D	10	26	24	26	-2----	1030	WBT
* WBL	1031	3300	45	805	880	91**	1.0	34.9	D	9	26	24	0	1-----	1031	WBL *
* WBR	1032	3600	45	893	960	93**	1.0	36.0	D-	11	26	24	26	-2----	1032	WBR *
* NBT	1040	3600	45	574	640	90	1.0	39.0	D-	7	18	16	72	---4--	1040	NBT *
NBL	1041	1700	45	46	340	14	1.0	22.5	C	1	20	18	52	--3---	1041	NBL
NBR	1042	1800	45	648	1800	36	1.0	.1	A	0	90	90	0	1234--	1042	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 5805   WEIGHTED AVERAGE DELAY = 29.9   DELAY LOS = D+   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .92/E   WEIGHTED AVERAGE DELAY = 37.6   DELAY LOS = D-

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
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MONITOR

INTERSECTION # 11 - ETHANAC RD @ GREEN VALLEY PKWY — GREEN VALLEY — P.M.peak — CUMULATIVE TRAFFIC LEVEL OF SERVICE — 06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	1110	5400	45	1882	2621	72	1.0	14.5	B	14	46	44	22	-2----	1110	EBT	
	EBL	1111	1700	45	88	378	23	1.0	21.9	C	2	22	20	0	1-----	1111	EBL	
	EBR	1112	-	-	14	19	72	1.0	14.5	B	-	46	44	22	-2----	1112	EBR	
	SBT	1120	3600	45	12	240	5	1.0	29.9	D+	0	8	6	82	---4--	1120	SBT	
*	SBL	1121	3300	45	398	440	90	1.0	45.4	E	5	14	12	68	--3---	1121	SBL	*
*	SBR	1122	1800	45	119	120	99**	1.0	94.2	F	3	8	6	82	---4--	1122	SBR	*
*	WBT	1130	5400	40	2401	2640	91**	1.0	20.2	C	18	46	44	22	-2----	1130	WBT	*
*	WBL	1131	1700	40	335	378	89	1.0	41.6	E+	8	22	20	0	1-----	1131	WBL	*
	WBR	1132	1800	45	431	880	49	1.0	12.2	B	7	46	44	22	-2----	1132	WBR	
	NBT	1140	3600	45	10	12	83	1.0	46.4	E	2	8	6	82	---4--	1140	NBT	
	NBL	1141	1700	45	10	227	4	1.0	25.9	D+	0	14	12	68	--3---	1141	NBL	
	NBR	1142	-	-	189	228	83	1.0	46.4	E	-	8	6	82	---4--	1142	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 5889 WEIGHTED AVERAGE DELAY = 23.1 DELAY LOS = C CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .91/E WEIGHTED AVERAGE DELAY = 28.2 DELAY LOS = D+

INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD — GREEN VALLEY — P.M.peak — CUMULATIVE TRAFFIC LEVEL OF SERVICE — 06/16/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	PHASING SEQUENCE	APPROACH (#)	LINK (DIR)	
	EBT	1210	5400	40	2276	3360	68	1.0	8.9	B	9	58	56	0	12----	1210	EBT	
*	EBL	1211	1700	40	194	227	86	1.0	47.6	E	5	14	12	0	1-----	1211	EBL	*
*	SBL	1221	3300	45	953	1100	87	1.0	27.0	D+	11	32	30	58	--3---	1221	SBL	*
	SBR	1222	1800	45	330	600	55	1.0	19.5	C	7	32	30	58	--3---	1222	SBR	
*	WBT	1230	7200	40	2836	3360	84	1.0	17.7	C	17	44	42	14	-2----	1230	WBT	*
	WBR	1232	1800	45	836	1480	56	1.0	2.4	A	7	76	74	14	-23---	1232	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 7425 WEIGHTED AVERAGE DELAY = 15.3 DELAY LOS = C CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .85/D WEIGHTED AVERAGE DELAY = 21.4 DELAY LOS = C

COMPARATIVE VEHICLE TRIP GENERATION

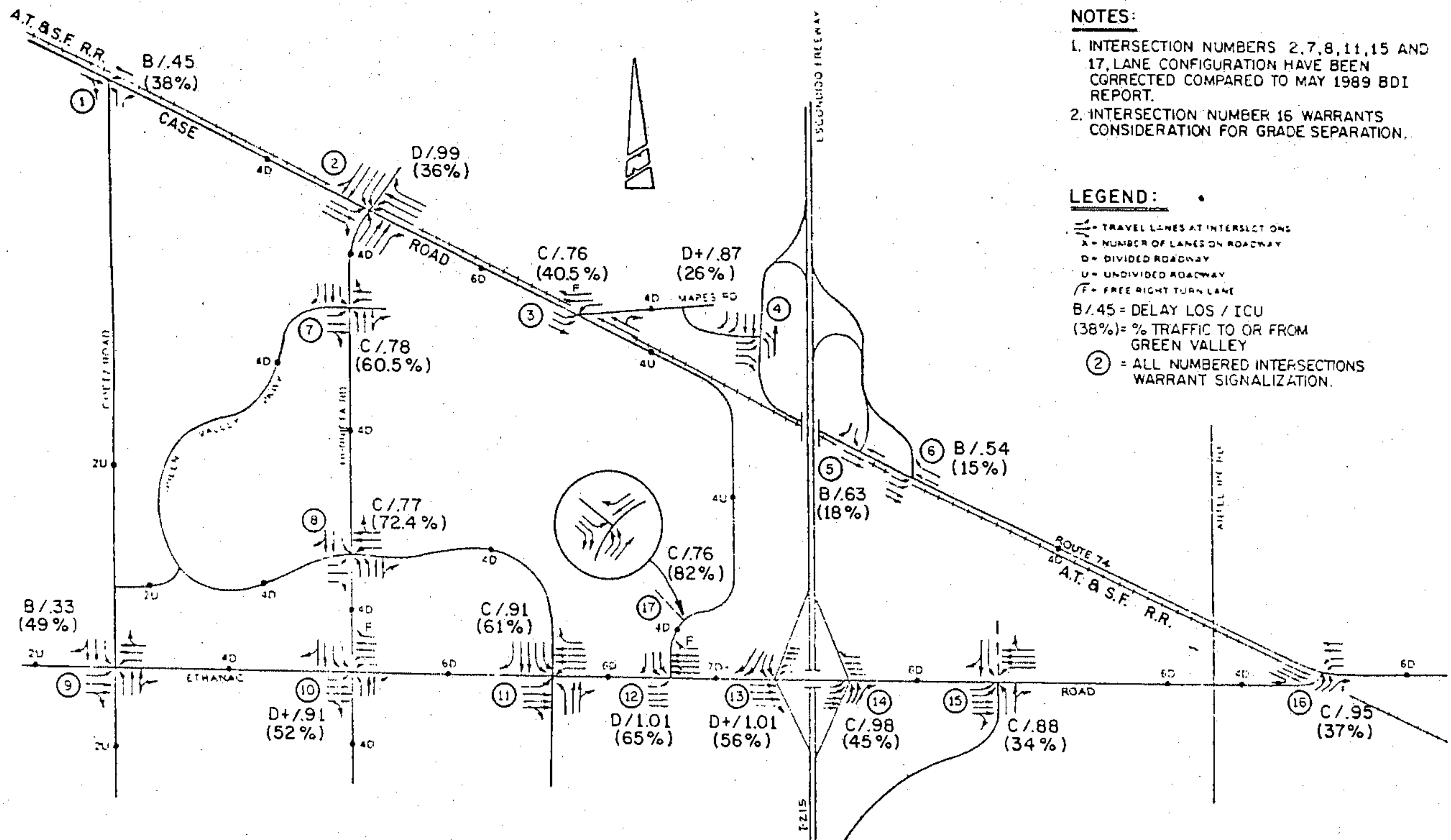
for PERMITTED LAND USES in CENTRAL BUSINESS DISTRICT

per ARTICLE 13, SECTION 9-4.1302 of CITY ZONING ORDINANCE

LAND USE ALTERNATIVE	A.M. PEAK HOUR (7 - 8 A.M.) ENTER	EXIT	TOTAL	ESTIMATED PASS - BY TRIP ENDS (%)	EXISTING C of C TRIP ENDS	EXISTING BODY SHOP TRIP ENDS	NET CHARGEABLE TRIP ENDS
1. SPECIALTY RETAIL	2	1	3	0	1	3	0
2. APPAREL STORE	0	0	0	0	1	3	0
3. SAVINGS and LOAN (walk-in)	3	2	5	0	1	3	1
4. BANK (walk-in)	18	11	29	0	1	3	25
5. BANK (drive-thru)	14	10	24	14	1	3	16
6. HARDWARE / PAINT STORE	3	1	4	8	1	3	0
7. PROFESSIONAL OFFICE	10	1	11	0	1	3	7
8. PUBLIC UTILITIES	2	0	2	0	1	3	0
9. HIGH - TURNOVER RESTAURANT	38	30	68	0	1	3	64
10. QUALITY RESTAURANT	3	0	3	0	1	3	0
11. CONVENIENCE MARKET	0	0	0	45	1	3	0
12. SUPERMARKET	1	1	2	28	1	3	0

* - All land use alternative types were referenced from Article 13, Section 9-4.1302 of City of Arroyo Grande zoning ordinance.

** - All trip ends were referenced from Institute of Transporation Engineers Trip Generation Manual, fourth edition, 1987.



NOTES:

1. INTERSECTION NUMBERS 2,7,8,11,15 AND 17, LANE CONFIGURATION HAVE BEEN CORRECTED COMPARED TO MAY 1989 BDI REPORT.
2. INTERSECTION NUMBER 16 WARRANTS CONSIDERATION FOR GRADE SEPARATION.

LEGEND:

- = TRAVEL LANES AT INTERSECTIONS
- X = NUMBER OF LANES ON ROADWAY
- D = DIVIDED ROADWAY
- U = UNDIVIDED ROADWAY
- F = FREE RIGHT TURN LANE
- B/.45 = DELAY LOS / ICU
- (38%) = % TRAFFIC TO OR FROM GREEN VALLEY
- (2) = ALL NUMBERED INTERSECTIONS WARRANT SIGNALIZATION.

MGA

FIGURE 4-14

RECCOMENDED LANE CONFIGURATION FOR CUMULATIVE TRAFFIC ANALYSIS INCLUDING GREEN VALLEY SPECIFIC PLAN

TABLE 4.8-4
TRIP GENERATION
GREEN VALLEY REVISED LAND USE PLAN

PHASE ONE

				TRIP RATES					TRIP ENDS				
				AM		PM		24	AM		PM		24
ZONE	LAND USE	SIZE	UNIT	IN	OUT	IN	OUT	HOUR	IN	OUT	IN	OUT	HOUR
1	INDUSTRIAL	34	AC	6.41	1.32	1.63	5.8	51.8	217	44	55	197	1761
2	INDUSTRIAL	34.2	AC	6.41	1.32	1.63	5.8	51.8	219	45	55	198	1771
3	COMMERCIAL	12	KSF	2.86	1.22	8.45	8.79	156.1	34	14	101	105	1873
4	RESIDENTIAL	149	DU	.2	.55	.64	.37	10.06	29	81	95	55	1498
21	RESIDENTIAL	197	DU	.2	.55	.64	.37	10.06	39	108	126	72	1981
26	RESIDENTIAL	136	DU	.2	.55	.64	.37	10.06	27	74	87	50	1368
28	RESIDENTIAL	108	DU	.2	.55	.64	.37	10.06	21	59	69	39	1086
29	COMMERCIAL	185	KSF	.96	.41	2.18	2.46	59.9	177	75	403	455	11081
30	RESIDENTIAL	192	DU	.07	.38	.38	.18	5.9	13	72	72	34	1132
31	RESIDENTIAL	168	KSF	.2	.55	.64	.37	10.06	33	92	107	62	1690
32	SCHOOL	10	AC	10	6	1	2	60	100	60	10	20	600
33	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
34	RESIDENTIAL	225	DU	.2	.55	.64	.37	10.06	45	123	144	83	2263
35	RESIDENTIAL	146	DU	.2	.55	.64	.37	10.06	29	80	93	54	1468
48	RESIDENTIAL	119	DU	.2	.55	.64	.37	10.06	23	65	76	44	1197
						PHASE ONE TOTAL			1006	992	1493	1468	30769

PHASE TWO

				TRIP RATES					TRIP ENDS				
				AM		PM		24	AM		PM		24
ZONE	LAND USE	SIZE	UNIT	IN	OUT	IN	OUT	HOUR	IN	OUT	IN	OUT	HOUR
5	RESIDENTIAL	154	DU	.2	.55	.64	.37	10.06	30	84	98	56	1549
6	RESIDENTIAL	169	DU	.2	.55	.64	.37	10.06	33	92	108	62	1700
7	PUBLIC PARK	29	AC	0	0	0	0	0	0	0	0	0	0
18	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
19	RESIDENTIAL	140	DU	.2	.55	.64	.37	10.06	28	77	89	51	1408
20	RESIDENTIAL	148	DU	.2	.55	.64	.37	10.06	29	81	94	54	1488
36	RESIDENTIAL	140	DU	.2	.55	.64	.37	10.06	28	77	89	51	1408
37	PUBLIC PARK	5.5	AC	0	0	0	0	0	0	0	0	0	0
38	SCHOOL	7	AC	10	6	1	2	60	70	42	7	14	420
45	RESIDENTIAL	199	DU	.07	.38	.38	.18	5.9	13	75	75	35	1174
46	RESIDENTIAL	166	DU	.2	.55	.64	.37	10.06	33	91	106	61	1669
47	RESIDENTIAL	137	DU	.2	.55	.64	.37	10.06	27	75	87	50	1378
						PHASE TWO TOTAL			291	694	753	434	12194
						CUMULATIVE TOTAL			1297	1686	2246	1902	42963

TABLE 4.8-4 (Continued)

PHASE THREE

ZONE	LAND USE	SIZE	UNIT	TRIP RATES AM IN	AM OUT	PM IN	PM OUT	24 HOUR	TRIP ENDS AM IN	AM OUT	PM IN	PM OUT	24 HOUR
9	INDUSTRIAL	40.5	AC	6.41	1.32	1.63	5.8	51.8	259	53	66	234	2097
10	RESIDENTIAL	96	DU	.2	.55	.64	.37	10.06	19	52	61	35	965
11	RESIDENTIAL	108	DU	.2	.55	.64	.37	10.06	21	59	69	39	1086
12	RESIDENTIAL	161	DU	.2	.55	.64	.37	10.06	32	88	103	59	1619
13	COMMERCIAL	166	KSF	1	.43	2.39	2.49	62.2	166	71	396	413	10325
14	RESIDENTIAL	161	DU	.07	.38	.38	.18	5.9	11	61	61	28	949
15	PUBLIC PARK	5	AC	0	0	0	0	0	0	0	0	0	0
16	SCHOOL	7.5	AC	10	6	1	2	60	75	45	7	15	450
17	RESIDENTIAL	80	DU	.2	.55	.64	.37	10.06	16	44	51	29	804
27	RESIDENTIAL	86	DU	.2	.55	.64	.37	10.06	17	47	55	31	865
								PHASE THREE TOTAL	616	520	869	883	19160
								CUMULATIVE TOTAL	1913	2206	3115	2785	62123

PHASE FOUR

ZONE	LAND USE	SIZE	UNIT	TRIP RATES AM IN	AM OUT	PM IN	PM OUT	24 HOUR	TRIP ENDS AM IN	AM OUT	PM IN	PM OUT	24 HOUR
8	RESIDENTIAL	118	DU	.2	.55	.64	.37	10.06	23	64	75	43	1187
22	RESIDENTIAL	191	DU	.2	.55	.64	.37	10.06	38	105	122	70	1921
24	RESIDENTIAL	146	DU	.2	.55	.64	.37	10.06	29	80	93	54	1468
25	RESIDENTIAL	172	DU	.2	.55	.64	.37	10.06	34	94	110	63	1730
39	RESIDENTIAL	198	DU	.07	.38	.38	.18	5.9	13	75	75	35	1168
40	BUSINESS PK	21.8	AC	17.25	2.89	3.33	14.7	159.7	376	63	72	320	3481
41	BUSINESS PK	20.5	AC	17.25	2.89	3.33	14.7	159.7	353	59	68	301	3273
42	COMMERCIAL	108	KSF	1.19	.51	2.94	3.06	72.33	128	55	317	330	7811
43	COMMERCIAL	138	KSF	1.08	.46	2.62	2.72	66.4	149	63	361	375	9163
44	COMMERCIAL	179	KSF	.97	.42	2.21	2.5	60.61	173	75	395	447	10849
								PHASE FOUR TOTAL	1316	733	1688	2038	42051
								CUMULATIVE TOTAL	3229	2939	4803	4823	104174

4.8.2.8 General Plan Policy Analysis

The general plan contains the following policies with respect to traffic circulation.

1. **Standard:** Improved street access shall be provided to all new parcels in accordance with the standards of the Circulation Element and applicable section of the Subdivision Ordinance.

Application: All roads within the Green Valley Specific Plan will be public streets and will conform with the City standards while moving traffic efficiently.

2. **Standard:** Local street patterns shall be logically related to the overall network of arterial and collector streets as provided for in the Circulation Network. Driveway entrances onto surrounding arterial, secondary and major streets should be restricted in all possible instances, and through traffic on interior residential streets should be minimized.

Application: The Green Valley traffic system is designed to move traffic efficiently by restricting vehicular access onto arterial roadways to controlled points. No direct access to or between individual dwelling unit lots and arterial roadways will be permitted. Commercial and business developments will have their own internal circulation system, connected to the backbone roadways at restricted points. Through-traffic within residential neighborhoods is discouraged.

3. **Standard:** Curvilinear street layouts based on the topography and site characteristics should be strongly encouraged. Street layouts should also be planned to avoid excessive storm water runoff. Adequate storm drainage facilities shall be provided when necessary.

Application: The Green Valley Circulation Plan integrates a curvilinear loop roadway system with the existing modified grid pattern of arterial streets. Primary storm drainage on-site is handled with a network of swales. Storm drains will not be provided within roadways, however, surface curbs and gutters will channel runoff to nearby swales.

4. **Standard:** Easements for through access by pedestrians should be provided where appropriate, especially to provide access from developments to neighborhood shopping facilities, schools and local park and recreation facilities.

Application: The Green Valley Circulation Plan includes provisions for non-vehicular circulation. Green Valley will be linked with the regional trail system by a trailhead located in the regional sports complex along the San Jacinto River. Green Valley pedestrian and bicycle traffic will access this trailhead, parks, schools and shopping facilities, via local trails which will utilize the greenbelt swales and generous right-of-ways along Green Valley Parkway.

5. **Standards:** Bicycle lanes and paths shall be dedicated and improved where required by the adopted Bikeways Master Plan. This plan will place special emphasis on the travel routes most in demand, major destinations of bicycle travel, and sections of roadway where safety impairments are most critical.

Application: Many of the trails throughout the Green Valley development will be compatible with bicycle use.

4.8.3 Mitigation Measures

The mitigation measures contained below are provided to meet City and areawide transportation needs relative to the traffic generated by the project. Measures include support for regional transportation demand management strategies promoted by Caltrans as well as areawide traffic fee mitigation programs promoted by Riverside County Trasportation Commission and SCAG.

Prior to the issuance of building permits, the applicant shall pay Areawide Circulation Improvement Fees in accordance with the recommendations of the proposed Areawide Circulation Improvement Study. The applicant shall be credited against such fees for any Areawide circulation improvements constructed and paid for by the Green Valley development.

The applicant shall provide bus pull-out areas and shelters within the Specific Plan. The location and number of bus pull-outs shall be subject to approval of the City of Perris, RTA, and school districts and shall be at locations where it can be seen with assurance that the bus stop location will remain, prior to approval of any subdivisions within each phase.

Phased transportation improvements shall be installed by the applicant as required by the City Engineer. Any major rephasing of construction must be approved by the Planning Commission and minor rephasing may be approved administratively by the City Engineer and Planning Department. The proposed improvements by phase are summarized below.

Phase 1 Improvements

o Ethanac Road shall be fully improved from SR 215 to Goetz Road along the north side (1/2 width) plus 14 foot landscaped median.

Ethanac Road from SR 215 to Goetz Road along the south side shall be improved with a minimum of 22 feet wide paving.

o Murrieta Road from Ethanac Road to Case Road shall be fully improved to full width.

o Green Valley Parkway from the westerly boundary of planning areas 4 and 26 and the easterly boundary of planning area to Murrieta Road shall be improved to full width.

o Green Valley Parkway from southerly boundary of planning area 7 to Murrieta Road shall be improved with a minimum 30 feet wide paved road and concrete curb and gutter for future median at one side of centerline.

o Case Road from Ethanac to north of planning area 40 shall be improved to full width.

o Case Road from easterly project boundary to westerly project boundary shall be improved to 55 foot half width and shall include improvement of 2 existing bridges to full width. Case Road from this point northerly to the intersection of Perris Boulevard shall be improved with a minimum of two lanes in each direction (plus left hand turn lanes) and any necessary drainage improvements.

o Contribute the development's fair share for the construction of a freeway bridge at Ethanac and SR 215.

o Construct or cause construction of the San Jacinto River bridge at Goetz Road to its ultimate width.

o The developer shall post a cash deposit for the construction an installation of traffic signals when determined appropriate by the City of Perris. Phase 1 traffic signals are anticipated at the following locations;

- Murrieta at Case
- Ethanac Road at Murrieta
- Ethanac Road at I-215 southbound ramps
- Ethanac Road at I-215 northbound ramps
- Ethanac Road at Case Road

Phase 2 Improvements

o Green Valley Parkway from easterly boundary of planning area 35 to Ethanac Road, and Green Valley Parkway from southerly boundary of planning area 7 to Murrieta Road shall be improved to full width.

o A secondary paved access road (minimum 30 feet in width) shall be constructed from Green Valley Parkway to Murrieta Road. This access may utilize the proposed alignment of planning area 20 to Murrieta Road.

o The developer shall post a cash deposit for the construction an installation of traffic signals when determined appropriate by the City of Perris. Phase 2 traffic signals are anticipated at the following locations;

- Ethanac Road at Green Valley Parkway
- Green Valley Parkway at Murrieta Road (N)
- Green Valley Parkway at Murrieta Road (S)

Phase 3 Improvements

o Widen Ethanac Road (2 lanes in each direction plus left turn lane) from I-215 to SR 74.

o Green Valley Parkway from the southerly boundary of planning area 7 to the westerly boundary of planning area 26 shall be improved to full width.

o Street "A" shall be improved to full width per county standards including a 14 foot landscaped median an 80 foot wide bridge over the Romoland channel.

o Goetz Road from Ethanac Road to northerly project boundary shall be improved with concrete curb and gutter located 43 feet from centerline with 55 foot half width dedicated right-of-way.

o The developer shall post a cash deposit for the construction an installation of traffic signals when determined appropriate by the City of Perris. Phase 3 traffic signals are anticipated at the following locations;

- Goetz Road at "A" Street
- Ethanac Road at Goetz Road

Phase 4 Improvements

o The developer shall post a cash deposit for the construction an installation of traffic signals when determined appropriate by the City of Perris.

o The need for traffic signal(s) for Case Road between Ethanac Road and Watson Road shall be determined at the time of individual development review. These signal(s) shall be constructed by the applicant

Additional improvements to the areawide roadway system beyond these improvements, including traffic signals, may be warranted and are anticipated to be the shared responsibility of all developments in the area, with Green Valley contributing a fair share of the cost of each.

The Green Valley Specific Plan should incorporate access and internal circulation recommendations contained in the project traffic report.

Areawide Measures

The City of Perris will support and participate in demand management strategies contained within SCAG's Regional Mobility Plan and Air Quality Management Plan.

The proposed project will incorporate the following transportation demand management strategies;

o The City will implement a Park and Ride program to be funded from the proposed Traffic Impact Fee program that it is planning to implement. Upon development of a Park and Ride program by the City of Perris, the developer shall fund an appropriate number of spaces towards the program.

o The City of Perris will participate in the proposed areawide traffic fee mitigation program.

o The City of Perris will establish a transportation information services coordinator position within the City to be funded by the proposed traffic impact fee program. The position would have the responsibility developing and implementing City-wide information programs related to transportation and for providing guidelines to businesses regarding ways to reduce traffic, including shuttle service and ridesharing as a condition of lease. For commerical areas, the use of flex-time work scheduling and ridesharing coordination shall be considered. The position would coordinate with Caltrans in the disemination of information about ride sharing, commuter services, rapid transit, bus service and park n ride.

o Bike racks and bike lockers should be provided in commercial and industrial areas as determined during development plan review.

4.8.4 Significant Unavoidable Adverse Impacts

Planned roadway improvements will mitigate operating conditions on studied roadways to LOS D or better by Phase 4, assuming an "areawide transportation improvement program" is implemented wherein the Green Valley project participates on a proportional basis.

4.9 AIR QUALITY

The air quality assessment contained below was taken from an "Air Quality Impact Analysis , Green Valley Specific Plan, City of Perris, California", prepared by Hans D. Giroux, Atmospheric Environment Consultant. The report is included in its entirety in the Technical Appendix, Appendix D. The following is summarized from that report.

4.9.1 Existing Conditions

4.9.1.1 Atmospheric Setting

The climate of the Perris area is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. Coastal clouds and fog rarely extend as far inland as the project site. The most important project area weather pattern is the warm seasonal airflow across the populated area of the Los Angeles Basin which brings polluted air into western Riverside County late in the afternoon. This transport pattern creates unhealthful air quality as the fringes of this "urban smog cloud" extend to the Perris area in diluted form during the summer months.

Temperatures at Green Valley average a very comfortable 63 degrees (F) year-round, with warm summer afternoons (95+ degrees) and often cool winter mornings (around 35 degrees).

Rainfall in the project area varies considerably from year to year. Measurements at Lake Elsinore near the project site average 12.5 inches per year. The bulk of the annual rainfall occurs from late November to early April.

Daytime winds are from the West-Northwest at about 6 to 8 miles per hour. This air flow is regional in nature and results from cool Pacific air being drawn onshore by rising warm Mojave Desert and interior air. These winds allow for good local mixing, but they often bring air pollutants from urbanized coastal areas into the Perris Valley. At night, air drains off surrounding mountains and then pools on the valley floor. These breezes are cool and clean, but they may allow for local stagnation of air inconjunction with radiation temperature inversions. This meteorology tends to maximize the impact of any local pollution emissions sources such as freeways. These kinds of inversions can lead to air pollution "hot spots" in heavily developed coastal areas. However, there is not enough traffic in inland valleys to cause any winter air pollution problems.

In summer, there are often periods of hazy visibility and occasionally unhealthful air. In winter, air quality is often excellent and affords spectacular visibility.

4.9.1.2 Air Quality Setting

Ambient Air Quality Standards (AAQS) have been established at the national and state level to protect the public from the adverse effects of air pollution. The standards are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children , people already weakened by other diseases or illness, and persons engaged in strenuous work or exercise. These persons are called "sensitive receptors". Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The air quality standards which are currently in effect in California are shown in Table 4.9-1.

Air quality monitoring throughout the South Coast Air Basin is conducted by the Southern California Air Quality Management District (AQMD) . Air quality monitoring for ozone, the primary ingredient of regional photochemical smog is conducted at Perris. However, the closest monitoring station for other key pollutants including carbon monoxide, nitrogen oxides, and total suspended particulates is in the City of Riverside. The Riverside data are not necessarily fully representative of the Green Valley project site, but are shown in Table 4.9-2 as the best available characterization of project area baseline air quality.

Ozone and particulates are seen to be the two most significant air quality concerns. The five-year trend in these data show the frequency of first stage smog alerts (hourly ozone levels over 0.20 parts per million) has dropped dramatically at Perris in 1986-87. More localized pollutants such as carbon monoxide, nitrogen oxides, lead, etc. should be very low near the project site because background levels even in Riverside rarely exceed allowable levels, and there are almost no sources of such emissions near the project site. Suspended particulate levels are periodically high throughout Riverside County because of agricultural activities, desert and dry soil conditions and frequently brisk winds. Ten micron diameter respirable particulates (PM-10) measured beginning in 1984, show a considerable number of violations of the state standard as well as a considerable number of violations of the less stringent federal standard. Particulate exposure is therefore a serious air quality concern in Riverside County.

4.9.1.3. Air Quality Planning

A revised Air Quality Management Plan (AQMP) was adopted by the governing boards of the AQMD and the Southern California

TABLE 4.9-1

Table 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 Hour	0.09 ppm (180 ug/m3)	Ultraviolet Photometry	0.12 ppm (235 ug/m3)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m3)	Non-dispersive Infrared Spectroscopy (NDIR)	9.0 ppm (10 mg/m3)	Same as Primary Stds.	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide	Annual Average	-	Gas Phase Chemiluminescence	0.053 ppm (100 ug/m3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m3)		-		
Sulfur Dioxide	Annual Average	-	Ultraviolet Fluorescence	80 ug/m3 (0.03 ppm)	-	Pararosoaniline
	24 Hour	0.05 ppm (131 ug/m3)		365 ug/m3 (0.14 ppm)	-	
	3 Hour	-		-	1300 ug/m3 (0.5 ppm)	
	1 Hour	0.25 ppm (655 ug/m3)		-	-	
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	-	-	-
	24 Hour	50 ug/m3		150 ug/m3	Same as Primary Stds.	Inertial Seperation and Gravimetric Analysis
	Annual Arithmetic Mean	-	-	50 ug/m3		
Sulfates	24 Hour	25 ug/m3	Turbidimetric Barium Sulfate	-	-	-
Lead	30 Day Average	1.5 ug/m3	Atomic Absorption	-	-	Atomic Absorption
	Calendar Quarter	-		1.5 ug/m3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m3)	Cadmium Hydroxide STRactan	-	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m3)	Tedlar Bag Collection, Gas Chromatography	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%.		-	-	-
Applicable Only in the Lake Tahoe Air Basin						
Carbon Monoxide	8 Hour	6 ppm (7 mg/m3)	NDIR	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when the relative humidity is less than 70%.		-	-	-

4.9.1.2 Air Quality Setting

Ambient Air Quality Standards (AAQS) have been established at the national and state level to protect the public from the adverse effects of air pollution. The standards are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children , people already weakened by other diseases or illness, and persons engaged in strenuous work or exercise. These persons are called "sensitive receptors". Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The air quality standards which are currently in effect in California are shown in Table 4.9-1.

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TABLE 4.9-2
PERRIS AREA AIR QUALITY MONITORING SUMMARY
1983 - 1987
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	1983	1984	1985	1986	1987
Ozone:					
1-Hour > 0.09 ppm	128	137	146	133	136
1-Hour > 0.12 ppm	88	75	96	79	82
1-Hour ≥ 0.20 ppm	13	6	8	3	1
Max. 1-Hour Conc. (ppm)	0.26	0.22	0.29	0.22	0.20
Carbon Monoxide:					
1-Hour > 20. ppm	0	0	0	0	0
8-Hour > 9. ppm	1	0	1	0	0
Max. 1-Hour Conc. (ppm)	15.	16.	14.	18.	13.
Max. 8-Hour Conc. (ppm)	7.9	8.9	9.1	8.3	7.6
Nitrogen Dioxide:					
1-Hour > 0.25 ppm	2	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.32	0.20	0.23	0.25	0.22
Total Suspended Particulates:					
24-Hour ≥ 100 ug/m3	21/54	35/60	28/59	29/60	30/59
24-Hour ≥ 260 ug/m3	0/54	0/60	0/59	0/60	0/59
Max. 24-Hour Conc. (ug/m3)	192.	193.	201.	215.	255.
Particulate Sulfate:					
24-Hour ≥ 25. ug/m3	0/54	0/60	0/59	0/60	0/59
Max. 24-Hour Conc. (ug/m3)	17.9	15.9	14.1	14.0	15.6
Particulate Lead:					
1-Month ≥ 1.5 ug/m3	0/12	0/9	0/12	0/12	----
Max. 1-Month Conc. (ug/m3)	0.28	0.31	0.18	0.11	----
Respirable Particulates:					
24-Hour > 50 ug/m3	----	4/10	46/61	48/61	5/15
24-Hour > 150 ug/m3	----	0/10	11/61	5/61	0/15
Max. 24-Hour Conc. (ug/m3)	----	129.	208.	294.	137.

Source: South Coast AQMD — Perris Air Monitoring Station Data Summaries, supplemented by Riverside data for selected species.

to improve air quality by 5 percent per year and attain all AAQS's by the Year 2007. The new AQMP has many recommended measures that will affect the lifestyle of nearly everyone in the basis.

The proposed Green Valley project relates to the AQMP through the land use and growth assumptions used to forecast automotive air pollution emissions. The project's consistency with the AQMP is tied to whether a developed condition for the project site was considered in the AQMP.

4.9.2 Environmental Impacts

Residential, commercial, industrial, recreational or institutional land uses such as those proposed for the Green valley Specific Plan potentially impact air quality almost exclusively through increased automotive emissions. Nominal emissions may occur in conjunction with "clean" on-site industry, but these emissions are strictly controlled by the AQMD and are generally insignificant compared to the motor vehicle emissions component.

4.9.2.1 Construction Impacts

For purposes of analysis of short-term impacts, it has been assumed that about 10 percent of the project site acreage would be under construction at any one time. An average development scenario of 119.2 acres under simultaneous disturbance was used to calculate short-term construction impacts.

The average uncontrolled dust emission rate during construction is about 1.2 tons per acre per month of disturbance. This is a universal factor and is applied to the Green Valley site with the understanding that it may not reflect actual conditions. In reality, the site soils contain some clay which may reduce the actual dust emission rate. Dust control measures required by the AQMD (Rule 402 and 403) can reduce dust emissions by about 50 percent of their uncontrolled rate. Applying this to the disturbed acreage yields a daily dust generation rate of about 3.2 tons per day.

Much of this dust will be comprised of large diameter inert silicates that are chemically non-reactive and readily filtered by humans. The impact is more of a nuisances since, as the particles settle out of the air, they will drop on cars, landscape foliage, and outdoor furniture.

The inhalable fraction (PM-10) of construction dust typically comprises one-third to one-half of the total suspended particulate fraction. This ratio suggests that the project-related

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The inhalable fraction (PM-10) of construction dust typically comprises one-third to one-half of the total suspended particulate fraction. This ratio suggests that the project-related construction PM-10 dust burden will be approximately 1.1 to 1.6 tons per day. This impact is considered to be a significant adverse effect of the project. It is noted that this dust burden is similar to that generated by agricultural operations.

On-site and off-site construction equipment (primarily diesel powered) requires an average of 300,000 Brake Horsepower of operations to build out one acre of land into roads and structures. For the proposed project, assuming a 10-year buildout, the following daily emissions from construction equipment will occur:

Reactive Organic Compounds	114.7	pounds/day
Carbon Monoxide	293.7	"
Nitrogen Oxides	1,092.7	"
Combustion PM-10	47.9	"
Sulfur Dioxide	91.5	"

Although the daily NOx emissions are substantial, the mobile nature of the construction equipment will prevent any localized violation of the NOx standard. There may be localized instances when the characteristic diesel exhaust odor is noticeable from passing trucks or nearby heavy equipment, but such transitory exposure is a brief nuisance and will not adversely affect air quality standards.

4.9.2.2 Mobile Source Impacts

At project buildout, the proposed Green Valley project will generate over 100,000 daily vehicle trips. Based on typical Riverside County residential, commercial and institutional trip lengths, additional vehicle travel from project implementation will be about 640,000 vehicle miles travelled.

The California Air Resources Board's URBEMIS2 model was run for three conditions of build-out ranging from Years 1995 to 2005. This modeling exercise predicts the relative share of the project emissions to the sub-regional emissions predicted by the AQMP. If project buildout occurs in the Year 2000, the model predicts the following emissions levels for Green Valley and relative contribution to the sub-regional (Perris Valley) air pollution burden.

Carbon Monoxide	7.33 tons/day	15.3 % of regional
Reactive Organics	0.61 tons/day	5.7 % of regional
Nitrogen Oxides	0.94 tons/day	14.6 % of regional

The projects share of the Riverside area emissions burden is seen to be significant. There are no absolute standards of significance on a regional basis except for general AQMD guidelines that specify when a project is of sufficient scope to create a potentially significant regional air quality impact. Green Valley far exceeds that threshold level.

The question of impact significance from growth-associated vehicular emissions should not be related to the size of a project or the magnitude of its emissions, but rather whether such growth best serves the City of Perris and the Riverside County population and whether such growth has been properly anticipated within the air quality planning process. The growth assumptions for the 1998 AQMP revisions call for an increase of 1.2 million residents in Riverside County in the next 20 years, along with an increase of 230,000 jobs (SCAG Draft Growth Management Plan). SCAG recently adjusted Perris' share of the RSA 47 forecasted growth as a result of considering subdivision activity and considering annexations from the sphere of influence. The City's forecasted growth rate is generally consistent with SCAG regional growth assumptions (see Section 4.7, Population and Housing).

The conversion of agricultural land to more transportation - intensive land use is therefore abundantly anticipated. The project is readily consistent with the AQMP balanced land use objectives in that it will include a large employment component that will allow many residents to live and work in close proximity to their residence. Jobs/housing balance and maximizing the number of trips internal within a development sub-area are critical AQMP measures that Green Valley complies with. The employment provided within the Green Valley Specific Plan will substantially reduce the project's mobile source air quality impact.

4.9.2.3 Microscale Impacts

In addition to evaluating the regional air quality impact of the project, microscale air quality potential was also assessed. The California Roadway Dispersion model CALINE4 was run for peak hour traffic levels assuming levels of service ranging from "C" to "F". Carbon monoxide was used as the indicator pollutant to determine "hot spot" potential. Under worst-case circumstances, the maximum CO level achieved was 3.7 parts per million above background. This is not considered significant given that background levels of CO are expected to remain low in the future.

4.9.2.4 Secondary Impacts

Other air quality impacts will occur indirectly as a result of project implementation. These indirect impacts are individually small but can make a substantial contribution to regional air quality when summed for the county overall. The secondary impacts are as follows:

- o Increased fossil fuel combustion in county power plants to provide electrical energy to the project site.

- o On-site combustion of natural gas for heating, hot water and cooking.

- o Increased evaporative emissions from transport, storage and dispensing of gasoline for project-related vehicles.

- o Evaporative emissions from cleaners, paints, solvents, and other materials used in building construction and on-going maintenance.

- o Dust emissions from the manufacture and use of aggregates, concrete, sand, gravel, stucco and other building materials.

- o Combustion emissions from mowers, edgers, blowers, and other landscape utility equipment.

- o Increased business travel at regional airports.

These impacts are considered adverse but not significant.

4.9.3 Mitigation Measures

Fugitive Dust

Standard mitigation measures will be implemented to control fugitive dust emissions during construction as required by AQMD Rules 402 and 403. These rules contain a nuisance provision that gives an AQMD inspector wide latitude to enforce dust abatement, particularly in the event of a nuisance complaint.

Mobile Sources

The project represents a significant share of the county mobile source air emissions. This places a special responsibility on project proponents and the City of Perris to develop effective impact mitigation. The project proponents have limited potential to achieve mobile source emissions reductions. Effective emissions reductions will require a unified transportation system management (TSM) approach where a wide variety of transportation control measures are integrated into a comprehensive system of procedures and goals. An effective TSM program as a means of reducing vehicular traffic and its associated environmental effects (such as air pollution, noise, and energy consumption) is difficult to achieve in practice. The difficulties inherent in implementing TSM notwithstanding, the City of Perris must be committed to reducing mobile and stationary source air pollutant emissions through a unified TSM program. Elements of such a program should included:

- Coordination with the AQMD to implement regional strategies and tactics.
- Development of Park and Ride facilities.
- Encouragement of bicycle and pedestrian circulation alternatives (The project provides this opportunity).
- Express transit access from the Green Valley area to regional employment centroids.
- Encouragement of job-intensive uses to reduce the existing and growing jobs housing imbalance that promotes long commutes in and out of the local area. (The project provides this measure.)
- Obtain commitments from individual project proponents to reserve land within their developments for public transportation access and park and ride facilities.

Project plans will need to be reviewed by the City of Perris to verify that these policies have been incorporated as fully as possible in order to meet the stated air quality objectives.

It is suggested that such measures be substantiated through incorporation in a City Perris General Plan, Transportation Element.

Secondary Impacts

Compliance with Title 24 regulations for energy efficient design will improve region-wide emissions due to energy production and use.

Consideration should also be given to the use of solar energy to heat structures and swimming pools and to the protection of solar access and orientation of buildings.

4.9.4 Significant Unavoidable Adverse Impacts

Air quality in the project area will be temporarily degraded during project construction, and the regional air cell will be incrementally degraded by pollutants from increased traffic and energy consumption. Extensive transportation control measures will need to be implemented for this and other projects in the City and County if AAQS's are to be achieved regionally within the mandated time frame. The mitigation measures proposed will reduce the magnitude of impacts to levels considered acceptable, however, the impacts are still considered adverse after mitigation.

4.10 NOISE

The information in this section was taken from a draft report entitled, "Noise Assessment and Noise Control Recommendations, Green Valley Specific Plan in the City of Perris", dated May 24, 1989 and prepared by the acoustic engineering firm of J.J. Van Houten and Associates, Inc. The entire noise report is contained in the Technical Appendices, Appendix F and is summarized below.

4.10.1 Existing Conditions

4.10.1.1 Noise Sources and Measurement Levels

The project site is situated near several substantial sources of noise. These sources include traffic on I-215 and surrounding roads, trains on the nearby AT & SF railroad, aircraft from March Air Force Base, and, operations at the Perris Valley Airport.

The Perris Valley Wastewater Treatment Facility is located near the eastern boundary of the project site and is presently a very minor source of noise.

In order to statistically characterize the existing noise environment at the project site, noise measurements were taken at four different locations on (or in the vicinity of) the site. The locations where measurements were taken as well as the resultant noise levels are shown in Table 4.10-1. Existing noise levels on and near the project site range from an Leq of 51.8 dBA (Leq is an average noise level) near the intersection of Ethanac and Case, to 64.6 dBA near Murrieta and Case. Overall, noise levels at the project site are most influenced by vehicular traffic on roadways. The noise measurements will form the basis of determining impact from traffic and other sources attributable to the proposed project.

Because of the generally low level of operations at the Perris Valley Airport, the noise impact of airport operations is generally not significant when examined on a day-night average scale or a community noise equivalent level (CNEL) scale. Historically, the 60 CNEL noise contour has remained within the airport property. Recent analysis by Aviation Systems Associates showed that the 65 CNEL contour is confined to the airport site and river channel area while the 60 CNEL noise contour overlies a portion of the proposed Green Valley community park site, the Planning Area 9 industrial area and small portions of residential planning area numbers 6, 8 and 22. These data are further substantiated in the Finalizing Addendum, Airport Compatibility Report. These contours are reasonable given the current low level of aircraft operations.

With respect to the other sources of noise in the area, the project

TABLE 4.10-1
SUMMARY OF NOISE MEASUREMENTS
GREEN VALLEY SPECIFIC PLAN

Pos No.	Measurement Location	Date	Source	Start Time	Duration	A-Weighted Sound Level, dB(A)				
						L1	L10	L50	L99	Leq
1	110' N. of Case Rd. 500' W. of I-215 freeway.	4-4-89	Traffic on I-215 freeway.	10:45	15 min	60.0	54.0	50.0	44.0	51.8
2	30' W. of Murrieta Rd. 100' S. of Case Rd.	4-4-89	Traffic on Murrieta and Case.	11:10	15 min	77.0	67.5	59.5	48.0	64.6
3	102' E. of Goetz Rd. About 1000' S. of Perris Valley Airport.	4-4-89	Traffic on Goetz Rd.	11:40	15 min	62.0	57.5	51.0	39.5	54.0
4	Back yard of 1712 Sycamore St.	4-4-89	Traffic on A St.	14:00	24 hours	70.5	60.5	50.5	39.5	58.0
						Peak hour (7:00-8:00) noise levels in the 24 hour period.				

4.10.1.2 Noise Standards

Criteria For Residential Construction

The City's Noise Element contains the following standards concerning residential noise exposure.

a. If a specific project site is located within the CNEL contour of 60 dB or higher for noise generated by the freeways, major or secondary arterials or airports, an acoustical analysis will be required showing compliance with the City of Perris standards. This analysis should indicate the existing and projected CNELs on the site and the method(s) by which the noise is to be controlled or reduced to no more than 70 dB within the exterior living space of the project. Although residential projects within the 70 dB contour or higher should be strongly discouraged, under special circumstances their approval may be conditioned upon the feasibility of reducing existing noise levels to no more that 75 dB.

b. The CNEL within any habitable room shall be 45 dB, or less.

Criteria For Non-Residential Construction

The City of Perris has no noise standard for commercial/industrial projects. A recommended standard for the interior industrial, office and commercial spaces is given in Table 4.10-2.

TABLE 4.10-2
RECOMMENDED INTERIOR NOISE STANDARDS FOR COMMERCIAL, OFFICE, AND INDUSTRIAL USES

Typical Use	Equivalent Sound Level Leq (12), dBA *
Private Office, Board Room, Conference Room	45
General Office, Reception, Clerical	50
Bank Lobby, Retail Store, Restaurant	55
Manufacturing, Kitchen, Warehousing	65

* Leq (12) is the equivalent sound level during the 12-hour period from 7:00 am to 7:00 pm.

site lies one half mile outside of the 60 CNEL contour of March Air Force Base and just on the edge of the 55 CNEL contour, according to the March Air Force Base AICUZ study. Freight train operations are not frequent but generate a 60 CNEL contour which extends approximately 100 feet on either side of the tracks. This contour overlies a small part of the northern portion of the project site. This rail line generates about two train movements per day.

4.10.1.2 Noise Standards

Criteria For Residential Construction

The City's Noise Element contains the following standards concerning residential noise exposure.

a. If a specific project site is located within the CNEL contour of 60 dB or higher for noise generated by the freeways, major or secondary arterials or airports, an acoustical analysis will be required showing compliance with the City of Perris standards. This analysis should indicate the existing and projected CNELs on the site and the method(s) by which the noise is to be controlled or reduced to no more than 70 dB within the exterior living space of the project. Although residential projects within the 70 dB contour or higher should be strongly discouraged, under special circumstances their approval may be conditioned upon the feasibility of reducing existing noise levels to no more that 75 dB.

b. The CNEL within any habitable room shall be 45 dB, or less.

Criteria For Non-Residential Construction

The City of Perris has no noise standard for commercial/industrial projects. A recommended standard for the interior industrial, office and commercial spaces is given in Table 4.10-2.

State Noise Insulation Standards

Compliance with the State's noise insulation standards (CCR, Title 24, Part 2) is required for all new multi-family dwelling units constructed in California. The standards set minimum ratings for the transmission of sound through party walls and floor/ceiling assemblies. Also, a maximum community noise equivalent level (CNEL) of 45 dB is specified for intrusion from external noise sources.

TABLE 4.10-2
RECOMMENDED INTERIOR NOISE STANDARDS FOR COMMERCIAL, OFFICE, AND INDUSTRIAL USES

Typical Use	Equivalent Sound Level Leq (12), dBA *
Private Office, Board Room, Conference Room	45
General Office, Reception, Clerical	50
Bank Lobby, Retail Store, Restaurant	55
Manufacturing, Kitchen, Warehousing	65

* Leq (12) is the equivalent sound level during the 12-hour period from 7:00 am to 7:00 pm.

School Noise Control Standards

The State of California's noise standard for school sites sets a maximum peak hour equivalent sound level, Leq, of 52 dBA within any classroom, library, multi-purpose room, or space used for pupil personnel services (California Streets and Highway Code: Section 216). Although this standard applies to noise generated by freeway traffic, it can be applied to the noise generated by traffic on the surrounding streets, by airport operations and by railroad movements.

In addition to the above, it is recommended that the Federal Highway Administration (FHWA) noise abatement criteria for school sites be applied to the project (U.S.C. Title 23, Chapter I, Part 772). This criteria specifies that any active sports area, playground, or recreation area within a school site should not be exposed to a peak hour Leq in excess of 67 dBA.

4.10.2 Environmental Impacts

Noise exposure of the various proposed uses within the Green Valley Specific Plan will be assessed in this section. If land uses are exposed to noise levels exceeding the criteria listed in the previous section, then significant impact is indicated. Other impacts such as construction-related impacts are discussed as well.

4.10.2.1 Construction Activity During Project Development

Construction equipment can produce significant levels of noise and can be annoying in residential zones. Noise levels of the type of equipment that may be used during earthmoving and construction of the Green Valley project will generate noise levels of 65 to 105 dBA at 50 feet from the source. However, because the area surrounding the project site is sparsely developed, significant noise impacts are not expected with initial development. Later phases of construction could produce potentially significant annoyance to already occupied residential developments within the site, particularly if the annoyance occurs after 7:00 pm on week days or during the day on Sunday. A general characteristic of this impact is its relatively short-term impact on any one area of the site. Construction activities near commercial areas will not produce significant adverse impacts since these uses are less sensitive to noise.

4.10.2.2 Traffic and Community Noise Impacts

Residential Land Uses

Traffic volumes on roadways around the site and accompanying noise exposure will increase significantly on all arterials within the vicinity of the project site. Noise levels were projected for major arterials in and around the site using Federal Highway Administration methodologies. A CNEL of greater than 70 dB is projected at all proposed residences adjacent to Case Road, Ethanac Road (east of Murrieta) and Murrieta Road. This noise exposure is considered significant and adverse.

Flight operations a March Air Force Base generate about 55 CNEL at the northeast property line. This level is well below residential exterior noise standards are is not considered significant. Aircraft will occasionally create temporarily annoying noises, however.

Noise generated by train movements on the AT & SF Railroad located north of the site parallel to Case Road will not have a significant impact on the site. The 60 CNEL contour currently extends 100 feet on each side of the tracks and overlies the northerly site boundary. After development, however, the contour would be entirely within the Case Road right-of-way. The combined effect of train noise and future traffic noise have been taken into account in the analysis of traffic noise contours for Case Road.

The existing wastewater treatment facility current is not a significant source of community noise. In its present configuration, the facility generates noise on the order of 46 dBA at the nearest proposed residences to the west. This is not significant. However, the facility is planned for 50 to 100 MGD ultimately which would make it a more substantial noise source in the future if expansion is realized. Though it is difficult to predict the magnitude of the expansion and the types of noise producing equipment to be employed, the impact can be classified as potentially significant.

Potential annoyance may be generated at the residential locations within the project development by activity at the sports complex and at nearby school yards. These noise impacts are potentially significant.

A potential noise impact is produced by mechanical equipment such as air conditioning and refrigeration units and their associated inlet and exhaust systems. These units often produce noise levels which exceed recognized standards when experienced at near-by residential locations. This impact is considered potentially significant.

Trash pickup and compacting vehicles are also a cause of complaints near commercial operations. These vehicles use hydraulic equipment to raise and lower the metal trash bins and to compact their contents. Typical noise levels range from 80 to 85 dB(A) at 50 feet. This impact is considered potentially significant.

Perris Valley Airport Operations

Experience shows that airport noise complaints begin to occur at around the 60 dBA CNEL contour and grow proportionately with increasing noise. The 65 dBA CNEL contour and above is commonly recognized as unacceptable for residential use while 60 CNEL is considered normally acceptable. At a 65 dBA CNEL exterior noise level, it is difficult to achieve an indoor noise standard of 45 dBA with windows open. The projected increases in operations of the type of aircraft commonly used is not projected to significantly affect the location of the 65 CNEL contour relative to residential uses. It should be noted that the skydiving operation has discontinued use of the noisy DC-3 aircraft on a regular basis. Use of these aircraft at Perris will be infrequent.

In addition to average noise levels, future residents would be exposed to single-event flyover noise on a regular basis. Though not significant on an averaged basis, noise from individual flyovers can be a significant annoyance. Noise levels for single-event flyovers of various aircraft can be up to 85 dbA on the ground for a short period (see Finalizing Addendum, Airport Compatibility Report, Attachment 3). It is expected that single event flyover noise will at times be annoying to future residents and this continues to be a significant adverse impact of the project.

Commercial Land Uses

Traffic noise levels have been projected for commercial areas of the project site. On Case Road between Murrieta and Ethanac, Leq (12) noise levels at commercial sites will range between 71 and 72 dB. On Ethanac, Leq (12) noise levels up to 73 dB are projected. The commercial developments in Planning Areas 40, 41, 42 and 43 will experience Leq (12) noise levels of 75 dB from I-215. This noise impact is considered to be potentially significant on the interior of buildings without proper design.

At full development, the noise produced by trucks delivering supplies at the commercial sites could be a potential source of annoyance. Noise levels within 50 feet of the service areas may approach Leq values of 75 to 80 dB(A) if these vehicles are unprotected. The impact could be significant at adjacent residential areas depending upon distance and shielding between the homes and service area.

Schools

Of the four school sites in the Green Valley Specific Plan, two of the sites (Planning Areas 15 and 25) will experience a peak hour Leq of 69 dB which is above the FHWA standard for exterior noise exposure. This noise exposure is considered significant and adverse with respect to exterior and potentially significant with respect to interior level. The other school sites on Planning Areas 37 and 32 will have peak hour noise exposure of 66 and 67 dB Leq, respectively. This is not significant with respect to exterior levels but is potentially significant with respect to the interior standard.

4.10.3 Mitigation Measures

The following mitigation measures are proposed to reduce significant and potentially significant impacts of noise. The site plan is presently conceptual, however, additional site plan detail will clarify noise relationships.

As an initial measure, it is recommended that the following measures be incorporated into project design to the maximum extent possible and that the final engineering design be reviewed by a recognized acoustical engineer to verify that measures have been incorporated and to ensure compliance with the recommended noise standards.

4.10.3.1 Mitigation for Construction Noise

Construction activities near residential developments should be limited to daytime hours (7 am to 7 pm) on weekdays and be prohibited on the weekends.

4.10.3.2 Mitigation for Exterior Noise Impacts

Residential Structures

The following design measures will allow the project to comply with the City's 70 dB CNEL exterior residential noise standard.

o Multi-family residences should be oriented whenever possible such that the patios and balconies are located on the side of the building away from the arterials and/or railroad. In this way, buildings will present a solid barrier to traffic noise. If this is not possible, noise barriers with a minimum height of 5 to 7 feet will be required around the perimeters of patios and balconies directly facing Ethanac (east of Murrieta) and Murrieta. All common recreational areas should be located at the interior of the site buffered from the traffic noise by the residential buildings.

o For single family residences with rear yards abutting the arterials, noise barriers with a minimum height of 6 to 8 feet will be required around the property line adjacent to Case, Ethanac (east of Murrieta) and Murrieta.

o It is recommended that a noise barrier wall be provided along the project site's common boundary with the Perris Valley Wastewater Treatment Facility property. This wall will minimize future noise impacts as the wastewater facility undergoes planned expansions. Mitigation of this noise source is actually more easily accomplished at the treatment facility by providing mufflers on exhaust stacks, soundproof doors, and acoustic baffles. Such measures would be beyond the responsibility of the applicant.

o All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise (eg. concrete block, stucco-on-wood, 1/4 inch plate glass, earth berm or any combination of these materials.

It should be noted that the actual heights of barriers, patio walls and balcony walls will depend on the precise location of the structures, the elevation of the site relative to the arterials, and the set back of the buildings from the arterials.

Perris Valley Airport Operations

o Avigation easements shall be given to the owner of the Perris Valley Airport, and so noted on each final map. Avigation easements shall not restrict airport operations. Avigation easements will specifically include reference to an airport vicinity effects including noise impact.

o The 65 CNEL noise contour shall be established as the performance criteria for residential site location. While the 65 CNEL contour is not projected to overlie any proposed residential planning areas, the contour should be specifically located in the future based on the number of operations and noise characteristics of the future aircraft. Such contours will be established by acoustical study and shall be incorporated prior to approval of a final map.

Commercial Areas and Operations

Measures to reduce noise generation from commercial areas to surroundings are as follows:

o Mechanical equipment on commercial buildings should not emit noise at levels above 45 dBA measured at the nearest residential location.

o Equipment should be placed behind a barrier to attenuate noise as required. The height of the barrier is dependent upon the attenuation required.

o All inlet and exhaust system ducting should contain fibrous lining for noise reduction.

o All major items of noise producing equipment should be placed within an acoustically isolated room.

o Trash bins should not be located adjacent to residential areas.

o To minimize delivery truck loading and transportation impacts, walls should be placed in the immediate vicinity of the service areas to eliminate the line-of-sight from loading areas to nearby residential areas.

o Delivery trucks should avoid travel on residential streets.

o Deliveries between the hours of 10:00 pm and 7:00 am should be avoided.

o Truck staging, operations and parking should not be done adjacent to residential or school areas.

Schools

The following measures are recommended to achieve peak hour exterior noise standards of 67 dB(A).

- o For school sites in Planning Areas 15 and 25, noise barriers with a minimum height of 6 to 8 feet may be required around property line of any play area adjacent to Green Valley Parkway.

- o All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise as identified previously.

- o An alternative to the above noise barriers is to orient the play areas away from the arterials so that they are buffered from the traffic noise by either distance or school buildings. The actual heights of barriers is dependent upon final site layout.

4.10.3.3 Mitigation For Interior Noise Standards

The ability of structures to attenuate noise transmission from exterior sources is dependent upon type of construction materials used in construction and the implementation of various building techniques that limit noise transmission to the interior of structures. In order to achieve interior noise standards, a number of these measures will need to be implemented. In some cases, interior noise standards will be achieved only by keeping windows closed at all times, in which case forced air ventilation systems must be used.

The noise report in Technical Appendices, Appendix F contains numerous measures available to achieve interior noise standards (refer to pages 6 through 10). After specific building layouts for the various planning areas are determined, the design should be reviewed by a qualified acoustical engineer for a determination of the actual design measures applicable to specific proposed structures.

4.10.4 Significant Unavoidable Adverse Impacts

The noise technical report concludes that the significant impacts identified previously can be mitigated to insignificance through use of the suggested mitigation and review of final design by a qualified acoustical engineer. The impacts after mitigation are deemed adverse but not significant.

4.11 AESTHETICS

4.11.1 Environmental Setting

4.11.1.1 Existing Visual Resources

The project site is situated within the central portion of the Perris Valley. The terrain within the valley is essentially flat. Consequently, the views of the surroundings from the valley floor are mostly limited to the immediate surroundings or more distant hills.

The overall visual character of the valley is semi-rural; agriculture and supporting activities are very apparent. However, there are many indicators of progressive urbanization such as the substantial number of construction projects which can be seen and the significant amount of real estate signage which is evident as one travels through the valley. March Air Force Base is an important visual entity within the valley and its aircraft are a common element in the skies above the valley.

Certain physical features rise above the floor of the valley and are prominent from several valley vantage points. One of these features is the dam on Lake Perris. The large granitic hill just south of the dam is also a visible feature of the area.

Bordering the Perris Valley on the west are the Gavilan Hills which rise only about 1000 feet above the valley floor. These hills provide a minor backdrop to the visual environment of the valley. To the east are the Bernasconi Hills and the Lakeview Mountains. These features rise only slightly higher than Gavilan Hills but increase in height much more steeply.

An important visual backdrop to the valley is the San Jacinto Mountains, which lie to the east beyond the Lakeview Mountains. Though views of the mountains are sometimes obscured by haze and smog, clear days in winter bring spectacular views of the snow covered peaks. When the mountains are visible, the views from the Perris Valley are impressive.

The project site has little topographic relief, except that the southwestern corner of the property begins to slope upward toward the hills to the west. This corner of the property affords the best overall views of the project site and greater area of the Perris Valley.

A noteworthy visual element of the project site is the mature row of eucalyptus trees which line a portion of Murrieta Road onsite and which provide the driver with a strong north/south orientation. These trees can be seen from most areas of the site and surroundings.

4.11.1.2 Light and Glare (Astronomical Night Sky)

The levels of lighting at night in the Perris Valley are generally quite low. Existing sources of night illumination include the usual street and freeway lights, commercial area lights, other structure lighting and vehicle lights. This kind of lighting is clustered within communities and along transportation corridors, with virtually no lighting apparent in outlying areas. There are no significant existing sources of light on the project site.

The project site is located within about 35 miles of the Mount Palomar Observatory. The observatory is operated by California Institute of Technology, which conducts important astronomic and astrophysical research from the facility. The "glare" from night illumination of communities in San Diego County and western Riverside County is a form of light pollution that, according to the observatory, has a serious and adverse effect on the scientific research programs being conducted at the facility.

Riverside County has adopted ordinance No. 655 which regulates light pollution and is applicable to areas within a 45-mile radius of the observatory. In general, the ordinance calls for use of low pressure sodium vapor lamps for exterior lighting and limits use of types of lamps with an output above 4050 lumens. The City of Perris has not adopted this ordinance.

4.11.2 Environmental Impacts

4.11.2.1 Visual Resources

The project site will be extensively altered by the implementation of the Green Valley Specific Plan. Consequently, the appearance of the site as well as the views of and from the site will change significantly. The views of the site will change from the present relatively open views of large acreages devoted to agriculture, to a limited view of development forms associated with residential and commercial development. There will be substantial greenery in the development which will tend to soften the structural shapes that will be constructed on the site.

Views from the site will be more restricted as well. The provision of structures up to two stories in height and the extensive landscaping will tend to limit views to internal areas of the site.

Project properties bordering the wastewater facility site will have unappealing views of the treatment plant structures. These structures could be expanded in the future to encompass nearly the entire treatment plant parcel. The impact on aesthetics is considered significant.

The project site will be highly visible from I-215. The project will continue the trend of urbanization which is readily apparent in the Perris Valley.

From the above, the proposed project will significantly change the existing visual character of the site and general area. The specific plan for Green Valley contains extensive development standards for community design that will improve and enhance the aesthetic features and appearance of the development. Though the loss of open agricultural vistas and views is considered an adverse impact of the project, the proposed development standards (including the landscaping plan) will limit the impact to the level of adverse but not significant.

4.11.2.2 Light and Glare (Astronomical Night Sky)

The proposed project will add significant sources of night lighting to the environment. It is expected that project lighting requirements will include both decorative and functional aspects. Several components of the Green Valley Specific Plan will operate at night such as the some commercial uses and the sports complex. High intensity lighting, in excess of the 4050 lumens per lamp criteria in light control ordinance No. 655., may be required at the sports complex. Lighting for security will be provided as well.

The impact of project-related night lighting on Mount Palomar Observatory is considered adverse, though significance is dependent upon lighting design and compliance with other measures to reduce light pollution (as specified in Riverside County ordinance No. 655).

The area immediately surrounding the project site is sparsely developed and populated and no significant impacts from light and glare on these surrounding areas is anticipated.

4.11.2.3 General Plan Policy Analysis

The City of Perris general plan includes community design goals and objectives which are applicable to all new projects. The proposed project contains development standards which specifically address the general plan standards and are consistent with them as discussed below.

1. **Standard:** A high quality of aesthetic design should be encouraged in the development of the City's residential, commercial and industrial areas. Effective landscaping treatment, including the planting of street trees, should be required as a part of all new developments. In commercial

districts, the use of landscaping in parking areas should be implemented in order to soften the visual impact of paved areas, and to provide an attractive environment for shopping. Landscaping in industrial areas will contribute to an industrial "park" setting, and the use of plant materials can serve as an effective barrier to unsightly outdoor activities, as well as shielding neighboring land use from excessive noise impacts.

Application: Development standard, design standards, and a unified landscaping plan are utilized in the Green Valley Specific plan to ensure a high quality of aesthetic design. A plant palette has been established, and a parkway design has been created for the major streetscapes. Specific spacing of trees and landscaping materials in all parking areas has been stipulated, in excess of that established in the City of Perris Zoning Ordinance. Strict landscape requirements have been established in the industrial park areas to ensure a high level of aesthetic quality.

2. Standard: The City should adopt a revised Sign Ordinance that includes standards for uniform control of all on-site and building advertising and identification signs.

Application: The development standards established for each planning area within the Green Valley Specific Plan, include specific sign regulations indicating the types, size, spacing, quantity, color, lighting, and materials allowed for advertising and directional structures within each land use. In lieu of these requirements, a Comprehensive Planned Sign Program may be submitted for public hearing consideration by the City of Perris Planning Commission.

4.11.3 Mitigation Measures

Site Design Elements

The Green Valley Specific Plan includes extensive consideration of community design elements. Aesthetic impacts of the proposed project are largely mitigated by the proposed landscape plan and tentative site development standards established for the specific plan. The landscape plan has been developed to provide project identity and cohesiveness throughout the development, visually soften the hardscape and urban core environment, and enhance unique features of the project.

Landscaping will be used to create screens and buffers, particularly for such project elements as parking structures, parking lots and storage areas. The landscape treatments and site design elements will create pleasing environments to replace the views lost as a result of the overall development.

Extensive landscaping will be required along the eastern border of the site to mitigate views of wastewater treatment facilities. A 60 foot heavily landscaped area is recommended. Extensive landscaping inconjunction with berms or walls in an expanded buffer area along the site boundary would substantially reduce the adverse impact on the projects from proximity to wastewater facilities.

Light and Glare Mitigation

Significant adverse impact on Palomar Observatory operations can be avoided by incorporating lighting control measures similar or equivalent to those contained in the Riverside County Ordinance No.655. In general, the ordinance requires;

- using the least amount of lighting needed at each installation,
- shielding of lights to prevent direct upward illumination, or turning off lights when they are not needed,
- establishing an eleven o'clock lighting curfew for some classes of lighting, and ,
- Use of low pressure sodium vapor lamps for street illumination.

The City of Perris has not adopted this ordinance. It is suggested that the City incorporate these provisions as a development standard for the project, except for street lighting which is contrary to the City's present standard.

4.11.4 Significant Unavoidable Adverse Impacts

The extensive landscape and aesthetic treatments and development standards detailed in the specific plan will be incorporated with the project design. These measures will limit the magnitude of the impact to the level of adverse but not significant.

The resultant impact of light pollution after mitigation is adverse but not significant.

4.12 PUBLIC FACILITIES AND SERVICES

4.12.1 Police Protection

4.12.1.1 Existing Conditions

The project site is currently within the jurisdiction of the City of Perris Police Department. Prior to annexation, the site was served by the Riverside County Sheriffs Department. Due to lack of population on the site, police calls to the area are infrequent.

4.12.1.2 Environmental Impacts

The Police Department staff have indicated that the proposed project will create a need for 18 additional sworn officers at the time of full buildout. This number of officers has been computed on the basis of approximately 1.5 sworn officers per 1,000 population. This ratio is a proposed City standard which averages police protection needs for all land uses on the basis of citywide population; the actual standard may be revised through the general plan update and accompanying public services element which are under preparation. The 18 additional officers will be sufficient to cover both police protection and the animal control function within the Police Department. Such police protection will meet all the needs of Green Valley, including residential, commercial and industrial land uses and will be able to comply with the general plan policy of a 5 minute response to emergency calls.

In addition, an increase in patrol officers will require increased expenditures for administrative personnel as well as police equipment and facilities.

4.12.1.3 Mitigation Measures

The increased need for police officers, personnel and equipment is expected to be provided through expenditures from the City General Fund. According to the fiscal analysis contained in Section 4.13 of this EIR, the proposed project will generate sufficient revenues to cover costs of police protection. This mitigates any adverse impact of the project's demand for additional police services.

4.12.1.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts will occur.

4.12.2 Fire Protection

4.12.2.1 Existing Conditions

The City presently sub-contracts to the Riverside County Fire Protection District for personnel to man city fire stations. The provision of adequate fire protection equipment and facilities are solely the responsibility of the City of Perris. The City of Perris is currently considering whether to continue to present fire protection arrangement, perhaps taking over operation of fire facilities and establish a City Fire Department. The City is having a special fire protection plan prepared which will be available later in 1989 and will recommend an organization, establish required levels of service and locations of future fire stations. According to the City's Planning and Community Development Director, the city is leaning toward continuing the present fire services arrangement, but must first adopt the County's building standards with respect to fire protection.

The closest fire station to the project site is Riverside County Fire Station #1 located in Perris at 210 West San Jacinto. This station is about 2 miles from the project site. This station is staffed by one man 24 hours per day and supplemented by Paid-Call volunteers. Two other fire stations are located in the general but none are within the City of Perris. Stations are currently planned for near the intersection of Placentia and Redlands Avenue and for another site in the downtown area.

4.12.2.2 Environmental Impacts

Implementation of the proposed project will create additional demands for fire protection services. General plan policies stipulate that an adequate response time to the project site should not exceed five minutes. The existing fire station in downtown Perris is about two miles from the site and equipment should be able to respond within the stipulated time frame. However, the extent of development proposed as well as other projects in the area will significantly strain existing services.

Until the Fire Protection Plan is prepared, fire protection requirements for this project can be based upon typical county standards and discussions with District officials. According to district officials, a two-engine fire station is required for each 4,000 residential units or their commercial/industrial equivalent. A commercial/industrial equivalent to residential unit is computed on the basis of 1,667 square feet of building space. Considering this standard, the proposed project would require 1.1 two-engine fire station based on residential units and 0.4 fire station based on commercial/industrial acreage. Thus, the total equipment warranted by considering county standards is one new 2-engine station.

No sites for new fire facilities are proposed within the Green Valley site.

General Plan Policy Analysis

Relative to police and fire service, the general plan includes the following standards;

1. **Standard:** All new developments should be located within an adequate response distance for police, fire and emergency services. Response time should not exceed five minutes for Industrial, Commercial and Low to High Density land use categories.

   Application: Green Valley complies with this criteria.

4.12.2.3 Mitigation Measures

A site for a fire station which is acceptable to the planning director and fire department shall be dedicated within either planning area 29, 7 or 18. If the site is within planning area 18, a reconfiguration of the area must occur to allow adequate distances from intersections. A station should be operational prior to the 1000 dwelling unit being occupied.

Prior to the issuance of building permits, the applicant shall provide fire protection fees in accordance with the recommendations of the adopted public safety study.

It is suggested that the applicant use County fire protection requirements for designing structural fire protection features within the development.

Eastern Municipal Water District has indicated that there is an adequate supply of water and pressure to meet fire flow requirements. All water mains and hydrants will be provided to specifications of the City of Perris Ordinance, subject to approval of the Riverside County Fire Department.

Specific fire water protection needs of commercial developments will be assessed on a case-by-case basis when the type of business is known. However, the specific plan will incorporate County fire protection policies to maximize internal fire safety including use of fire retardant building materials, specification of critical hydrant spacing, and requirements for use of fire sprinkler systems. All buildings will be constructed with fire retardant roofing materials.

Additional project fire protection requirements to be implemented are contained in the Insurance Services Office Fire Suppression Schedule.

4.12.2.4 Significant Unavoidable Adverse Impacts

Impacts are reduced to adverse but not significant by the measures described above.

4.12.3 Water and Sewer

4.12.3.1 Environmental Setting

Water

Green Valley is within the Eastern Municipal Water District (EMWD). EMWD currently obtains the majority of its water supply from groundwater sources and from the Metropolitan Water District of Southern California (MWDSC). EMWD in concert with MWDSC is constantly examining the water supply picture to ensure that adequate water supplies are available to meet long-term demands. Water supply is currently available to the site from the following points (see also Figure 3-10 in Section 3):

Murrieta Road	33-inch line
Ethanac Road	18-inch line
Goetz Road (southern portion)	16-inch line
Goetz Road (northern portion)	12-inch line
Watson Road	12-inch line

In addition, a booster station currently exists just west of Murrieta Road in the southern portion of the project.

EMWD is currently in the process of preparing a master water plan. It is expected that this plan will take approximately one year from the date of this writing to prepare and will contain various regional strategies to increase water supplies.

Wastewater

Eastern Municipal Water District (EMWD) is the agency responsible for providing sewer service to the project area. The project site is located just south and west of EMWD's Perris Valley Treatment

Facility. The treatment facility presently has a capacity of about 1 million gallons per day. The plant is undergoing a 1 MGD expansion. All of the facility's capacity is committed.

According to district sources, the growth that is occurring in the plant's tributary area is extremely rapid. If regional projections are achieved, the treatment plant may be expanded to as much as 50 or 100 MGD. Strategies for expanding the Perris plant or other plants in the area are being studied as part of the update of the Regional Wastewater Facilities Master Plan.

The existing wastewater facility provides secondary treatment by clarification and sludge digestion. Effluent from the facility does not currently meet Title 22 requirements for beneficial reuse. It is anticipated that future expansions will incorporate tertiary levels of treatment so that water reuse may be accomplished.

A 24-inch diameter sewerline is located in Case Road adjacent to the northern boundary of the project site, and an 18-inch diameter sewerline runs through the site in Evans Road. These lines are shown in Figure 3-11 in Section 3.

4.12.3.2 Environmental Impacts

Water

The Green Valley community will connect with the existing waterlines at the project site. An internal loop system of 16-inch waterlines is proposed for the majority of the site. The industrial area in the northwest portion of the site will be served via an 18-inch diameter line. Most of the onsite pipelines will be constructed in proposed streets, therefore, construction impacts are expected to be minimal and insignificant.

At ultimate buildout, a 10 million-gallon reservoir will be required to meet the needs of the project. A site for this reservoir has not been designated. However, construction of this facility including any pipelines to and from it, could result in adverse impacts.

The project water system has been designed to meet the domestic flow demand of the proposed project as well as fire flow requirements established by Riverside County Fire Department. Green Valley, at full buildout, is expected to have average day water demands of approximately 5.0 million gallons. Peak day demand is estimated to be approximately 8.8 million gallons. A fire flow of 5,000 gallon per minute with a residual pressure of 30 pounds is projected. Water demand is based on a consumption rate of 200 gallons per capita per day for residential land uses and 3600 gallons per acre per day for schools, commercial and industrial uses.

The project will rely on imported sources as the primary supply of water for the development. In that the project area, and the whole of southern California is water short and dependent upon imported supplies, the increased demand for water is considered an adverse impact of the project.

The water system has been designed to comply with existing system requirements of EMWD and the City of Perris. Upon completion of the EMWD master water plan, modifications to the proposed project's water system may be necessary.

Wastewater

The quantity of wastewater expected from the Green Valley project at buildout will be approximately 2.1 million gallons per day. The sewage generation rate is based on 100 gallons per capita per day for residential uses and 3000 gallons per acre per day for commercial and industrial facilities. New facilities to serve the project will include:

- A lift station to a force main which will serve the industrial area northwest of the San Jacinto Channel.
- A lift station to a force main for areas in the southwest portion of Green Valley.
- A system of 8-inch, 10-inch, 12-inch, 15-inch, 21-inch and 24-inch diameter sewerlines throughout the Green Valley project.

Presently, wastewater treatment capacity is not available to serve the development.

General Plan Policy Analysis

The following standards relate to infrastructure and public services in the City's general plan.

1. **Standard:** All proposed land divisions shall have available to each recorded lot a potable water supply and adequate provision for sewage disposal prior to the approval of occupancy for any structures constructed thereon.

   Application: The Green Valley Water and Sewer Plans will provide potable water and sewage disposal for the entire project. The water and sewer systems for each phase of development will be fully operational prior to occupancy of the corresponding phase. The EMWD will certify that capacity is available prior to occupancy of the various phases of the project.

2. Standard: The capacity of existing water storage facilities to provide an adequate reserve supply and pressure for fire fighting needs shall be taken into consideration when reviewing development proposals.

Application: The Green Valley Water Plan provides for a fire flow of 5,000 gallons per minute, with a residual pressure of 30 pounds. It is sufficient to provide the peak day demand of approximately 9.64 million gallons for the development. EMWD will be the provider.

4.12.3.3 Mitigation Measures

Water and sewage disposal facilities shall be installed in accordance with the requirements and specifications of the City of Perris, Eastern Municipal Water District, Riverside County Department of Health and Regional Water Quality Control Board. Such requirements will be applied at the subdivision or plot plan stage.

The applicant shall cooperate with EMWD in the acquisition of a water storage tank. Agreements between the applicant and EMWD for provision of the storage tank shall be executed prior to recordation of any tentative tract map within the specific plan area. Prior to construction of the tank, environmental review shall be conducted to determine the possibility of impacts resulting from such construction and operation.

The applicant shall submit to EMWD a project master plan of water facilities and sewer facilities. EMWD shall provide written approval of the plans. Any required revisions to the plans shall be made and approved prior to approval of any tract map.

Prior to recordation approval of any final tract map, the applicant shall execute agreements with EMWD for mechanisms to finance the additional 2.5 MGD of wastewater treatment capacity needed by the project.

The capital cost of new water and sewer pipelines, pump stations, reservoirs and treatment works will be borne by the applicant and dedicated to the Eastern Municipal Water District after construction and certification.

The Green Valley project site lies within an assessment district of the Eastern Municipal Water District with respect to water and sewer facilities and is subject to the payment of connection and other fees to pay for the provision of water and sewer service. Project water and sewer fees will be established by the EMWD.

It is suggested that a water conservation goal for the project be established which would include a range of water savings devices and systems, landscape design and use of reclaimed water. A suggested goal is for the project to achieve a 15 percent reduction in water use from the stated demand. Methods of achieving this goal should include the following;

o The landscape plans for the proposed project should emphasize a planting scheme that minimizes water irrigation requirements. It is suggested that irrigation requirements be reduced by having at least one third of the plant palette call for use of drought-resistant, native vegetation. Xeriscape techniques should also be used in design of the final landscape scheme for the development.

o Efficient landscape irrigation systems should be developed, minimizing excess runoff and the watering of trees and sidewalks.

o Reclaimed wastewater will be used for the maintenance of all common open space landscaped areas within the project area as called for in the Specific Plan. Appropriate facilities will be installed to convey the reclaimed wastewater to areas within the site for irrigation. It is suggested that reclaimed water also be considered for sanitary uses within commercial and industrial buildings as well as schools.

o Additionally, the State of California Department of Water Resources imposes the following requirements for water-efficient plumbing fixtures in structures:

- Health and Safety Code, Section 17921.3, requires low-flush toilets and urinals.
- Title 20, California Administrative Code, Section 1604(f), establishes efficiency standards that give the maximum flow rate of all new showerheads, lavatory faucets, and sink faucets.
- Title 20, California Administrative Code, Section 1606(b), prohibits the sale of fixtures that do not comply with regulations.

o Title 24, California Administrative Code, Section 2-5307(b), prohibits the installation of fixtures unless the manufacturer has certified to the CEC compliance with the flow rate standards.

o Title 24, California Administrative Code, Sections 2-5352(i) and (j) address pipe insulation requirements. Insulation of water-heating systems is also required.

4.12.3.4 Significant Unavoidable Adverse Impacts

The impacts of the project on water and sewer demands and services are mitigated by the various fees to be levied as well as the mitigation measures described above. The residual impact after mitigation is adverse but not significant.

4.12.4 Public Schools

4.12.4.1 Environmental Setting

The Green Valley project site is located in the Perris Union High School District. The district educates grades 7 through 12. The site is split between two elementary school districts: Perris Elementary on the northwestern portion of the site (north of the extension of Mapes Road and west of Murrieta Road) and Romoland Elementary for the remainder of the site. The school district boundaries relative to the elementary schools are shown in Figure 4-15.

In general, elementary schools in the districts operate over or near capacity. There are two middle schools (grades 7 and 8) in the Perris Union High School District. The Perris Valley Middle School has a capacity of 959 students with 100 percent classroom utilization. Pinacate Middle School has 725 students with 100 percent classroom utilization. Total middle school population is 1684 students.

The Perris Union High School (Grades 9-12) currently has an enrollment of about 2,183 students which is above the capacity of the school. Relocatable classrooms are currently used to meet the needs of enrollment.

4.12.4.2 Environmental Impacts

The proposed Green Valley project will generate a significant number of new students. At buildout, approximately 3991 students will reside in the development, consisting of 2,526 K-6 students, 631 7-8 students and 834 9-12 students.

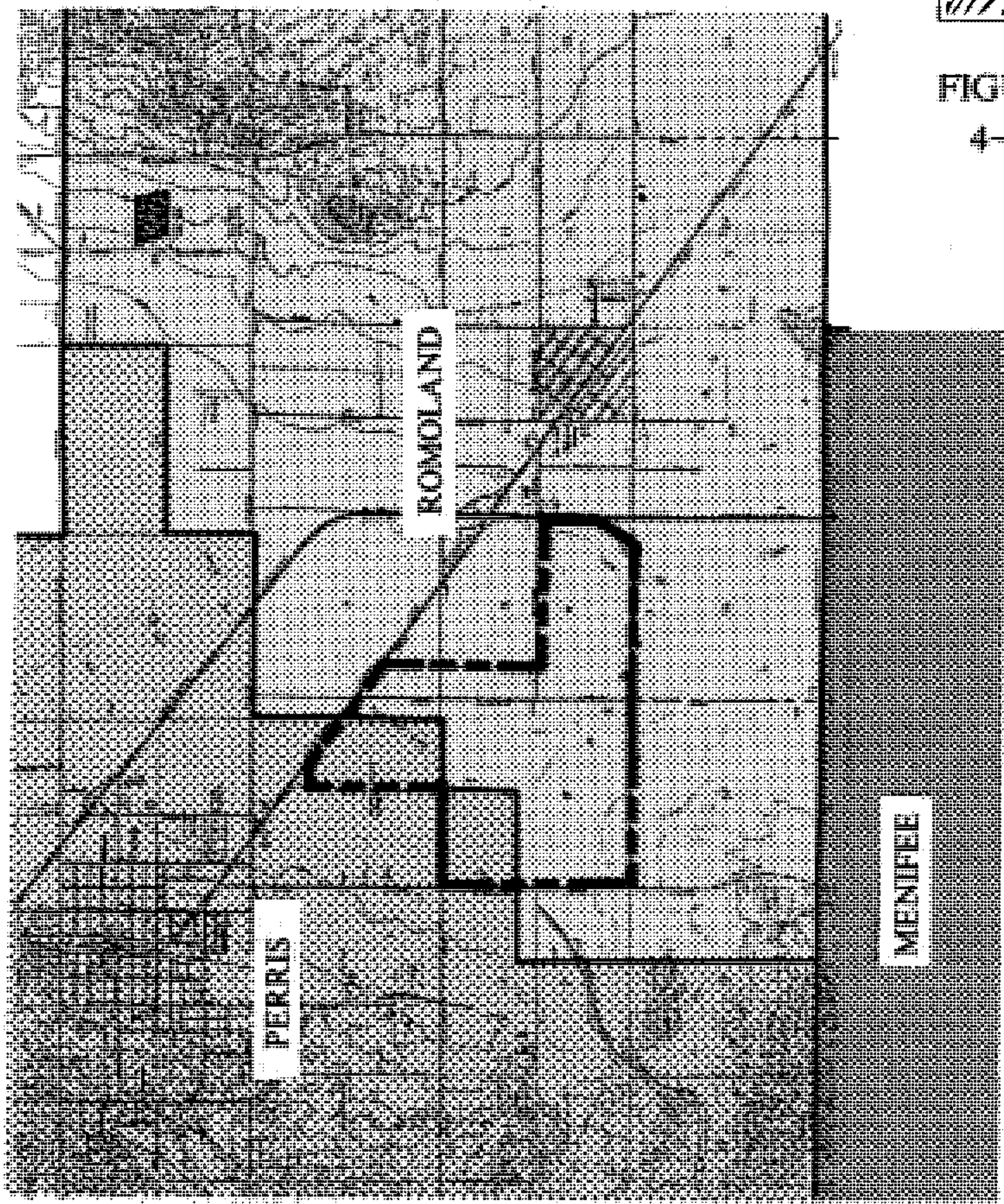
The student generation rates are equivalent to the enrollment level in approximately 3.6 elementary schools, 0.5 middle school, and 0.5 high school.

The Green Valley Specific Plan calls for the construction of four elementary schools, three onsite and one at an undetermined offsite location. One school will be located in the Perris Elementary School District, while the other three will be part of the Romoland Elementary School District. The provision of these school sites

GREEN VALLEY

FIGURE 4-15

SCHOOL DISTRICT MAP



will avoid significant impacts on existing elementary schools, which generally operate above or near capacity.

However, middle and high schools will be significantly and adversely impacted by student generation rates of the proposed development.

General Plan Policy Analysis

1. Standard: Adequate enrollment capacity in the local school districts that is sufficient to accommodate the projected residents of a proposed development should be demonstrated prior to project approval. Where such capacity does not exist at the present time, the developer shall offer appropriate mitigating measures, such as dedicating land for school purposes, or providing temporary school buildings.

Application: The Green Valley Specific Plan includes 24 acres of schools in compliance with local and state plans, policies and programs. These sites are proposed in quantity, location and configuration required by the respective agencies. The development will additionally enter into specific agreements with the districts to provide school facilities and will pay school fees which will go toward construction of necessary classroom facilities and will.

4.12.4.3 Mitigation Measures

It is anticipated that the provision of new school sites as proposed will reduce student generation impacts on the affected school districts. However, the aspect of construction funding is not mitigated by the providing school sites. Therefore, an agreement acceptable to the City of Perris must be executed between the developer and the school district for adequate provision of schools (land and funding for the construction of buildings and facilities) prior to the recordation of any final maps. If any school site is determined to be unacceptable to a serving school district, the uses proposed shall be reviewed and a revised proposal submitted.

The applicant will provide mitigation in the form of school impaction fees either in conjunction with or separate from the school facilities agreements. School impaction fees may not exceed the state mandated limit of $1.56 per square foot of building area in residential areas and $0.26 per square foot of commercial building area.

The project applicant will cooperate with any school districts to advise them of expected student loading at the time of tentative tract map submittal,and will work with the districts to insure that

school facilities are available to serve the project and the community.

School sites within the Green Valley project are subject to Division of Aeronautics and Department of Education review due to proximity to the active Perris Airport.

4.12.4.4 Significant Unavoidable Adverse Impacts

With implementation of the above mitigation measures, the significant environmental impacts are reduced to the level of adverse but not significant.

4.12.5 Parks and Recreation

4.12.5.1 Environmental Setting

The project site is located immediately south and east of the Perris Valley Airport, a recreational parachuting, ballooning, skydiving, glider and ultra-light center for the region. Other recreational opportunities in the City include the 650-acre Roy Kabian Regional Park, a 3-acre firing range, the 5-acre Bob Long Memorial Park, the 3.15-acre Russel Stewert Park, and the 2.5-acre Banta Beatty Park. Immediately north of the City is the Lake Perris State Recreational Area, and 8,200-acre park facility providing boating, swimming, fishing, hunting, hiking, bicycling, horseback riding, picnicking, rock climbing and overnight camping.

In 1987, the estimated population of the City of Perris was 29,156. The state standard for active parks (the Quimby Act) is three acres of parkland per 1,000 population. Applying this standard to the City of Perris would indicate a need for 87.47 acres of parkland to serve its citizens. With the inclusion of the 650-acre Roy Kabian Regional Park the citizens of Perris have access to a total of 651 acres of parkland. However, only eleven acres of this parkland is City-operated. The City is especially in need of more ballfields and soccer fields. At the present time there is only one ball park with two diamonds in the City.

4.12.5.2 Environmental Impacts

The additional 11,740 residents attracted to the City by the proposed Green Valley project will generate additional demand for local and regional recreational facilities in the Perris Valley. Considering the Quimby Act standards, 35.1 acres of parks would be required to support the Green Valley development plan. The Green Valley plan provides a total dedication of 51.1 acres of active parkland, or 26 percent more than required to support its own residents. Additionally, 34 acres of open space, suitable for recreational activities are provided in the drainage channels/greenbelts.

The parkland provided by the proposed project will include four soccer/multi-purpose fields, four ball fields (including one competition baseball field), three multipurpose courts, three tennis courts, two tot lots, plus numerous picnic areas (covered and open), recreational trails, concession stands and information centers, par courses, and other recreational facilities.

Since the project will provide park acreage in excess of Quimby Act requirements and City requirements, there will be no significant adverse impact on parks or recreation resources.

Due to the close proximity of the Lake Perris State Recreation Area, it is likely that project residents will use this facility frequently. The average Riverside County resident visits Lake Perris 2.5 times per year. The Green Valley population of 11,704 projected at final buildout would generate 29,260 additional visits to Lake Perris per year. This figure represents an increase of approximately 1.5% over the present estimated 2,000,000 visitors per year. These additional Lake Perris visitors will increase demand and competition for the finite recreational resources of Lake Perris, as well as increase traffic congestion at park entrances. This increase will contribute to the cumulative demand for recreational resources placed by the numerous residential developments in Perris and Moreno Valley.

General Plan Policy Analysis

1. **Standard:** The City should encourage to the maximum extent feasible the provision of adequate park lands and recreational facilities to keep pace with the demand created by new residential development as the City's population grows. Larger scale multi-family and single family projects should provide such land and facilities within the total project design as much as possible.

Application: The Green Valley Specific Plan includes 48 acres of dedicated public parkland, and an additional 34 acres of recreational open space. Such provisions are in excess of that required by the Quimby Act.

2. **Standard:** Means should be found by which open space and natural areas within the City can be linked in order to form a system of recreational trails as well as provide a scenic backdrop to the City's physical form of projected urban growth.

Application: The Green Valley Specific Plan uses the 96 acres of open space formed by the San Jacinto River and Romoland drainage channels to provide a system of recreational trails linking each neighborhood of Green Valley with the regional trail system, by means of the trailhead located in the community sports complex.

3. Standard: The City shall foster the development of a system of community and regional parks and recreational facilities.

Application: The Green Valley Specific Plan includes 46 acres of public parks, ranging in size from three acres to 28 acres. The smaller local parks are intended for improvement as general-purpose park and playground facilities for the broad community interest and use. The largest park, community sports complex, is intended to contain, as a minimum, four soccer fields, three ball fields, a concession facility, and the trailhead which connects Green Valley with the regional trail system. Each of these parks is connected via a local trail system, and several of the parks take advantage of adjacent flood control swales for additional recreational space.

4.12.5.3 Mitigation Measures

No significant adverse impacts were predicted, therefore, no mitigation measures are required.

4.12.5.4 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts will occur.

4.12.6 Utilities and Energy Use

4.12.6.1 Environmental Setting

Electricity is provide by the Southern California Edison Company (SCE). Points of connection are along Ethanac Road, between Murrieta and Case Roads, and from the line running from Case to Murrieta Road north of Ethanac.

The project site is within the service area of the Southern California Gas Company (SCG). An eight-inch gas line runs for a short distance along the southern boundary of the property from Goetz Road toward the east. Other possible points of connection are located near Ethanac between Murrieta and Case Roads, and at Case Road, near the point where it turns due south.

Telephone service to the project site is provided by General Telephone Company.

4.12.6.2 Environmental Impacts

Project implementation will result in an increased demand for natural gas and electricity. Based on an average monthly consumption of 6,665 cubic feet of natural gas per month per dwelling unit, the 4,210 dwelling units which make up the residential component of Green Valley will require 28,059,650 cubic feet of natural gas per month. An additional 3,397,680 cubic feet of natural gas per month would be consumed ultimately by the commercial and industrial land uses on the site.

Based upon an average annual per dwelling unit consumption of 6,081 kilowatt hours (kwh) of electricity, electrical usage for the residential component of the project would be approximately 25,601,010 kwh per year. An additional 20,725,848 kwh per year would be consumed by the commercial and industrial acreage proposed.

The project will create a need for the extension of telephone service lines throughout the project. Points of connection are along Ethanac Road, between Goetz and Murrieta.

New utility lines to be installed underground to serve the proposed project will be connected into the existing network of lines servicing the project area.

4.12.6.3 Mitigation Measures

The Southern California Gas Company and the Southern California Edison Company can provide assistance in selection of effective energy conservation techniques, as well as assistance in infrastructure construction. The use of solar energy and waste heat recovery should be encouraged wherever feasible.

New utility lines to be installed underground to serve the proposed project will be connected into the existing network of lines servicing the project.

Consideration should be given to establishing a City-wide recycling program which makes it easy for residents to separate recyclables from their garbage and dispose of the recycled items.

4.12.6.4 Significant Unavoidable Adverse Impacts

Mitigation measures reduce the impacts to the level of adverse but not significant.

4.12.7 Solid Waste

4.12.7.1 Environmental Setting

Solid waste generated in the City of Perris is collected by Perris Disposal, a private company, and is disposed of by the Mead Valley landfill. The Mead Valley landfill is expected to operate until 1999, according to the Riverside County Solid Waste Management Plan. This landfill received an average of 275 tons of solid waste per day in 1986.

4.12.7.2 Environmental Impacts

The Green Valley Specific Plan will increase the amount of solid waste generated on the project site both during construction and operation, and thus will increase service needs for waste haulers. The average solid waste generation factor for the Mead Valley Landfill service area is 10.65 pounds per capita per day. This figure is determined by taking the total waste load received at the landfill and dividing by the number of persons residing in the service area. Solid waste generation by commercial, industrial and other land uses are included as an average in the per capita figures.

Therefore, the proposed 4,210 dwelling units (11,740 estimated population) will result in about 62.5 tons per day at final buildout. This represents an increased average daily waste load at the Mead Valley Disposal site of 24 percent, thereby shortening its estimated life. Solid waste generation is considered a significant adverse impact of the project.

The Solid Waste Management Department of Riverside County is in the process of completing an updated Solid Waste Study which is expected to identify replacement sites and alternative disposal methods. This study will be completed and approved by the end of 1989.

4.12.7.3 Mitigation Measures

Solid wastes generated during project construction will be deposited in containers at the construction site and will be transported from the site by a commercial waste hauler. In accordance with local and state building requirements, no hazardous materials will be used in construction, and none will be deposited in the trash containers. It is anticipated that all wastes will be deposited in an approved sanitary landfill. Disposal of wastes will be done in accordance with all applicable local and county regulations including any requirements for recycling of wastes.

The County Solid Waste Plan includes programs to reduce the quantities of waste being sent to landfills. These programs include source reduction, separation of recoverables, composting and high technology resource recovery. The implementation of any of these programs will reduce the increase in solid waste generation associated with the proposed project, thereby extending the life of affected disposal sites.

The County is required to reduce the overall solid waste stream by 25 percent (AB 162). The County is encouraging large projects to provide storage and transfer ability for recycled material (glass, newspaper, aluminum, etc.) in separate and enlarged trash enclosures. The applicant shall provide an area within planning areas 1,2,13,29,42,43 or 44 for a local drop-off station for recycling of newspapers, glass and metal to mitigate impacts associated with solid waste disposal. The drop-off station shall be constructed pursuant to existing City of Perris Ordinance.

Trash compactors will be installed as a standard feature in new homes. Trash compactors save space in landfills by precompacting the disposal material.

4.12.7.4 Significant Unavoidable Adverse Impacts

With implementation of the above mitigation measures, the impact is considered adverse but not significant.

4.12.8 Libraries

4.12.8.1 Environmental Setting

Perris is currently served by a library facility within the city which is located at 424 South "D" Street.

Library facilities compete with many other activities for available tax dollars for continued operation and funding levels are variable.

4.12.8.2 Environmental Impacts

The proposed project will increase the area's population, and therefore, the overall demand for library facilities will increase as well. The project's contribution is considered incremental and not significant by itself.

4.12.8.3 Mitigation Measures

No mitigation measures are required.

4.12.8.4 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts will occur.

4.12.9 Health Services

4.12.9.1 Environmental Setting

Emergency medical services in the project area are provided by the Riverside County Fire Department Paramedics and several local ambulance companies.

The major emergency care facility for the project area is the Christian Hospital in the City of Perris. Other health care facilities are located in the City of Riverside. The Riverside Community Hospital and the Riverside General Hospital provide 24-hour trauma care.

4.12.9.2 Environmental Impacts

Project implementation will incrementally increase the need for medical services and facilities. Significant adverse impacts on health care facilities are not predicted since the project's contribution to the demand is considered incremental.

4.12.9.3 Mitigation Measures

Planning for new medical facilities in Riverside County is the responsibility of the County Health Services Agency. No additional mitigation is proposed.

4.12.9.4 Significant Unavoidable Adverse Impacts

Significant adverse impacts will not occur.

4.12.10 Airports

4.12.10.1 Environmental Setting

The existing conditions with respect to Perris Valley Airport have been discussed in previous sections. The project is not expected to significantly affect other county airport facilities.

4.12.10.2 Environmental Impacts

No impacts to regional airport facilities is forecast.

4.12.10.3 Mitigation Measures

No additional mitigation is proposed.

4.12.10.4 Significant Unavoidable Adverse Impact

No significant unavoidable adverse impacts will occur.

4.13 TOXIC SUBSTANCES

4.13.1 Environmental Setting

The existing conditions with respect to toxic substances on the Green Valley site are discussed in Earth Resources, Section 4.2. Four underground fuel storage tanks exist on the site.

4.13.2 Environmental Impacts

The type of industry proposed will not handle, store or utilize large quantities of hazardous wastes or toxic substances. However, even light industry can use and produce hazardous substances and related by-products in the production and manufacturing process. There is a potential hazard to the public, to workers and to the environment from the use and handling of this material. Specifically, the potential hazards include;

- Injury to people due to direct exposure.
- Contamination of soil or groundwater.

4.13.3 Mitigation Measures

- Industrial concerns within the project will be required to provide the Fire Department with a list of all hazardous materials used at the site, a description of where and how each is stored, and how each reacts to fire.
- The discharge of untreated toxic wastes into the surface water or storm drainage conveyance devices is prohibited by state and federal law.
- Proposed commercial and industrial uses which have the potential for either receiving, utilizing, creating, or storing of hazardous materials in production processes shall be required, as a condition of approval, to provide a hazardous materials plan outlining treatment, handling, transportation, and disposal of hazardous wastes.

4.13.4 Significant Unavoidable Adverse Impacts

With implementation of the proposed mitigation, the impacts are reduced to adverse but not significant.

4.14 FISCAL IMPACTS

4.14.1 Basis of Analysis

The fiscal impact conclusions contained herein are based on the, "Fiscal Analysis of the Green Valley Development Project, Perris California", prepared by the firm of Natelson, Levander and Whitney, Inc. The analysis was prepared with specific input from the City of Perris as to the scope of the analysis and establishment of several of basic study parameters. The entire fiscal report is contained in Technical Appendices, Appendix H and is briefly summarized below.

The fiscal report assumes a 10-year project buildout and all monetary values given are in 1989 constant dollars.

4.14.2 Fiscal Analysis Results

According to the fiscal report, the proposed Green Valley Specific Plan of development is expected to result in the following;

- The proposed development will increase the subject property's value on the County Assessor's roll from the current 2.0 million dollars to approximately 723 million dollars at buildout.
- Taxable sales of 146 million dollars annually are expected to be generated from the proposed developments at buildout.
- The Green Valley Specific Plan commercial and industrial developments will generate approximately 6110 new jobs.

Implementation of the proposed project will result in a positive and beneficial project jobs to housing ratio. The project will create 1.45 jobs for every household created.

The implementation of the proposed project is expected to generate a financial surplus to the City at buildout when all costs and revenues are accounted for. Table 4.14-1 summarizes the various costs and revenues considered in the study and shows the years where a surplus occurs. Accordingly, fiscal surpluses occur during the Years 1 and 2, and during Years 6 through 10 during buildout, and in all years thereafter. Deficits occur in Years 3, 4 and 5 during buildout. The deficits which occur in Years 3 and 4 ($57,000 and $134,000, respectively) could have significant adverse financial impact on the City budget during those years.

The study further indicates that at full development, a net surplus of $996,000 per year will be realized by the City of Perris.

4.14.3 Fiscal Mitigation

Significant project-related deficits are projected to occur in Years 3, 4 and 5, of project buildout. It is suggested that the Green Valley Development Agreement address this substantial deficit situation. Possible mitigation could include assessment of permit fees for units constructed during those years to offset the deficits.

TABLE 4.14-1

SUMMARY OF PROJECT CASH FLOW

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
	$000's											
ON-GOING OPERATIONS												
Revenues												
Property Tax—Secured	4,974	56	104	177	249	387	529	690	839	937	1,805	1,805
Property Tax—Unsecured	115	0	0	0	0	5	11	18	24	27	31	31
Sales & Use Tax	5,844	0	9	22	36	288	566	879	1,152	1,293	1,609	1,609
Transient Occupancy Tax	767	0	0	0	0	0	0	192	192	192	192	192
Business Licenses	122	0	0	0	0	5	10	18	25	29	34	34
Franchises	503	0	7	17	27	41	55	71	86	97	102	102
Fines & Forfeitures	42	0	1	2	2	4	5	6	7	8	8	8
Documentary Transf Tax—Resale	182	0	3	7	12	16	21	25	29	34	35	35
Motor Vehicle In Lieu	2,097	0	30	75	121	179	236	294	352	397	412	412
State Gas Tax	671	0	10	24	39	57	76	94	113	127	132	132
Cigarette Tax	134	0	2	5	8	11	15	19	22	25	26	26
Refuse Collection	50	0	1	2	3	4	6	7	8	10	10	10
Animal License Fees	33	0	0	1	2	3	4	5	6	6	7	7
Transportation Tax	0	0	0	0	0	0	0	0	0	0	0	0
Administrative Service Fees												
Other Revenues	123	0	2	4	7	10	14	17	21	23	24	24
Total Revenues	15,657	56	168	336	585	1,002	1,547	2,335	2,675	3,205	3,628	3,628
Expenditures												
Police Protection	6,637	0	96	239	382	565	748	931	1,114	1,257	1,305	1,305
Animal Control	0	0	0	0	0	0	0	0	0	0	0	0
Fire Protection	3,099	0	34	85	135	232	338	444	551	623	665	665
Street Sweeping	243	0	11	17	19	26	29	32	35	37	38	38
Near-Term Street Maintenance	268	0	0	0	0	21	33	38	53	57	65	69
Longer-Term Street Maintenance	146	0	0	0	0	0	0	21	33	38	53	57
Refuse Collection	0	0	0	0	0	0	0	0	0	0	0	0
Flood Control Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Park Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Recreation Services	547	0	8	20	32	47	62	77	92	104	108	108
Senior Citizens Services	216	0	3	8	12	18	24	30	36	41	42	42
Administration	1,673	0	23	55	87	136	184	236	287	324	341	343
Total Expenditures	12,829	0	174	423	668	1,046	1,411	1,809	2,201	2,481	2,617	2,628
Net Surplus/(Deficit)	2,827	56	(6)	(87)	(163)	(44)	136	525	675	724	1,011	1,000
—Cumulative		56	50	(37)	(200)	(244)	(108)	418	1,092	1,816	2,827	3,828

4.14.3 Fiscal Mitigation

Significant project-related deficits are projected to occur in Years 3, 4 and 5, of project buildout. It is suggested that the Green Valley Development Agreement address this substantial deficit situation. Possible mitigation could include assessment of permit fees for units constructed during those years to offset the deficits.

TABLE 4.14-1, cont.

SUMMARY OF PROJECT CASH FLOW

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
	$000's											
ONE-TIME ITEMS												
Revenues												
Property Transfer Tax—New	246	0	21	31	31	31	31	31	31	31	10	0
Development Control Fees	3,613	0	186	280	280	524	538	609	564	377	256	0
Fire Protection Fees	2,001	0	182	152	152	291	296	341	323	218	127	0
Park Fees	0	0	0	0	0	0	0	0	0	0	0	0
Master Plan Drainage Fees	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	5,860	0	388	463	463	845	865	980	917	626	393	0
Expenditures												
Deve.opment Control	3,142	0	162	243	243	455	468	529	490	328	222	0
Fire Protection Facilities	1,740	0	88	132	132	253	257	296	281	189	110	0
Other Direct	0	0	0	0	0	0	0	0	0	0	0	0
Administration	732	0	38	56	56	106	109	124	116	78	50	0
Total Expenditures	5,614	0	288	432	432	815	834	949	887	595	382	0
Net Surplus/(Deficit)	246	0	21	31	31	31	31	31	31	31	10	0
—Cumulative		0	21	51	82	113	144	174	205	236	246	246
ON-GOING & ONE-TIME ITEMS COMBINED												
Revenues	21,516	56	476	799	967	1,848	2,412	3,315	3,793	3,831	4,020	3,628
Expenditures	18,443	0	462	855	1,100	1,861	2,244	2,759	3,087	3,076	2,999	2,628
Net Surplus/(Deficit)	3,074	56	15	(56)	(132)	(13)	167	556	705	755	1,021	1,000
—Cumulative		56	70	14	(118)	(131)	36	592	1,297	2,052	3,074	4,074

SECTION 5
MANDATORY CEQA TOPICS

5.1 CUMULATIVE IMPACT ANALYSIS

5.1.1 Description of Cumulative Projects

This analysis considers in a general way, the impacts that will occur from the proposed project inconjunction with the large amount of development which is either under construction but not occupied, approved by not constructed, or in the process of obtaining approval. Emphasis has been placed on identifying large scale projects since it is difficult to forecast the smaller in-fill activities. The City of Perris is in a rapidly growing area and a significant number of projects are planned or approved both inside the present City limits and outside in the County area. It is also noted that the impacts discussed herein are additive to the existing levels of service provided within the community.

City services and utilities will only be affected by projects inside the City limits. No assumptions will be made concerning annexations unless such is actually proposed. Projects outside the City limits will affect all other resources.

Figure 5-1 illustrates the location of major projects anticipated to occur within the Perris area in the foreseeable future. The proposed project site is shown as well. Exclusive of the proposed project, a total of 23,070 dwelling units and 13,300,000 square feet of combined commercial and industrial development is proposed. With the proposed project, the cumulative totals would be about 27,532 dwellings units and 15,975,000 square feet of combined commercial and industrial development. It should be noted that the past and existing development levels necessary for this cumulative analysis are reflected in the existing conditions sections for the various resource topics evaluated in Section 4 of this EIR.

Based on building industry trends, it can be assumed that 80 percent of this development will actually be built, and it is further assumed that total buildout will require 12 years. This cumulative analysis, therefore, will be based on a Year 2000 development level of 18,354 dwelling units, and 6,656,250 square feet of combined commercial and industrial development.

5.1.2 Impacts By Resource Issue

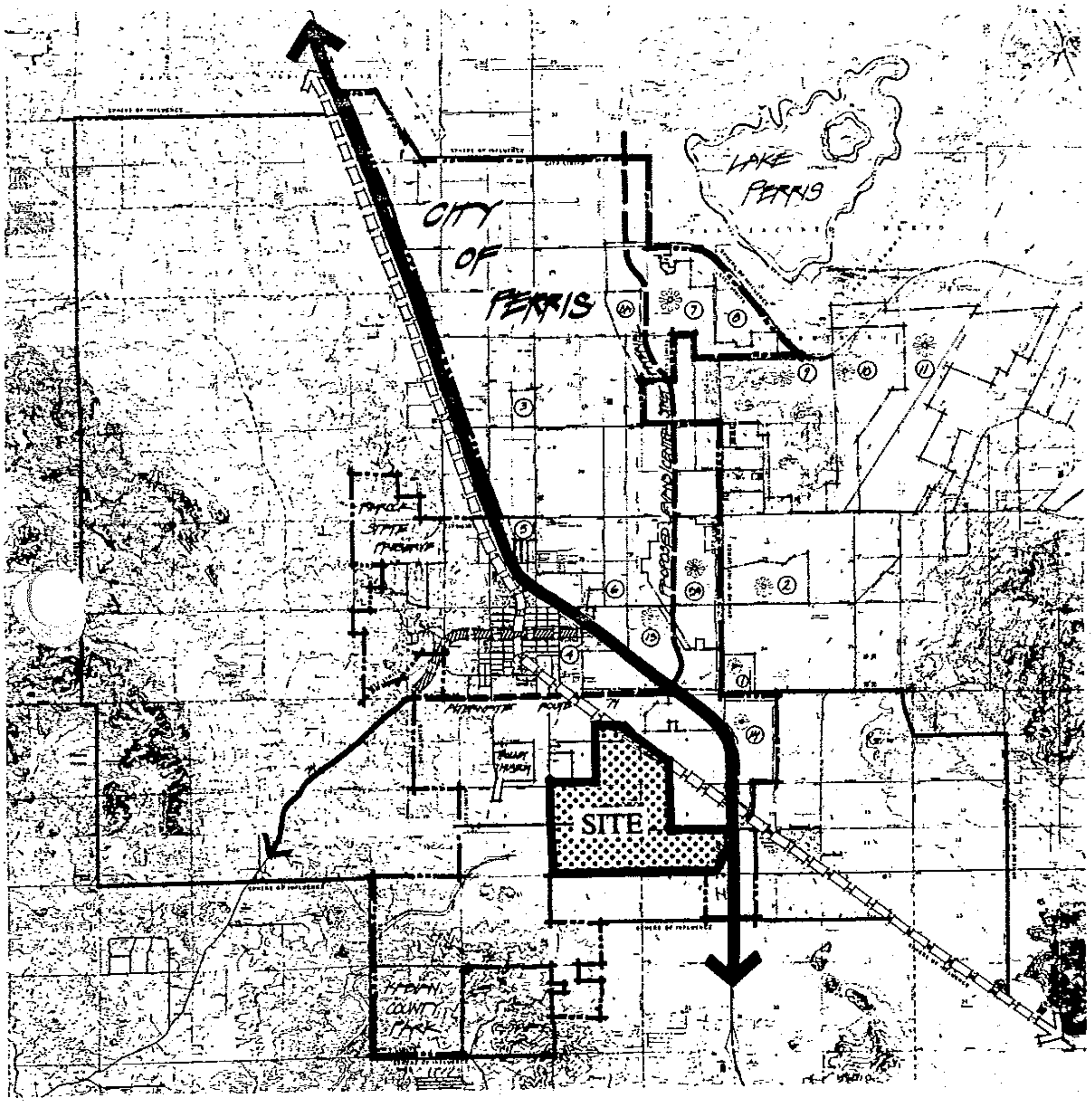
5.1.2.1 Seismic Safety, Slopes and Erosion

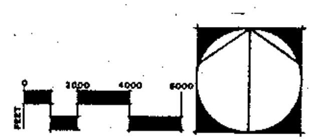
Impacts resulting from grading for construction of these 18,354 dwelling units and the development of commercial areas will alter

GREEN VALLEY

REGIONAL DEVELOPMENT MAP

FIGURE 5-1





the topography of the sites. Cut and fill operations will be necessary to prepare street grades, lots and pads for development. A large portion of the Perris Valley, especially in the immediate vicinity of the project site, is composed of relatively flat, agricultural land which will not require extensive cut and fill operations and which minimizes the impact upon landform in the immediate area. However, developments in the northeastern area adjacent to the City limits are hilly and grading protections on slopes should be implemented. Grading activities also increase the potential for erosion of soils from the area. Limiting soil erosion has water quality benefits as well as facilitates the operation and maintenance of regional flood control facilities.

Due to the presence of regional faults, the potential exists in all areas of Perris for groundshaking associated with a seismic episode.

As mitigation, the City could develop a model grading ordinance as a means of protecting the area's valuable soil resources. Other landform and seismic impacts are mitigated on a site specific basis through the requirement for geotechnical and soils investigations during project design and construction.

5.1.2.2 Hydrology and Water Quality

Drainage patterns and the quality, velocity and composition of runoff will be altered by large scale areas planned for construction. Developments will create impervious surfaces (such as roadways, driveways, parking lots, etc.) which can reduce groundwater basin recharge. Runoff entering streams will contain minor amounts of pollutants typical of urban use, thereby impacting the downstream water quality. Downstream uses which are sensitive to water quality impacts include the San Jacinto River, Canyon Lake and Lake Elsinore.

A large portion of the Perris Valley is subject to flooding and/or is within inundation areas of a dam failure at Lake Perris. Mitigation of these impacts includes continuation of the existing drainage improvement program for the Perris Valley Storm Drain and the San Jacinto River and the continued collection of assessment district fees to implement regional drainage improvements. It is anticipated that storm drain systems of individual projects will be constructed in accordance with the City of Perris and the RCFCD requirements in order to mitigate impacts on local drainage patterns.

5.1.2.3 Climate and Air Quality

Construction of all projects will cumulatively impact air quality in the vicinity. Air quality will be temporarily degraded during construction activities which occur separately or simultaneously. However, the greatest cumulative impact on the quality of the regional air cell will be incremental addition of pollutants from increased traffic in the area and increased consumption of energy by inhabitants of the various new projects.

The City of Perris should take an active role in implementing regional transportation strategies contained in the AQMP aimed at reducing vehicle travel. These should be implemented by incorporation in the City's Circulation Element of the General Plan.

5.1.2.4 Noise

Noise during construction activities will impact noise conditions in the region on a short-term basis. It is not expected that cumulative construction noise impact would be significant since proposed projects are physically separate or can be phased so they do not occur simultaneously within a concentrated area. The major significant cumulative noise impact in the area would result from the increased traffic volumes in the vicinity. This is particularly important for existing noise sensitive land uses near I-215, within or near the 65 Ldn contour of March AFB, uses near the railroad or near the proposed Evans Arterial Corridor. For the already noise impacted uses, a relatively small noise increase may be realized. The local standard of 70 Ldn will likely not be exceeded.

As mitigation, State and local standards are established to require attenuation in noise-impacted dwellings. Additionally, the City could establish noise zones where proposed projects within the zones could be required to provide special noise attenuation techniques on-site as well as to clearly impacted off-site areas.

5.1.2.5 Biotic Resources

Developments in the Perris Valley will require grading and clearing of a substantial amount of existing vegetation. Due to the disturbed (or nonnative) nature of much of the valley, losses of vegetation will not be significant. Of significance is the loss of open space available to wildlife. Loss of open space in the region could adversely affect use of the area by wildlife in general, and specifically, could adversely affect use by wintering raptors and other avian species, including the bald and golden eagles. The Perris Valley also contains a large area designated as habitat for the state and federal listed Stephens kangaroo rat which could be affected by cumulative projects. Other sensitive or protected plant and animal species are known to occur in the area as discussed in Section 4.4 of this EIR.

As mitigation, the City of Perris could participate in the County-wide Stephens kangaroo rat mitigation program, which would provide for collection of development fees to help establish habitat for the species. Other biological impacts will need to mitigated on a project-by-project basis.

5.1.2.6 Land Use

It can be anticipated that development of cumulative projects would influence the present atmosphere of passive rural open space and scattered development which typifies the outlying areas of Perris. These development projects have the potential for inducing growth within neighboring areas, and may encourage removal of lands from agricultural use. In addition, General Plan Amendments and Zone changes may be necessary to accommodate the proposed urban uses.

The General Plan of the City of Perris will be revised in the near future. The land use goals and policies, as well as the policies in other elements of the plan will reflect the magnitude of growth potential of the area. No other mitigation is proposed at this time.

5.1.2.7 Housing and Population

The potential 18,354 dwelling units occurring cumulatively will generate an anticipated population of 51,391 (2.8 persons per dwelling unit), and 9538 dwelling units within the City of Perris will add 26,700 persons to City population. When added to the existing population of approximately 30,000, cumulative growth will result in a Year 2000 population of, at a minimum, 56,700 persons. This is slightly above the 55,330 projected Year 2000 population. From this analysis, cumulative growth within the City may exceed projections.

Cumulative commercial developments could result in employment opportunity for 13,300 persons. This appears to be a significant amount of commercial development and it is not known whether the valley could support this level of commercial development within the time frame considered in this analysis.

The City of Perris should work with SCAG to develop realistic population growth projections for the area. The upcoming general plan revision provides an opportunity to establish accurate population and land use consumption projections. It may be appropriate as well to establish a growth management objective in light of increased regulatory activity to achieve air quality standards. Commercial development proposals should be accompanied by fiscal and economic documentation at the time application for development is made.

5.1.2.8 Historic And Prehistoric Resources

The general area is known to contain important archaeological, paleontological and historical resources. In sensitive areas, qualified archaeologists, historians and paleontologists should monitor grading operations on a case-by-case basis. This will mitigate any adverse impacts.

5.1.2.9 Traffic Circulation

Ultimate development of 18,354 dwelling units and 6,656,250 square feet of commercial space will significantly increase trip generation and local traffic volumes. Mohle, Grover and Associates estimate that by Year 2000, some 300,000 vehicle trips will be generated citywide. Traffic generated by the developments will impact existing roadways, necessitating the expansion and improvement of the existing circulation system and the construction of new regional roadway networks in accordance with the City of Perris Master Plan of Highways. Within developments, it will be necessary to install circulation systems with sufficient capacity to accommodate traffic generated, in coordination with the regional roadway system.

While the cumulative impact of these projects may be viewed as an increase that will necessitate expansion and improvement of the existing road network it is important to reiterate that City of Perris planning goals reflected in their Master Plan of Highways include programming major roads in the Perris area for incremental widening and/or extension to serve expected growth in surrounding areas. Mohle, Grover and Associates cautions that potential developments based on zoning will create some level of service problems at City intersections. The City should consider a fee assessment as a way to equitably distribute the costs of circulation system improvements.

5.1.2.10 Utilities, Services and Energy Use

Cumulative development in the City of Perris will incrementally increase the demand for public utilities and services, including water and sewer service; electricity and natural gas service; telephone and cable television services; police and fire protection; school and park facilities; public transportation; and solid waste disposal service.

Police and Fire Protection

Growth in the project area will increase the demand for fire and police services provided by the County of Riverside Fire Department and the City of Perris Police Department. The level of growth envisioned will result in the need for additional capital expenditures for additional fire stations and equipment and additional police officers.

It is expected that the project applicants will cooperate with the City of Perris to assure that sufficient effective services are provided to serve each project, thereby insuring a safe environment throughout the area. The principal means that this can be accomplished is through mitigation fees and or dedication of property for location of emergency services facilities. Further, development agreements must specify the timing of needed critical services such as fire protection.

Water and Sewer Service

Growth in the City of Perris and surrounding areas will increase the demand from the Eastern Municipal Water District for water and sewer service. Cumulative developments will generate an average daily demand for approximately 15.4 million gallons of water and will generate approximately 9.4 million gallons per day of wastewater requiring treatment. Additional trunk water and sewer distribution and collection lines will be necessary as well as additional treatment capacity in regional wastewater facilities.

Water and sewer service fees charged on a per unit basis will be applied to all units and commercial developments constructed. These fees will offset some of the costs of facilities expansion with other fees to be collected through establishment of special community services districts. In that water supplies are currently and will continue to be limited in the local area and regionally, all developments should strive to implement water conservation to the maximum extent feasible. The City of Perris should adopt a water conservation ordinance that implements strict standards for water consumption throughout the community. A comprehensive water reclamation reuse plan should be formulated and implemented locally, with the construction of pipelines to distribute reclaimed water to developments part of the development requirements.

Schools and Parks

Construction of cumulative developments will increase area population, and therefore, the demand on school and park facilities. The anticipated 18,354 dwelling units (within the

City) will generate a student population of approximately 17,400 students attending grades K through 12. These students will attend the several school districts in the area. Additional schools will be needed to accommodate these students. It will be necessary for each development to cooperate with local school districts to insure that sufficient facilities are collectively provided serve education needs of the community.

Mitigation measures will include payment of fees of up to $1.53 per square foot of building area, or dedication of land for school sites.

Cumulative projects will result in the need for additional acreage of community parks. The community standard of 3 acres per 1000 population will mean that cumulative developments within the City (9338 dwelling units by Year 2000) should provide 80 acres of parkland. Payment of in-lieu fees can also be used to meet park acreage standards.

Solid Waste

The cumulative projects will increase the amount of solid waste generated in the Perris area and thus increase service needs for waste haulers. The average solid waste generation factor for the Mead Valley landfill service area is 10.65 pounds per capita per day (which is an average for all land uses). Cumulative population would generate about 274 tons per day. This is approximately double the current rate of disposal at Mead Valley.

It is anticipated that a new disposal site will be required by the Year 2000 to meet waste disposal needs of the community and surroundings.

Electricity and Natural Gas

The cumulative development levels will significantly increase use of non-renewable energy resources for air conditioning, water heating, and drying over present levels of usage. Southern California Edison and the South Coast Air Quality Management District (SCAQMD) utilize an estimated residential demand rate of 6081 kilowatt hours per unit per year. A rate for the mix of commercial uses proposed in the area is 12 kilowatt hours per square foot per year. Using these factors, the estimated demand for electricity from cumulative projects is 190 million kilowatt hours per year.

The Southern California Gas Company and the SCAQMD utilize a residential rate for gas consumption of 6665 cubic feet per dwelling per month (residential). Commercial and industrial gas consumption varies widely by type of use, however, this analysis will utilize 4.0 cubic feet per month per square foot. Using these factors, the estimated demand for electricity from cumulative projects is 26.6 million cubic feet per month.

Cumulative levels of development will possibly require new infrastructure as well as continued extraction and consumption of these energy resources.

5.1.3 Significant Unavoidable Adverse Cumulative Impacts

If cumulative projects cause growth to occur in excess of planned or regulated levels (ie. SCAG/SCAQMD projections), cumulative impacts will be significant. Within the City of Perris, cumulative projects are about equal to the growth projection. Outside the City, cumulative projects are slightly higher than growth projections. However, the projects identified as cumulative do not include in-fill type projects which are inevitable in the cumulative projects time frame and may not include other projects which are currently planned. In addition, annexations may change City growth allocations and impacts.

Cumulative projects will have significant unavoidable impacts on the following specific resources:

- Water quality in major drainages will be degraded by pollutants from urban runoff.

- Air quality will be degraded through construction activities, and vehicular emissions.

- Urbanization will eliminate raptor foraging and nesting habitat and will place additional pressures on sensitive species which occur in the area.

- Conversion of farm lands to urban uses represents a loss of productive soils and food production capability. Though agriculture is declining in the area, agricultural soil productivity is a valuable natural resource.

- Cumulative projects will place additional demands on utilities and services which are either scarce, in short supply, or at capacity for current levels of demand. Included are water supply, wastewater treatment capacity, and solid waste disposal capacity.

- Cumulative project will increase demand for nonrenewable energy sources used to supply gasoline, natural gas, and electricity.

Mitigation measures for these impacts have been proposed in the discussions above. Implementation of these measures will reduce the magnitude of the impacts somewhat, however, they are still considered significant.

5.2 ALTERNATIVES TO THE PROPOSED PROJECT

In accordance with State EIR Guidelines, an EIR must present alternatives which are capable of eliminating significant environmental impacts, and state why they were rejected for the proposed project. The emphasis of the alternatives analysis is on reducing adverse effects of the proposed action. The alternatives analysis must also identify an environmentally superior alternative.

Included in this section are discussions addressing several potential alternatives to the proposed action, including the "No Project" alternative, a reduced density of development alternative and an all residential alternative. Additionally, alternative project locations and an all commercial/industrial project are briefly assessed. The City of Perris, as lead agency, must weight the merits of each alternative in comparison to the proposed action.

5.2.1 "No Project" Alternative

5.2.1.1 Environmental Effects

The "No Project" Alternative would retain the site in its present undeveloped condition, and would support the continuation of limited agricultural use of the site as is defined by zoning and general plan requirements. This alternative maintains the existing environmental conditions of the subject property as discussed in the various subsections of Section 4 of this EIR. In addition, the project specific impacts discussed in Section 4 would not occur.

The No Project Alternative would have the following specific favorable effects relative to the unavoidable impacts of the proposed project.

o elimination of all grading impacts and associated irreversible impacts upon agricultural soils.

o reduction in city-wide traffic and associated air quality and noise impacts over development scenarios associated with the project proposal, or other alternatives considered herein.

o retention of on-site open space which is favorable to raptor foraging.

The "No Project" Alternative would have the following impacts which are considered negative.

o Agriculture is not considered a long-term viable use which can be self supporting.

o The fiscal impact of status quo could negatively impact City services. It is assumed that growth will continue in the region and in the City of Perris. Having this large open space in the near center of Perris could adversely affect infrastructure financing and funding of City services to support planned growth within the City.

o There could be an increase in agricultural/urban land use conflicts as surrounding parcels develop as planned.

5.2.2 Reduced Density of Development Alternative

The objective of the Reduced Density of Development Alternative is to provide a scaled-down version of the project in an attempt to allow for further mitigation for the significant adverse impacts identified for the proposed action. A scenario for the Reduced Density of Development Alternative includes development of residential uses at a lower density on the site. The historic standard lot size for residential development within the City has been 7200 square feet. It is believed that this density of development has contributed to the rural atmosphere of Perris. Commercial, industrial and park uses as depicted in the proposed project would be included at presently proposed densities in this alternative, since such uses are seen to have a positive impact on the jobs/housing balance in western Riverside County.

A conceptual definition of land uses for this alternative is provided in Table 5.2-1.

This alternative achieves about a 32 percent reduction in residential units compared to the proposed land use plan density. Though the exact densities within planning areas has not been defined in this alternative, the concept includes an overall residential density of about 3.7 units per acre.

TABLE 5.2-1
REDUCED DENSITY ALTERNATIVE
STATISTICAL LAND USE SUMMARY

LAND USE	TOTAL ACRES	DU'S	SQUARE FOOTAGE
Residential			
7200 S.F. lot	760	2854	
Parks	46		
Schools 3 Sites	30		
Commercial	114		1,459,800
Industrial	81		1,215,000
Open Space	96		
Circulation	57		
ALT. SUMMARY	1,194	2,854	2,674,800

The environmental impacts of the Reduced Density Development Alternative are described in the sections which follow.

5.2.2.1 Earth Resources; Hydrology; Cultural Resources

It can be anticipated that impacts resulting from the Reduced Density Development Alternative for Earth Resources, Hydrology, and Cultural Resources would be similar in magnitude and scope to those associated with the proposed Green Valley Specific Plan. These impacts are briefly summarized below:

5.2.2.2 Topography, Geology and Soils

Grading for the project will involve cut and fill operations which will alter the existing landform. However, due to the generally flat nature of the site, this alteration will not be significantly less than that which will occur with the proposed plan. Ground surfaces which are temporarily exposed during grading may be eroded, thus erosion control measures will be required to the same extent as with the proposed project.

5.2.2.3 Seismicity

Due to the presence of regional faults, the potential exists for ground shaking at the project site. This, in turn, creates the potential for structural damage as a result of earthquake activity regardless of development density.

5.2.2.4 Hydrology

Project grading will permanently alter the natural runoff pattern by channeling drainage through pipelines and channels to the San Jacinto River. Storm flow rates on-site will increase from the natural condition due to the creation of impervious surfaces. The velocity and quantity of runoff will also be altered. The amount of runoff will be incrementally less than the proposed project due to the retention of a larger area of pervious ground provided by the larger lot size. Housing, commercial and industrial uses would still be constructed within the Perris Reservoir Dam inundation area, however, this alternative would reduce the number of dwelling units exposed by about 30 percent.

5.2.2.5 Wildlife and Vegetation

Development of the site with the uses proposed by the Reduced Density of Development Alternative would affect the same amount of area as the proposed plan. The impacts of loss of raptor habitat with this alternative would be similar to the proposed plan. It is possible, however, that the reduced density alternative would allow more opportunities for landscaping and slightly reduced human presence. Overall, the impacts of this alternative relative to wildlife and vegetation are only slightly more favorable that the proposed project.

5.2.2.6 Cultural Resources

No adverse impacts will result from implementation of this alternative since the results of the archaeological and histroical surveys show that the project area contains no prehistoric cultural resources and no significant historic resources. The site includes no areas likely to contain subsurface manifestations of such resources.

5.2.2.7 Land Use and Population

Utilizing the development scenario for this alternative described above, the projected alternative project population is estimated at 7990 persons based on 2.8 persons per dwelling unit. This alternative will reduce population growth associated with the development of the Green Valley site by about 3714 persons. The alternative would account for about 14.4 percent of the estimated Year 2000 City population of 55,300, whereas the proposed project accounts for about 22 percent. As with the proposed project, the population growth associated with this alternative is not necessarily in excess of SCAG projections for the project area. Also, the lower population does not necessarily mean that service demands would be reduced from a cumulative standpoint.

5.2.2.8 Traffic and Circulation

This alternative will generate approximately 28,700 vehicle trips per day associated with residential land uses. For the total alternative, assuming commercial and industrial uses are the same as the proposed project and school sites are reduced by one, approximately 90,303 trips per day would occur. Total trips per day is reduced by 13,564 which is substantive, but will not significantly reduce the level of improvements needed to support traffic flow from this and other planned projects. Most circulation system improvements described for the proposed plan would be required of this alternative as well.

5.2.2.9 Air Quality

A reduced density alternative will result in lower operational air pollutant emissions compared to the proposed project. However, construction emissions are not likely to be significantly reduced since the acreage affected over the life of the project would not be changed. The levels of pollutant emissions resulting from operations associated with full buildout of this alternative are as follows;

Carbon Monoxide	5.13 tons/day
Nitrogen Oxides	0.66 tons/day
Reactive Organics	0.43 tons/day

The relative contribution of these pollutants to the overall San Jacinto Valley subregional emissions is as follows;

Carbon Monoxide	10.7 percent
Nitrogen Oxide	10.2 percent
Reactive Organics	4.0 percent

This alternative will contribute about 5 percent less emissions to the subregional levels. This is considered a substantial reduction particularly since the site would be fully developed; that is, no future options for higher density development on-site could occur.

Regardless of the comparative effects, the emissions from this alternative are still significant overall and there is still the requirement to provide substantial mitigation in the form of local transportation management programs.

5.2.2.10 Noise

Any reduction in dwelling units will have a concomitant reduction in traffic volumes which would incrementally decrease on-site and off-site noise levels as presented for the proposed plan. Generally, homes along interior roadways will not be exposed to noise levels greater than 60 CNEL. Mitigation will be needed for homes exposed to 57 CNEL or greater to achieve acceptable noise levels. Noise levels along Case, Ethanac, and Murrieta are expected to require noise mitigation with this alternative as with the proposed project. As per the proposed plan, this alternative would require that additional noise studies be conducted prior to recordation of the Final Tract Map and mitigation measures be incorporated into final project design.

This alternative would have noise impact similar to the proposed plan with respect to the Perris Airport and the adjacent Perris Valley Wastewater Treatment Facility. Relative to the airport, there is no change in noise impact in comparison to the proposed plan. With the wastewater facility, there could be additional opportunity, due to the reduced density, to incorporate a substantial buffer area between the treatment facility and the project site.

5.2.2.11 Utilities, Public Services, and Energy Resources

This alternative would result in fewer emergency calls than the proposed plan. Using generation factors contained in the Section 4.12.1 this alternative would ultimately require 13 new police officers. This alternative would also require one fire station and engine company ultimately. These requirements are not significantly different from the proposed project.

Incremental decreases in the amount of water and sewer service requirements will occur with this alternative. This alternative would have an average flow demand of 3.98 million gallons of water per day. Based upon a population of 7990 persons plus commercial and industrial uses, this alternative will generate 1,810,600 gallons per day of wastewater. These reduced levels of water and sewer service are considered beneficial in relation to the proposed plan since water resources are limited in the project area.

In terms of impacts to schools, this alternative would reduce the number of public school students compared to the proposed plan. A total of 2710 students would be generated by this alternative, consisting of 1712, K-6 students, 428, 7-8 students and 570, 9-12 students. Total student load would be reduced 32 percent from the proposed project. All school facilities serving the project site are presently operating over capacity, thus this alternative could substantially reduce the impact. This alternative still would require impact mitigation (need for use of temporary classrooms and school impaction fees) similar to the proposed plan. It is assumed that one less elementary school site would be needed with this alternative compared to the proposed project.

From the standpoint of parks and recreation facilities, this alternative would generate less demand for parks and put less pressure on other recreation facilities in the area. This alternative provides the same amount of park land for 30 percent fewer residents which is a positive aspect of this alternative. This alternative would generate about 42.5 tons per day of solid waste ultimately. This would reduce the average daily waste load of the project by about 32 percent which has a positive impact on land fill capacity.

This alternative reduces the estimated natural gas and electrical usage of the proposed plan. Residential units under this alternative will consume about 9.0 million cubic feet per month of natural gas less than the proposed project. Other uses will remain the same. Electricity usage for this alternative would decrease by about 8.2 million kwh annually. The reduction in consumption of these nonrenewable resources is considered a beneficial effect of this alternative.

5.2.2.12 Toxic Wastes

Since this alternative retains the industrial uses at the same level as the proposed project, impacts from toxic wastes would be the same.

5.2.2.13 Fiscal Impact

The implementation of this alternative can be expected to generate substantial fiscal deficits during project buildout, according to an analysis by the fiscal consultant, Natelson, Levander and Whitney. Throughout at buildout, a surplus of approximately $125,000 per year would accrue to the City, substantial deficits would occur during buildout years.

Accordingly, fiscal surpluses occur during buildout Years 1 and 2. Fiscal deficits up to $135,000 in one year occur in buildout Years

3,4,5,7,8 and 9. No surplus or deficit occurs in Year 6. The deficits which occur during buildout years under this alternative would have significant adverse fiscal impact on the City of Perris and could not be overcome by the surpluses after development.

5.2.3 All Residential Alternative

The objective of an All Residential Alternative is to examine project site level effects from an alternate land use than that proposed.

A scenario for the All Residential Alternative involves development of a range of residential densities and uses, but similar in mix to the proposed in the Green Valley Specific Plan. This alternative assumes that about 5200 residential units would be built on approximately 958 acres of the 1194 acre project site. Other uses to be provided would include streets, drainage swales, and parks. Though the exact densities within planning areas have not been defined in this alternative, the concept includes an overall residential density of about 5.2 units per acre.

The environmental impacts of the All Residential Alternative are described in the sections which follow.

5.2.3.1 Earth Resources; Cultural Resources

The impacts resulting from the All Residential Alternative for Earth Resources and Cultural Resources would be similar in magnitude and scope to those already discussed for the proposed Green Valley Specific Plan and the Reduced Density of Development Alternative. This is due to the relatively flat site and the fact that these alternatives would involve grading over the entire site. Similar levels of mitigation would be required for this alternative as well.

5.2.3.2 Hydrology

Project grading will permanently alter the natural runoff pattern by channeling drainage through pipelines and channels to the San Jacinto River. Storm flow rates on-site will increase from the natural condition due to the creation of impervious surfaces. The velocity and quantity of runoff will also be altered. The amount of runoff will be about the same as the proposed Green Valley site plan since the area affected by development is similar in size.

This alternative increases the number of housing units exposed to inundation potential from Lake Perris by about 990 units, and decreases commercial and industrial use exposure.

5.2.3.3 Wildlife and Vegetation

Development of the site with the uses proposed by the All Residential Alternative would affect the same amount of area as the proposed plan and thus would have similar impacts on wildlife and vegetation.

5.2.3.4 Land Use and Population

Utilizing the development scenario for this alternative described above, the projected alternative project population is estimated at 14,456 persons. This alternative will increase population growth associated with the development of the Green Valley site by about 2752 persons (an increase of 6466 persons compared to reduced density alternative). The alternative would account for about 26 percent of the estimated Year 2000 City population of 55,300, whereas the proposed project accounts for about 22 percent. As with the proposed project, the population growth associated with this alternative is not necessarily in excess of SCAG projections for the project area. However, this alternative does not do anything to achieve jobs to housing objectives of regional planning.

5.2.3.5 Traffic and Circulation

This alternative will generate approximately 50,822 vehicle trips per day associated with residential land uses. Total trips per day is reduced by 53,045 compared to the proposed project which is significant. This alternative has 39,481 less trips than the reduced density alternative. This alternative would also reduce the extent of the circulation system improvements described for the proposed plan.

5.2.3.6 Air Quality

An all residential alternative will result in lower operational air pollutant emissions than either the proposed project or the reduced density alternative. This is due primarily to the significantly reduced vehicular travel associated with this alternative. However, construction emissions are not likely to be significantly reduced since the acreage affected over the life of the project would not be changed. The levels of pollutant emissions resulting from operations associated with full buildout of this alternative are as follows;

Carbon Monoxide	3.6 tons/day
Nitrogen Oxides	0.5 tons/day
Reactive Organics	0.3 tons/day

The relative contribution of these pollutants to the overall San Jacinto Valley subregional emissions is as follows;

Carbon Monoxide	7.5 percent
Nitrogen Oxide	7.7 percent
Reactive Organics	2.8 percent

This alternative contributes the least amount of emissions to the subregional levels compared to the proposed project or the reduced density alternative.

Regardless of the comparative effects, the emissions from this alternative are considered significant regionally and there would still be a requirement to provide substantial mitigation in the form of local transportation management programs.

5.2.3.7 Noise

Any reduction in traffic volumes will have a concomitant result of reducing on-site and off-site noise levels. This alternative therefore, has the lowest associated vehicular noise of the major alternatives considered.

This alternative would have noise impact similar to the proposed plan with respect to the Perris Airport and the adjacent Perris Valley Wastewater Treatment Facility. Relative to the airport, there is no change in noise impact in comparison to the proposed plan. With the wastewater facility, there could be additional opportunity, due to the reduced density, to incorporate a substantial buffer area between the treatment facility and the project site.

5.2.3.8 Selected Utilities, Public Services, and Energy Resources

This alternative would potentially result in more emergency calls than the proposed plan due to the increased population. Using generation factors contained in the Section 4.12.1 this alternative would ultimately require 22 new police officers. This alternative would require 1.3 fire station and engine company ultimately. These requirements are well above those associated with the proposed project.

Incremental increases in the amount of water and sewer service requirements will occur with this alternative compared to the proposed project. This alternative would have an average flow demand of 4.3 million gallons of water per day, which is slightly higher than the proposed alternative. This alternative will generate 2.2 million gallons per day of wastewater which is also slightly higher than the proposed project. These increased levels of water and sewer service are a significant adverse impact of this alternative.

In terms of impacts to schools, this alternative would increase the number of public school students compared to the proposed plan. A total of 4940 students would be generated by this alternative, consisting of 3120, K-6 students, 780, 7-8 students and 1040, 9-12 students. Total student load would be substantially increased compared to the proposed project. All school facilities serving the project site are presently operating over capacity, thus this alternative could substantially increase the impact. This alternative still would require impact mitigation (need for use of temporary classrooms and school impaction fees) similar to the proposed plan. It is assumed that four elementary school sites would be needed with this alternative which is the same as required for the proposed project.

From the standpoint of parks and recreation facilities, this alternative would generate additional demand for parks. It is assumed that this alternative would meet Quimby Act requirements of 3 acres of parks for each 1000 population. This alternative be required to provide about the same amount of park land as is presently proposed.

This alternative would generate about 76.6 tons per day of solid waste ultimately. This would increase the average daily waste load compared to the project as proposed, by about 14.2 tons per day.

This alternative increases the estimated natural gas and electrical usage of the proposed plan. Residential units under this alternative will consume about 34.7 million cubic feet per month of natural gas, which is 3.2 million cubic feet more per month than the proposed project.

Electricity usage for this alternative is estimated at 31.6 million annually, which is 14.7 million kwh less than the proposed project. The reduction is attributed to the elimination of commercial and industrial uses with this alternative.

5.2.3.9 Toxic Wastes

With the elimination of the industrial uses in this alternative, there are no toxic waste impacts.

5.2.3.10 Fiscal Impact

The implementation of this alternative can be expected to generate substantial fiscal deficits in all buildout years except Year 1. The Year 10 deficit is in excess of one million dollars, according to an analysis by the fiscal consultant, Natelson, Levander and Whitney. The overall conclusion is that this alternative is not fiscally feasible and that some level of commercial and industrial development is financially desireable in a project of this magnitude.

5.2.4 Non-Residential Land Use Alternative

The alternative of providing all commercial and industrial uses on the site is briefly assessed in this section. The project site is served by I-215 and by rail which makes it favorable from the standpoint of commercial and industrial uses. Also, regional planning objectives for air quality improvements and transportation mitigation call for a more equitable jobs to housing balance in western Riverside County. More local jobs means less commuting by residents.

In comparison to residential use, commercial and industrial uses have similar land development requirements (ie. grading, streets, flood control). Geologic and seismic parameters would also be similar in terms of kind and magnitude of impact. Similar too would be the impacts on biological and cultural resources since these are related more to ground and habitat disturbance than type of new use.

From a land use standpoint, the high concentration of commercial and industrial uses may cause reassessment of compatibility of proposed land use immediately surrounding the site. There would be less compatibility impact as far as the wastewater treatment facility is concerned, however, adjacent planned residential could be impacted to a greater degree than the proposed project.

Commercial and industrial uses can generate significantly more traffic per acre compared to residential use. Based on the proposed project's traffic impact, commercial and industrial uses throughout the site would be significantly worse. It also follows that significantly worse traffic impacts would result in significantly worse noise and air quality impact with this alternative.

From the standpoint of aesthetics, the overall appearance of a commercial and industrial project, considering a well planned and designed project, would not be significantly worse than residential development. Both forms of development can be made to look aesthetically pleasing. However, commercial uses would require a substantial amount of additional artificial lighting, which could exacerbate lighting impacts on astronomical observation at Mount Palomar.

Compared to residential uses, commercial and industrial uses would result in slight reductions in the amount of police and fire protection required. This is assuming that only non-hazardous industry is allowed. Likewise, there could be incremental reductions in water use and wastewater generation compared to residential, assuming that water-using industry is discouraged. Also, there would be no direct impact on schools.

The most substantial negative feature of this alternative relates to fiscal impact. The absorption rate of commercial and industrial uses vary substantially from year to year and is related to economic forces existing in the region. An alternative of all commercial and industrial uses on the site would take considerably more time to buildout than those same uses under the proposed alternative. A buildout of 20 years or more would likely be required, and this alternative would directly compete with the nearby proposed New Perris project which could add 4.5 million square feet of retail and office commercial space over a 10 to 15 year buildout. The result would be negative for both projects and could adversely affect revenue production of the City of Perris.

In conclusion, this alternative has incrementally greater and lesser impact depending upon the resource considered, than the proposed project. This alternative is not considered environmentally superior to the proposed project and is considered undesirable from an absorption standpoint.

5.2.5 Alternative Locations

This alternative considers qualitatively the use of a different project site for construction of the Green Valley project. This analysis is not based on a study of the availability of property of equal quality and size to that of the proposed site. A major premise of this alternative is that there is a project site available elsewhere in the Perris Valley which could accommodate a project of the scope and magnitude of Green Valley. Further, this alternative focuses on what could be gained by utilizing another site.

Any of the major constraints at the Green Valley site could be alleviated by utilizing a site in another location. Specifically, the impacts imposed by the Perris Airport and the EMWD wastewater facility could be avoided at another location. A project site at another location may not have to utilize an extensive surface swale system to move water through and off the site. In addition, it may be possible to find a site without important farmlands.

What is not avoided by use of another site is several other important environmental impacts. Generally, earth resources impacts, ie. grading and erosion, would be similar regardless of where the site is. If steeper topography is encountered, the impacts could actually be worse. Traffic generation and air quality impacts would be similar to the proposes site regardless of location. Additionally, the project demand for services and utilities would also be very similar for this alternative as for the proposed alternative. Finally, it would be difficult to find a site that, in its undeveloped condition, could not be construed as valuable raptor foraging area.

In conclusion, all potential sites for a project like Green Valley have various opportunities and constraints. Impacts due to construction will be similar in most cases and will commonly include impacts like grading, erosion, traffic generation and air emissions generation. Impacts to be avoided at Green Valley include wastewater treatment plant land use compatibility and airport hazard zones. However, it cannot be said quantitatively that alternative sites are less environmentally damaging than the proposed site.

5.2.6 Comparison and Evaluation of Major Alternatives

5.2.6.1 No Project

This alternative eliminates certain significant unavoidable effects of the proposed project and as such, can be considered environmentally superior to the proposed project. However, other long-term adverse effects related planning and community development are possible with the No Project alternative. For instance, the No Project alternative would negate any benefits of the project relative to provision of a wide range of housing types within a homogenous planned community setting. The benefits of expanding the community's employment base also would be negated. The No project alternative would not provide developed park facilities or serve to meet the public demand by providing affordable detached single family dwelling units. Employment opportunities would be negated as well.

The economic pressures and public demand for housing within the City of Perris appear to have improved the development potential of the subject site. The project site is in a high growth area and in the path of growth occurring outward from the City of Perris and occurring between Moreno Valley and Rancho California. It appears that the highest and best use of the site is urban use when community infrastructure, circulation and service needs of the growing community are considered. As the rest of Perris grows, it is expected that the project site will feel continued pressures for development. For these reasons the No Project Alternative is not considered viable.

5.2.6.2 Reduced Density of Development

The Reduced Density of Development Alternative contains incrementally reduced impacts in the areas of traffic, noise, air quality, and public services and utilities and because of that, can be considered environmentally superior to the proposed project. No significant adverse impacts were avoided by the Reduced Density of Development Alternative although those mentioned above were incrementally and beneficially reduced an may require a reduced level of mitigation. This alternative results in substantial fiscal deficits during buildout years.

This alternative includes only standard lot single family development which precludes some of the housing needs of the City and some of the objectives of the project. In the past year, economics have not been favorable for construction of multi-family units. Consequently, there is excess demand for this type of housing which is not currently being meet in the project area. Affordability is also affected by larger lot developments. The entry-level buyer is most adversely affected by the higher cost of detached housing on large lots. In short, this alternative will tend to reduce the amount of available new housing offered to the public which meets the housing affordability goals of SCAG and the County of Riverside.

The goals of the project for a homogenous mix of residential land use types is not served by the standard lot size subdivision. This aspect, however, is more related to project economics and sales rate than environmental considerations.

For these reasons, the Reduced Density of Development Alternative is not considered viable or desireable.

5.2.6.3 All Residential Alternative

The All Residential Alternative has incrementally increased impacts in the areas of public services and utilities because of higher population levels that would be generated (with the exception of electricity usage). Without the commercial and industrial land uses, traffic and trip generation is significantly less than the proposed project, as are noise and air quality impacts. Other impacts such as land use constraints, geotechnical and hydrological impacts are about equal to the proposed project.

This alternative provides no employment opportunity for the local area. As such it contributes to the existing trend of imbalanced jobs and housing. Though trip generation is reduced, regional emissions may be adversely affected by longer trips to employment areas. This impact has not been quantified within the air quality analysis of this alternative due to speculative factors.

No significant adverse impacts are avoided by the All Residential Alternative and major development constraints such as the Perris Airport and the Perris Valley Wastewater Facility are still a factor with this alternative. Also, this alternative results in significant and long lasting deficits during and after buildout and is considered fiscally infeasible.

Overall, it is concluded that this alternative is not considered environmentally superior to the proposed project.

5.3 GROWTH INDUCING IMPACT OF THE PROPOSED PROJECT

The area in the immediate vicinity of the project is currently in agricultural uses and has recently been annexed into the City of Perris. In general, the Perris Valley, which includes the City of Perris and the communities of Sun Valley and Romoland, has experienced growth resulting in a 64% increase in population between 1970 and 1980. The City of Perris itself has experienced a 36% growth in population between 1984 and 1987. Residential development is expected to continue in the Moreno Valley and Perris Valley areas. Residential development within the City of Perris is expected to expand dramatically over the next five years primarily between the Ramona Expressway and Highway 74 (Hemet), and outward on both sides of the I-215 corridor. Development is occurring or proposed to occur on the north and east of the project site.

New residents of the proposed project will incrementally increase demands for public services and utilities, and will contribute to the need for educational and recreational facilities. Increased use of commercial establishments will occur, contributing to the demand for larger new retail commercial services, such as regional shopping centers in the project area. The proposed project's contribution to demand for these services should be considered as a growth-inducement to these systems. However, it is not anticipated that the increase in demand will reduce or impair any existing or future levels of utility services, either locally or regionally, as costs for increases in utilities and services will be met through cooperative agreements between the applicants and servicing agencies, by the collection of development fees, and/or the establishment of community services districts.

Project-related employment opportunities and project generated tax revenues will contribute to expansion of the economic base of Perris Valley and City of Perris. These factors will also contribute to growth inducement.

Though project phasing is expected to help regulate the rate of growth, the extension of utilities to the project site may contribute to growth in adjacent lands. However, water and sewer service is currently available to the project site and will not act to encourage development of surrounding lands.

The location of the project in a semi-rural but steadily developing area could result in conversion of adjoining agricultural lands outside of the City limits to urban uses. None of the nearby lands presently used for agriculture are protected by Williamson Act contracts. Though these lands may eventually convert, the process may be accelerated by the project and surrounding projects.

5.4 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The project site is currently undeveloped, supporting limited agricultural use. If the proposed Green Valley Specific Plan is approved and constructed, a variety of short-term and long-term impacts will occur on a local basis. During construction, portions of surrounding lands would be temporarily impacted by dust and noise over the anticipated 10-year project build-out. During later phases of the project, such impacts could affect already built phases of the project. During construction, impacts could occur from wind and water erosion of soils during grading. There also will be an increase in air pollution, mainly dust generation, caused by grading and construction activities. These disruptions, however, are temporary and can be mitigated to a large degree.

The long-term effect of the proposed development is the gradual conversion of the site from agricultural uses into a residential and mixed use community. As this conversion occurs, the existing characteristics of the physical, biological, cultural, aesthetic and human environment will be impacted. Consequences of this urbanization include: increased traffic volumes, incremental degradation of the regional air cell, additional noise created by traffic generated by project employment opportunities, incremental increased demands for public services and utilities, increased energy and natural resource consumption.

Ultimate development of the Green Valley Specific Plan would create long-term environmental consequences that are connected with any form of urbanization. However, the proposed project has been designed to benefit the community and population by providing needed family housing, a recreational sports complex, school sites and an aesthetically pleasing appearance.

The proposed project will ultimately provide for a form of long-term productivity which appears compatible with human needs in the area and with City of Perris goals for planned growth.

5.5 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Construction of the proposed project would result in the following primary irreversible environmental changes.

-Permanent commitment of land which will be physically altered to create access roads, dwellings, buildings, etc.

-Removal of 1194 acres of agricultural open space.

-Damage to or possible irreversible loss of prime, statewide and locally important agricultural soils.

-Alteration of the human environment as a consequence of the development process. The project continues the trend toward urbanization in the Perris Valley.

-Increased requirements for public services and utilities represents a permanent commitment of these resources.

-Utilization of various new materials, such as lumber, sand and gravel for construction. Some of these resources are being depleted worldwide. The energy consumed in developing and maintaining the site for urban use may be considered a nonrenewable investment of such resources.

5.6 EFFECTS FOUND NOT TO BE SIGNIFICANT

The scope of the environmental issues assessed in this EIR has been determined through preparation of an Initial Study. Also, a Notice of Preparation, containing the Initial Study, was circulated for review locally and through the state clearinghouse. Agency responses to the NOP further refined the scope of issues discussed in the EIR. The Initial Study, Notice of Preparation and agency responses are contained in the Technical Appendices, Appendix A.

Based on the Initial Study and NOP responses, the following issues have been determined to be not significant.

Mineral Resources: Significant mineral resources have not been found on the site.

Blowsand: The project site is not within a designated blowsand area.

Paleontological Resources: The project site is not in an area of moderate to high paleontological sensitivity.

Scenic Highways: The project site is not within the viewshed of a designated scenic highway.

5.7 MONITORING OF MITIGATION MEASURES

In response to recent legislation relative to long-term monitoring and effectiveness of mitigation measures, the City of Perris will be developing procedures for compliance.

The mitigation monitoring program will be compiled and considered by the City Council at the time of project approval.

SECTION 6
ORGANIZATIONS AND PERSONS CONSULTED

6.1 EIR INFORMATION CONTACTS

Public agencies, organizations and individuals have been contacted during preparation of the EIR. Approximately 40 separate agencies and organizations, and the state clearinghouse received a copy of the Notice of Preparation of Draft EIR (NOP) for the Green Valley Specific Plan. Many of these agencies provided a detailed response. A list of agencies that were sent the NOP is included with the NOP in the Technical Appendices, Appendix A, along with a copy of all responses received to date. In addition, the following organizations and individuals were contacted informally during the preparation of the Draft EIR. Agencies commenting on the Draft EIR are listed in the Finalizing Addendum.

County of Riverside, Planning Department
- Dick Archibeque
- Judy Estergard
- Richard MacHott

Riverside County Fire Department
- Mike Gray

Riverside County Department of Waste Management
- E. N. Grant

Riverside County Department of Environmental Health
- Bill Prince

Riverside County Flood Control
- Ken Edwards
- Eric Russell
- Henry Olive

California State Clearinghouse
- John Keene

Southern California Association of Governments
- Dave Stein
- Shelly Snyder

Chambers Group, Inc.
- John Westermeier

Perris School District
- William Parker

Eastern Municipal Water District
Al Spencer

Perris Airport
Steve Mack

6.2 EIR PREPARERS

This EIR was prepared under contract to the City of Perris (Lead Agency) by Thomas C. Ryan, Consulting Planner in association with several other professional consultants and planners. The major contributors are as follows:

City of Perris	Lead Agency
Ron Eggertsen	Director of Planning
Olivia Gutierrez	Principal Planner
Carol Miller	Assistant Planner
Hank Mohle	Mohle Grover Associates
Tri Lake Consultants, Inc.	City Engineer, EIR Review
Habib Motlagh	City Engineer
Al Davies	Principal Planner
Uzma Siddique	Senior Planner
Thomas C. Ryan, Consulting Planner	EIR Compilation
Thomas Ryan	Project Manager
P & D Technologies	Airport Planning
Steve Allison	Project Planner
Florian Martinez Associates	Land Planning, Green Valley Specific Plan
Gil Martinez	Executive Vice President
Richard Goacher	Project Manager
Andrew Daymude	Design Analyst
J.J Van Houten & Associates	Noise Assessment
John Van Houten	Managing Acoustical Engineer
David Wieland	Principal Engineer
Allan Mashoof	Associate Engineer

Hans Giroux, Atmospheric Environment Consultant	Air Quality Assessment
Hans Giroux	Air Quality Analysis
Basmaciyan-Darnell, Inc.	Traffic Impact Study
Bill Darnell Serine Ciandella	Managing Traffic Engineer Traffic Engineer
Highland Soils Engineering, Inc.	Geotechnical and Toxic Waste Analysis
Tyrone Clinton Dean Stanphill Warren Sherling Robert Manning	Chief Engineer Project Engineer Principal Geologist Project Geologist
Tierra Madre Consultants	Biological Surveys
Lawrence LaPre, PhD	Biologist
Hatheway and McKenna	Archaeological and Historical Assessment
Jeanette McKenna Melinda Romano	Principal Investigator Field Director
Albert A. Webb Associates	Infrastructure, Hydrology and Engineering and Grading
Hubert Webb Roger Prend	President Project Engineer
Natelson, Levander Whitney, Inc	Fiscal Impact Study
Dale Levander	Principal Economist

6.3 REFERENCES CITED AND RESEARCHED

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APPENDIX A

REFERENCES

UNPUBLISHED REFERENCES

"Report of Feasibility Geotechnical Investigation", 1196± Acre Commercial/Residential Development, Murrieta and Ethanac Roads, Perris, California; Prepared by Highland Soils Engineering, Inc., dated December 19, 1988, Job No: 07-7813-002-00-00.

AERIAL PHOTOGRAPHS

Date	Flight Number	Agency	Scale
2-25-59	29, 30, 31, 35, 36	Riverside County Flood Control	1" = 1,000'
6-20-74	518, 519, 520	Riverside County Flood Control	1" = 2,000'
8-1-76	10, 20, 30	Riverside County Flood Control	1" = 1,000'
4-14-80		Riverside County Flood Control	1" = 1,000'
1-20-84	959, 960, 961	Riverside County Flood Control	1" = 1,600'

APPENDIX C

BIOLOGICAL RESOURCES TECHNICAL REPORT

Green Valley Specific Plan Biological Assessment

Tierra Madre Consultants, Inc.
Lawrence F. LaPre, PhD

March, 1989

Introduction

At the request of Donna McCormick of FMA, Inc., Tierra Madre Consultants, Inc. has conducted a biological assessment for a large, vacant agricultural property owned by the Gary Cook Corporation. The property described in this report is a 1200 acre parcel located in unincorporated Riverside County just south of the City of Perris. As proposed by the Green Valley Specific Plan, the property will be subdivided and developed with a variety of urban land uses, dominated by residential neighborhoods. The biological resources of the project area are described, potential impacts to those resources as a result of the proposed project are discussed, and recommendations are made for mitigation measures intended to minimize those impacts.

The Gary Cook Corporation property lies within Sections 8 and 9, Range 3W, Township 5S. It is bounded by Goetz Road on the west, an extension of Mapes Road on the north, sewage ponds and agricultural fields on the east, and Ethanac Road on the south.

Methods

A literature review was conducted to identify any sensitive elements which are known to occur on or in the vicinity of the property. The California Natural Diversity Data Base (Data Base), a unit of the California Department of Fish and Game, provided computerized locational data for sensitive species known from the Perris area. The Data Base records include older museum and herbarium collections of species in the region, and serve to indicate the historic range and distribution of several sensitive elements which are not present today.

The property covered by the Green Valley Specific Plan was visited on March 24 and 26, by L. LaPre and John Pofahl. We performed a windshield survey of the site, with the objective to make a general assessment of the cultivated farmland, and to find any specific areas of localized biological importance. Ten man-hours hours were spent driving and walking over the site and all plant and animal species detected were recorded in field notes.

Biological Setting

All of the Green Valley site has been cultivated for many years, resulting in the elimination of all native plant communities and of the original wildlife habitat. The existing land uses are agricultural, consisting of alfalfa and grain crops and an extensive nursery, where potted plants are grown in the open and under shadehouses. At the northwest boundary of the nursery are several ponds, some of which contained water, although the majority were dry during the survey period. These active and abandoned ponds provide good artificial habitat for wildlife, mainly birds.

Results

Literature Review

Many biological assessments have been prepared recently for vacant lands in the Perris, Sun City, Nuevo, and Lakeview areas of Riverside County. These studies have verified early scientific and more recent agency reports, which show two major biological features existing in the Green Valley Specific Plan area. These are the floodplain community, and the regionally important habitat for birds of prey.

Historically, the clay soils formed within the San Jacinto River floodplain were known to support an interesting flora, including several plants now considered rare and endangered. These include the thread-leaved brodiaea, tarweed, and crownscale, all plants tolerant of the alkaline clay soils. Vernal pools with narrowly-adapted annuals, including Orcutt's grass and prostrate spineflower, have been reported by the Data Base from this area in the past, though no vernal pools now exist within the Perris Valley.

This part of western Riverside County is well-known for its large populations of birds of prey, especially during the winter. The San Jacinto Valley and the Gavilan Hills, which are found to the east and to the west of the Perris Valley, have been designated by the Department of Fish and Game as "Areas of Special Biological Importance" due to the outstanding raptor foraging habitat.

Field Survey

The major feature of biological interest on the Green Valley project site is the San Jacinto River channel. The river acts as a corridor of movement for birds and larger mammals, and formerly supported an alkaline wetl;and community along its banks. On the porject site the river channel has been very degraded by off-roaf vehicles, and the banks are virtually denuded of vegetation. Water is present only during releases to Canyon Lake, but the river serves as an important drinking source for wildlife during those times when water is present.

A small marsh adjacent to Murietta Road fed by agricultural drain water has created nesting habitat for a large colony of redwinged blackbirds. About 1000 birds were counted during the field survey. The adjacent agricultural fields provide feeding areas for the blackbirds, and the trees bordering the marsh serve as roosts.

Although this site is close to the regionally-significant habitat for raptors, the location of the site at the end of the runway for the Perris Valley Airport also makes the habitat less suitable for birds of prey. The constant activity in the airspace near the airport, including flights of ultralight aircraft, hot air balloons, and parachutists precludes the birds from using the site as often as other open agricultural lands in the region. Two red-tailed hawks were seen on the field survey, and many others would be expected if censuses were made at other times of the year.

Sensitive biological elements

The Data Base reported that the project area is within the known range of several plant and animal species considered sensitive by resource agencies and conservation organizations. Other animal species, namely resident and wintering raptors, that have been designated as "species of special concern" by the Department of Fish and Game, were considered as well. Sensitive species are so-called because of their limited distribution, restricted habitat requirements, particular susceptibility to human disturbance, or a combination of these factors. State and federally protected species considered for the project area are listed in Table 1, along with their status. An explanation of the status codes follows the table.

Table 1. Federal and state protected species of the Green Valley Specific Plan study area.

Scientific Name (Common name)	Status *	Habitat
Reptiles:		
<u>Phrynosoma coronatum blainvillei</u> San Diego horned lizard	1. C2 2. CSC 3. B2.1	Chaparral Coastal sage scrub Sandy washes
<u>Cnemidophorus hyperythrus</u> Orange-throated whiptail	1. C2 2. CSC 3. B3.1	Coastal sage scrub Riparian Dry washes
Birds:		
<u>Buteo regalis</u> Ferruginous hawk	1. C2	Farmland, grassland (Winter visitor)
<u>Polioptila melanura californica</u> Calif. black-tailed gnatcatcher	1. C2 2. CSC 3. B2.2	Coastal sage scrub Rocky hillsides (nests)
Mammals:		
<u>Dipodomys stephensi</u> Stephens kangaroo rat	1. E 2. CT 3. B1.2	Level grassland
Plants:		
<u>Caulanthus simulans</u> Payson's caulanthus	1. C2 3. B1.2 4. List 1 R2, E1, D3	Chaparral Rocky hillsides Fire follower
<u>Brodiaea filifolia</u> Thread-leaved brodiaea	1. C2 2. CE 3. A2.1 4. List 1B R3, E3, D3	San Jacinto River floodplain

* Status definitions are on the following two pages.

STATUS DESIGNATIONS

1) FEDERAL DESIGNATIONS

- E = Federally listed, endangered
- T = Federally listed, threatened
- C1 = Category 1 candidate species. Enough data are on file to support the federal listing.
- C2 = Category 2 candidate species. Threat and/or distribution data are insufficient to support federal listing.
- C3a = Extinct
- C3b = Taxonomically invalid
- C3c = Too widespread and/or not threatened. No longer considered as a federal candidate for listing.

2) STATE DESIGNATIONS

- CE = State listed, endangered
- CT = State listed, threatened (previously listed as rare)
- CP = Fully protected under California Fish and Game Code, Sections 3511, 4700, 5050, 5515
- CSC = California Department of Fish and Game Species of Special Concern

3) CALIFORNIA NATURAL DIVERSITY DATA BASE

Data Base Priority Codes were developed for use by the California Department of Fish and Game as a ranking system with respect to the status of sensitive biological elements. These codes are not intended to imply protection under legislation. The Federal and California Endangered Species Acts provide legal protection for listed species.

- A1.1 Extremely rare, endangered and unprotected species
- A1.2 Extremely rare and threatened species
- A2.1 Very rare, endangered and unprotected species
- A2.2 Very rare and threatened species

- B1.1 Rare and endangered species <u>or</u> extremely rare, endangered or threatened subspecies.
- B1.2 Rare and threatened species <u>or</u> very rare, endangered or threatened subspecies.
- B2.1 Uncommon and threatened species <u>or</u> rare and endangered subspecies.
- B2.2 Rare but not threatened <u>or</u> peripheral and endangered species in California only, <u>or</u> rare and threatened subspecies.
- B3.1 Uncommon and declining <u>or</u> peripheral and threatened species in California only, <u>or</u> uncommon or threatened, or peripheral and endangered subspecies in California only.

4. CALIFORNIA NATIVE PLANT SOCIETY (CNPS)

List 1 - Plants rare and endangered in California and elsewhere.
List 2 - Plants rare or endangered in California, but more common elsewhere.
List 3 - Plants about which we need more information.
List 4 - Plants of limited distribution (a watch list).

R-E-D CODE:

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 one extended population.
3 - Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 - Not endangered
2 - Endangered in a portion of its range
3 - Endangered throughout its range

D (Distribution)

1 - More or less widespread outside California
2 - Rare outside California
3 - Endemic to California (i.e., does not occur outside California).

Information sources of status descriptions are derived from the California Natural Diversity Data Base and the California Native Plant Society. See references for federal and state designations.

The protected species identified in Table 1 are discussed below.

The **San Diego horned lizard** frequents a variety of habitat types including coastal sage scrub and grasslands. It is common in areas where there is loose sandy soil with low-growing brush nearby. Ants are the primary food of this species. Populations of this lizard are declining due to extensive collecting on wildlands near urban development areas and as a result of its habitat being converted to agricultural and urban lands. San Diego horned lizards are known to occur in the region, and historic records exist for this species within five miles of the project site. However, no suitable habitat now exists within the project area, and the horned lizard is believed to be absent.

The **orange-throated whiptail** occupies washes and other sandy areas where there are rocks and patches of brush nearby. This species is common in coastal sage scrub, riparian areas, and dry washes. It has a limited range of occurrence, extending from inland southern California into northern Baja. Populations of this species are declining as a result of habitat loss due to land conversion for agriculture and development. The species is known from the Motte Reserve and from just west of Steele Peak. One was recently (1989) sighted near Lake Perris.

Because of the disturbance to the ground surface from agricultural operations over the past fifty years, very few reptiles of any kind now exist at this site. The orange-throated whiptail is presumed to be absent.

The **ferruginous hawk** is an uncommon but regular, winter visitor to southwestern Riverside County. It hunts the agricultural lands from October until March, then migrates to the northern plains to breed. The ferruginous hawk may be observed in winter throughout the agricultural and natural lands within the Perris area. Although not observed during the field surveys, the Green Valley site is undoubtedly occupied on occasion by the ferruginous hawk in the winter.

The **California black-tailed gnatcatcher** is a small songbird native to the coastal sage scrub plant community of southern California and northern Baja. A recent review of the status of this species (Atwood, 1980) revealed severely reduced population levels and a major loss of suitable habitat in recent times. This study estimated a remaining population of this race of about 1335 pairs. Approximately 400 pairs were estimated in Riverside County. A substantial amount of coastal sage scrub has been developed in Riverside County since Atwood's 1980 study.

None of the study area contains adequate stands of coastal sagebrush, white sage, black sage, and California buckwheat to support nesting pairs of this species. Because suitable habitat is lacking, this bird is presumed to be absent.

The **Stephens kangaroo rat** is listed by the state of California as threatened and is federally listed as endangered. The Stephens kangaroo rat is endemic to the San Jacinto Valley and nearby valleys of western Riverside and northern San Diego counties. Level to slightly sloping terrain with vegetative cover limited primarily to annual grasses and/or herbaceous plants is the species preferred habitat. This species is known to be sympatric with the Pacific kangaroo rat, a similar species with a much more widespread distribution.

The limited range of the Stephens kangaroo rat and the conversion of its habitat to agricultural lands and developed areas are the primary factors which have contributed to its decline and led to its listing as a threatened species.

The trapping survey performed for the Riverside County Flood Control District resulted in 35 captures of the Stephens kangaroo rat near the San Jacinto River, about 2-5 miles west of the Gary Cook Corporation property. This rodent is also known from the Motte Reserve. All of Perris and its Sphere are within the historic range of this species, and most of the lands were formerly suitable habitat. The Green Valley site was probably not suitable habitat in the past because of its dense clay, rather alkaline, soils. No habitat for the SKR is now present, and the species is presumed to be absent from the site.

Payson's caulanthus is an annual plant which inhabits chaparral areas following fire. It was recorded by the Data Base in Perris from an area now urbanized. LaPre' observed this rarely-reported plant in great abundance one spring following a chaparral fire in the Gavilan Hills. It has been recorded from the Motte Reserve in Perris, and can be expected on hillsides with chaparral vegetation throughout western Riverside County.

Because of the lack of habitat for Payson's caulanthus on the Green Valley site, this plant is believed to be absent.

Thread-leaved brodiaea is a perennial herb of the Amaryllis family. Apparently, the species' historical range extended from the base of the San Gabriel and San Bernardino Mountains to the interior valley region of central San Diego County. The species is probably extirpated from Los Angeles and San Bernardino Counties. A 1979 rare plant status report from the California Native Plant Society states that the only known recent collections are from the Santa Rosa Plateau, the San Jacinto River near Perris, and West of Murrieta in Riverside County, along with the San Marcos industrial area in San Diego County.

A population of the thread-leaved brodiaea was located along a 3000 foot reach of the San Jacinto River in April, 1988. This population is restricted to the southerly side of the river, and its numbers total approximately 275 plants.

Associated vegetation at that site is composed of dropseed bunchgrass (Sporobulus airoides) and introduced annual grasses including red brome (Bromus rubens), soft chess (Bromus mollis), and cheat grass (Bromus tectorum). Thread-leaved brodiaea was found growing at the edge of clumps of dropseed bunchgrass and intermixed with the introduced annual grasses.

The channel of the San Jacinto River is virtually denuded of vegetation where it crosses the Green Valley project site, and no brodiaea plants were observed or are expected. The Easton survey of 1988 did not locate any brodiaea plants in this reach of the river. Although this endangered plant is presumed absent from this site, conditions suitable for its establishment and growth are present, and the river channel might some day become an area where the thread-leaved brodiaea could be transplanted.

Additional sensitive species

Two plant species occurring in the nearby area are not yet recognized as rare by federal or state agencies, but are known to local botanists to be very uncommon and/or declining in numbers. These plants, which have recently been collected from natural lands on the San Jacinto River floodplain, are described below:

Crownscale (Atriplex coronata var. notatior) is an annual member of the saltbush genus which is restricted to the San Jacinto River floodplain in alkaline soils, according to Munz (1974). Although not listed as rare or threatened by state and federal agencies, local botanists Mike Hamilton and Andy Sanders have reported that this species has declined drastically from its former range due to dryland farming within the floodplain. It has recently been listed as a local endemic that is threatened throughout its range in the new edition of the Rare and Endangered Plant Inventory.

Crownscale is known from the San Jacinto Wildlife Area and from scattered localities within the San Jacinto River floodplain from San Jacinto to Elsinore. Most records of this species are historic. One plant was observed in 1988 near Lakeview, and suitable habitat exists for this species on all natural lands remaining in the San Jacinto River floodplain. A remote possibility exists that crownscale could be found on the Green Valley project site, although the extensive ground cultivation has probably eliminated all populations. It could be re-introduced within the right-of-way of the San Jacinto River channel.

Tarweed is a common name given to several species of the genus Hemizonia. Hemizonia laevis is a plant of the inland valleys with a range extending from San Diego to Kern county. Little is known of its preferences, but most reported localities have been from low elevation grasslands. UCR botanist Andy Sanders reports that few records of this plant exist in herbarium collections, and that a review of its rarity is in order. Tarweed is potentially found throughout the natural lands within the floodplain, and in the less-disturbed sites with annual grassland. None were found during the field survey, but an additional late spring or early summer search for this plant would be necessary to prove its absence from the less-disturbed pond areas of the site northeast of the nursery.

Discussion

The rapid urbanization of this part of western Riverside County has resulted in a diminishing of foraging habitat for the large number of wintering and nesting birds of prey. Where the development proposals impinge on the San Jacinto Valley, the impacts to raptors are judged to be significant. In other areas, such as the Gary Cook Corporation property, the loss of farmland and open space poses a rather large contribution to the cumulative impacts of development on raptor habitat, but direct impacts are negligible, since little or no nesting habitat is present. Because of the airspace disturbance near the airport, the loss of foraging habitat is not as great at this location as at other more protected sites in the Perris and San Jacinto Valleys.

Projects impacting wetland habitat or altering a stream course designated as a blueline on the USGS topographic maps are required to obtain a permit from the California Department of Fish and Game under Sections 1601-3 of the Fish and Game Code, and from the Corps of Engineers under Section 404 of the federal Clean Water Act. Mitigation requirements imposed by these agencies for loss of wetlands may differ from those required by the City of Perris or the County of Riverside. Early coordination with the state and federal agencies in the site planning process is recommended. The Riverside County Flood Control and Water Conservation District has recently been meeting with the permitting agencies to determine mitigation requirements for its San Jacinto River Channel Improvement Project. Participation by the Green Valley project in the overall mitigation plan for the San Jacinto River is recommended. At this time, preservation of a sufficient right-of-way for channel improvements and a bordering greenbelt of riparian or wetland vegetation is the most specific mitigation measure that can be suggested. After the precise mitigation plan is formulated, the exact land uses within this part of the right-of-way can be determined. Future approvals of plot plans, tentative tracts, and other land use entitlements within the Green Valley Specific Plan should be conditioned to participate in the mitigation plan approved for the San Jacinto River flood control improvement project.

As few native trees occur in the area, it is recommended that the eucalyptus trees remain intact and undisturbed to allow raptors and other birds continuous usage of these trees for perch and roost sites.

Because this site is within the historic range of the Stephens' kangaroo rat, mitigation measures designed to save this endangered rodent from extinction may be imposed on the Green Valley project even though no kangaroo rats are now present. The County of Riverside is currently preparing a Habitat Conservation Plan which will result in imposition of mitigation fees for all developments within the historic range of the species. The fees will be used to purchase lands as preserves for the Stephens' kangaroo rats. The City of Perris has been invited to join in the regional plan, and impose the same mitigating measures being contemplated by the County. Payment of the mitigation fees and participation in the HCP is recommended.

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Green Valley

Plants

ANGIOSPERMIAE: Dicotyledonae	FLOWERING PLANTS: Dicotyledons
Asteraceae	**Sunflower family**
Corethrogyne filaginifolia	Corethrogyne
Gnaphalium bicolor	White everlasting
Senecio vulgaris	Groundsel
Boraginaceae	**Borage family**
Amsinckia intermedia	Fiddleneck
Brassicaceae	**Mustard family**
*_Brassica geniculata_	Short-pod mustard
*_Sisymbrium irio_	London rocket
Caprifoliaceae	**Elderberry family**
Sambucus mexicanus	Elderberry
Convolvulaceae	**Morning-glory family**
*_Calystegia macrostegius_	Bindweed
Crassulaceae	**Succulents**
Crassula erecta	Crassula
Euphorbiaceae	**Spurge family**
Eremocarpus setigerus	Dove weed
Geraniaceae	**Geranium family**
*_Erodium cicutarium_	Red-stemmed filaree
Lamiaceae	**Mint family**
*_Marrubium vulgare_	Horehound
Myrtaceae	**Myrtle family**
*_Eucalyptus_ sp.	Eucalyptus tree
Onagraceae	**Evening-primrose family**
Camissonia bistorta	Suncups
Polygonaceae	**Buckwheat family**
Eriogonum fasciculatum	Calif. buckwheat
Portulacaceae	**Purslane family**
Claytonia perfoliata	Miner's lettuce

Green Valley

Plants (cont.)

Solonaceae	**Nightshade family**
Datura meteloides	Jimson weed

ANGIOSPERMIAE:	FLOWERING PLANTS:
Monocotyledones	Monocots
Poaceae	**Grass family**
**Avena barbata*	Slender wild oat
**Bromus rubens*	Red brome
**Schizmus barbatus*	Abu-mashi

* - denotes introduced (non-native) species.
Nomenclature follows Munz (1974).

This list reports only those plant species actually observed on the site by this study. Other plants may have been overlooked or undetectable due to the seasonal nature of their occurrence.

Green Valley

Animals

REPTILIA	REPTILES
Iguanidae	**Iguanids**
Sceloporus occidentalis	Western fence lizard
Uta stansburiana	Side-blotched lizard
AVES	BIRDS
Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus	Double-crested cormorant
Ardeidae	**Herons**
Ardea herodias	Great blue heron
Casmerodius albus	Great egret
Anatidae	**Ducks and geese**
Anas platyrhynchos	Mallard
Accipitridae	**Hawks, eagles, harriers**
Buteo jamaicensis	Red-tailed hawk
Columbidae	**Pigeons and doves**
*_Columba livia_	Rock dove
Zenaida macroura	Mourning dove
Tyrannidae	**Tyrant flycatchers**
Sayornis saya	Say's phoebe
Tyrannus verticalis	Western kingbird
Alaudidae	**Larks**
Eremophila alpestris	Horned Lark
Corvidae	**Crows and jays**
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Mimidae	**Mockingbirds and thrashers**
Mimus polyglottos	Northern mockingbird
Laniidae	**Shrikes**
Lanius ludocicianus	Loggerhead shrike

Animals (cont.)

Sturnidae	**Starlings**
*<u>Sturnus vulgaris</u>	European starling
Emberizidae	**Sparrows, Warblers, Tanagers**
<u>Passerculus sandwichensis</u>	Savannah sparrow
<u>Zonotrichia leucophrys</u>	White-crowned sparrow
<u>Carpodacus mexicanus</u>	House finch
<u>Sturnella neglecta</u>	Western meadowlark
<u>Agelaius phoeniceus</u>	Red-winged blackbird
MAMMALIA	MAMMALS
Leporidae	**Hares and rabbits**
<u>Lepus californicus</u>	Black-tailed jackrabbit
<u>Sylvilagus audubonii</u>	Audubon cottontail
Sciuridae	**Squirrels**
<u>Otospermophilus beecheyi</u>	Beechey ground squirrel
Geomyidae	**Pocket gophers**
<u>Thomomys bottae</u>	Botta pocket gopher
Canidae	**Foxes, wolves, and coyotes**
<u>Canis latrans</u>	Coyote
Mustelidae	**Skunks and weasels**
<u>Mephitus mephitus</u>	Striped skunk

* - denotes introduced (non-native) species.

Nomenclature follows Stebbins, <u>A Field Guide to Western Reptiles and Amphibians</u>, the American Ornithologists' Union, <u>Checklist of North American Birds</u>, sixth edition, and Ingles, <u>Mammals of the Pacific States</u>.

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AIR QUALITY IMPACT ANALYSIS

GREEN VALLEY SPECIFIC PLAN

CITY OF PERRIS, CALIFORNIA

Prepared for:

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May 8, 1989

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APPENDIX D

AIR QUALITY TECHNICAL REPORT

Atmospheric Setting:

The climate of the Perris area, technically called an interior valley subclimate of Southern California's Mediterranean-type climate, is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. The clouds and fog the form along the area's coastline rarely extend as far inland as the Green Valley project site, and if they do, they usually burn off quickly after sunrise. The most important weather pattern is associated with the warm season airflow across populated area of the Los Angeles Basin which brings polluted air into western Riverside County late in the afternoon. This transport pattern creates unhealthful air quality as the fringes of this "urban smog cloud" extend to the project site in diluted form during the summer months.

Temperatures at Green Valley average a very comfortable 63 degrees (F) year-round, with warm summer afternoons (95+ degrees) and often cool on winter mornings (around 35 degrees).

Rainfall in the project area varies considerably in both time and space. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April with summers often completely dry. Rainfall measurements at Lake Elsinore near the project site average 12.5 inches per year, but vary markedly from one year to the next.

Winds are an important parameter in characterizing the air quality environment of a project site because they determine both the regional pattern of air pollution transport as well as controlling the local rate of pollution dispersion near a source. There are no known wind data available from near the project site, but wind patterns are sufficiently homogeneous throughout the area that they can be well estimated without actual on-site data. Daytime winds are from the W-NW at 6-8 mph as air moves locally upvalley and regionally onshore from the cool Pacific Ocean to the warm Mojave Desert interior of Southern California. These winds allow for good local mixing, but they may bring air pollutants from urbanized coastal areas into interior valleys. Strong thermal convection in the summer in the San Jacinto Valley ultimately dilutes the smog cloud from urbanized development, but Green Valley is too close to Los Angeles Basin emissions sources to escape the brunt of the regional air quality degradation resulting from the photochemical airborne reactions that create the summer smog and haze throughout the aiir basin. At night, air drains off surrounding mountains and then pools on the valley floor of the San Jacinto Valley. These breezes are cool and clean, but they may allow for local stagnation of air on the valley floor. Such near calm winds, in conjunction with localized temeprature iinversions noted below, tend to maximize the impact of any local pollution emissions sources such as freeways in the immediate vicinity of such sources.

In addition to winds that control the rate and direction of pollution dispersal, Southern California is notorious for strong temperatute inversions that limit the vertical depth through which pollution can be mixed. In summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing, but acts like a giant lid over the basin. A second inversion type forms on clear, winter nights when cold air off the mountains sinks to the valley floor while the air aloft over the valley remains warm. This forms radiation inversions. These inversions, in conjunction with calm winds, trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the basin, there is not enough traffic in inland valleys to cause any winter air pollution problems. Thus, while summers are periods of hazy visibility and occasionally unhealthful air, winter is often a period of spectacular visibility and excellent air quality in the project area, particularly as it relates to gaseous air quality from sources such as cars or heavy industrial development. Winter air quality impacts tend to be highly localized such as odors near agricultural operations or dust near mineral resource recovery operations. Such sources tend typically to be more of a nuisance rather than an adverse air quality impact.

Air Quality Setting

Ambient Air Quality Standards (AAQS): In order to gauge the significance of the air quality impacts of a proposed Green Valley development, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 has since been extended to 1987 for national AAQS, and may require further extension in air quality problem areas like Southern California. Because California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 1.

Baseline Air Quality: There are no available baseline air quality data directly at the proposed project site. Air quality measurements are made by the South Coast Air Quality Management District (SCAQMD) in areas where there are perceived air quality problems or where there are significant populations potentially exposed to unhealthful air quality. Neither condition is met in the Green Valley area. Air quality monitoring for ozone, the primary ingredient in regional photochemical smog, is conducted at Perris, and the closest data resource for other pollutant species such as carbon monoxide, (CO), nitrogen oxides (NOx), and total suspended particulates (TSP) is in Riverside. The Riverside data are not necessarily fully representative of the

Table 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 Hour	0.09 ppm (180 ug/m3)	Ultraviolet Photometry	0.12 ppm (235 ug/m3)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m3)	Non-dispersive Infrared Spectroscopy (NDIR)	9.0 ppm (10 mg/m3)	Same as Primary Stds.	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide	Annual Average	-	Gas Phase Chemiluminescence	0.053 ppm (100 ug/m3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m3)		-		
Sulfur Dioxide	Annual Average	-	Ultraviolet Fluorescence	80 ug/m3 (0.03 ppm)	-	Pararosoaniline
	24 Hour	0.05 ppm (131 ug/m3)		365 ug/m3 (0.14 ppm)	-	
	3 Hour	-		-	1300 ug/m3 (0.5 ppm)	
	1 Hour	0.25 ppm (655 ug/m3)		-	-	
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	-	-	-
	24 Hour	50 ug/m3		150 ug/m3	Same as Primary Stds.	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	-	-	50 ug/m3		
Sulfates	24 Hour	25 ug/m3	Turbidimetric Barium Sulfate	-	-	-
Lead	30 Day Average	1.5 ug/m3	Atomic Absorption	-	-	Atomic Absorption
	Calendar Quarter	-		1.5 ug/m3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m3)	Cadmium Hydroxide STRactan	-	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m3)	Tedlar Bag Collection, Gas Chromatography	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%		-	-	-
Applicable Only in the Lake Tahoe Air Basin						
Carbon Monoxide	8 Hour	6 ppm (7 mg/m3)	NDIR	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when the relative humidity is less than 70%.		-	-	-

Green Valley project area, but are shown in Table 2 as the best available characterization of project area baseline air quality.

Ozone and particulates are seen to be the two most significant air quality concerns. The five-year trend in these data shows the frequency of first stage smog alerts (hourly ozone levels over 0.20 ppm) has dropped dramatically at Perris in 1986-87. More localized pollutants such as carbon monoxide, nitrogen oxides, lead, etc. should be very low near the project site because background levels even in Riverside rarely exceed allowable levels, and there are almost no sources of such emissions near the project site. Suspended particulate levels are sometimes high throughout Riverside County because of agricultural activities, dry soil conditions and upwind industrial development, but only a portion of the total particulate burden is contained within the human respirable range. Ten-micron diameter respirable particulates (PM-10) measured beginning in 1984 show a very high frequency of violations of the state PM-10 standard, and also a considerable number of violations of the less tringent federal standard. Particulate exposure, from both a health and a visibility perspective, is therefore a serious air quality concern in Riverside County.

Air Quality Planning: The Clean Air Act Amendments of 1977 require that a plan be prepared for all airsheds that do not meet national AAQS. In the South Coast Air Basin (SOCAB), this plan was prepared by the SCAQMD and the Southern California Association of Governments (SCAG). The basin air quality management plan (AQMP) was prepared in 1978 and predicted attainment of all air quality standards by 1987. Subsequent revisions to the AQMP, however, recognized that this estimate was grossly optimistic and that some pollution standards will continue to be violated into the 21st century. Air quality will continue to improve as evidenced by the almost complete elimination of second stage smog alerts in the basin and the dramatic reduction in first stage alerts, but ultimate attainment in all Southern California, especially its inland valleys, is well into the future.

A new AQMP was adopted by the governing boards of the AQMD and SCAG in March of 1989 which contains far-reaching programs to improve the air quality by 5% per year until; attainment is achieved by the end of 2007. The new AQMP has many recommended measures that will affect everyone's lifestyle throughout the

Table 2 Perris Area Air Quality Monitoring Summary -- 1983-87
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	1983	1984	1985	1986	1987
Ozone:					
1-Hour > 0.09 ppm	128	137	146	133	136
1-Hour > 0.12 ppm	88	75	96	79	82
1-Hour > 0.20 ppm	13	6	8	3	1
Max. 1-Hour Conc. (ppm)	0.26	0.22	0.29	0.22	0.20
Carbon Monoxide:					
1-Hour > 20. ppm	0	0	0	0	0
8-Hour > 9. ppm	1	0	1	0	0
Max. 1-Hour Conc. (ppm)	15.	16.	14.	18.	13.
Max. 8-Hour Conc. (ppm)	7.9	8.9	9.1	8.3	7.6
Nitrogen Dioxide:					
1-Hour > 0.25 ppm	2	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.32	0.20	0.23	0.25	0.22
Total Suspended Particulates:					
24-Hour ≥ 100 ug/m3	21/54	35/60	28/59	29/60	30/59
24-Hour ≥ 260 ug/m3	0/54	0/60	0/59	0/60	0/59
Max. 24-Hour Conc. (ug/m3)	192.	193.	201.	215.	255.
Particulate Sulfate:					
24-Hour ≥ 25. ug/m3	0/54	0/60	0/59	0/60	0/59
Max. 24-Hour Conc. (ug/m3)	17.9	15.9	14.1	14.0	15.6
Particulate Lead:					
1-Month ≥ 1.5 ug/m3	0/12	0/9	0/12	0/12	----
Max. 1-Month Conc. (ug/m3)	0.28	0.31	0.18	0.11	----
Respirable Particulates:					
24-Hour > 50 ug/m3	----	4/10	46/61	48/61	5/15
24-Hour > 150 ug/m3	----	0/10	11/61	5/61	0/15
Max. 24-Hour Conc. (ug/m3)	----	129.	208.	294.	137.

Source: South Coast AQMD -- Perris Air Monitoring Station Data Summaries, supplemented by Riverside data for selected species.

basin. The AQMP recognizes that the growing imbalance between employment in coastal areas and housing opportunities in inland valleys, and the inability of the transportation system to meet travel demand between these two activity centroids is the major land use impediment to achieving healthful air quality.

The proposed Green Valley development relates to the AQMP through the land use and growth assumptions used to forecast automotive air pollution emissions. The Riverside County Sub-Element and the SOCAB AQMP are based on the designated land use for the project site contained in the Riverside County General Plan. To the extent that the proposed Green Valley development is consistent with the General Plan, is it, by inference, also consistent with the AQMP. Such consistency implies that the project will not create any significant regional air quality impacts because such impacts have already been anticipated within the framework of the regional air quality process. If, however, project implementation allows for a greater rate of development than previously anticipated, such growth inducement may create air quality planning inconsistency, and therefore create a significant air quality impact.

Air Quality Impact

Residential, commercial, industrial, recreational or institutional land uses such as those proposed for the Green Valley project potentially impact air quality almost exclusively through increased automotive emissions. Nominal emissions may occur in conjunction with "clean" on-site industrial uses, but these emissions are strictly controlled by the AQMD and therefore are generally insignificant compared to the motor vehicle emissions component. Minor secondary emissions during construction, from increased fossil-fueled energy utilization and from small miscellaneous sources will also be generated, but these are usually much smaller in both duration and volume than the mobile source emissions.

Construction Activity Impacts

For purposes of analysis of any short-term impacts, it has been assumed that 10% of the 1192 acres comprising the developed portion of the project site are under construction at any one time. An average development scenario of 119.2 acres under simultaneous disturbance was thus used to calculate short-term construction impacts. Such development will create temporary emissions of fugitive dust from soil disturbance and combustion emissions from on-site construction equipment and from off-site trucks moving dirt, delivering construction materials, and from worker travel.

Dust emissions from the silty soil of the San Jacinto Valley are generally substantial during soil disturbance. The average uncontrolled dust emission rate during contruction is about 1.2 tons per acre per month of disturbance. This is a universal factor that may not necessarily be completely applicable to specific soil conditions at the Green Valley project site. Dust control measures required by the South Coast AQMD under its nuisance abatement and fugitive dust rules (Rules 402 & 403) can reduce dust emissions by about one-half of their uncontrolled rate. When this factor is applied to the total acreage under development within the development area, the daily dust generation is calculated to be about 3.2 tons per day. Much of this dust is comprised of large diameter inert silicates that are chemically non-reactive and are further readily filtered out by human breathing passages. These fugitive dust particles are therefore more of a potential soiling nuisance as they settle out on parked cars, landscape foliage or outdoor furniture rather than any adverse health hazard. The inhalable fraction (10-micron diameter or less particulate matter - PM-10) of construction dust typically comprises one-third to one-half of the total suspended particulate fraction. This ratio suggests that the project-related construction PM-10 dust burden will be approximately 1.1 to 1.6 tons per day. It should be noted that such dust is similar to the dust lofted from current agricultural uses throughout the area. Although the construction disturbance dust emission rate is much higher than from such activities, construction is a one-time process whereas agricultural activity dust is a chronic component of the regional dust burden. With prevailing daytime winds from the NW, dust nuisance potential can be minimized by building out the project site from the NW corner west and south. Each new development will then be downwind of already completed site uses. Such a consideration may be important in reducing dust loading of dust-sensitive uses such as schools or high-tech industrial sites.

On-site and off-site construction equipment (primarily diesel powered) requires an average of 300,000 Brake Horsepower Hours (BHP-HR) of operations to build out one acre of land into roads and structures. For the Green Valley site under the assumed 10-year total buildout phasing schedule, this translates into the following daily construction equipment combustion emissions:

Reactive Organic Compounds	-	114.7	pounds/day
Carbon Monoxide	-	293.7	"
Nitrogen Oxides	-	1092.7	"
Combustion PM-10	-	47.9	"
Sulfur Dioxide	-	91.5	"

Although the daily NOx emissions are substantial, the mobile nature of the construction equipment will prevent any localized violation of the NOx standard. There may be localized instances when the characteristic diesel exhaust odor is noticeable from passing trucks or nearby heavy equipment, but such transitory exposure is a brief nuisance and will not threaten air quality standards. Truck exhaust impacts can be minimized by controlling construction routes to reduce interference with non-project traffic patterns and to preclude truck queuing or idling near sensitive receptor sites.

Mobile Source Impacts

By far, the greatest project-related air quality concern centers on the 100,000+ daily vehicle trips that will be generated at project completion for the proposed implementation of the Green Valley Specific Plan. For typical Riverside County residential, commercial and institutional trip lengths, additional vehicle travel from project implementation will be about 640,000 vehicle miles traveled (VMT).

The California Air Resources Board (ARB) has developed a land use and air pollution emissions computer model that allows one to readily calculate the daily emissions increase associated with the proposed project. This model, called URBEMIS2, was run for build-out years from 1995 to 2005 to show the slight reduction in total emissions from the continued retirement of older, polluting cars. Output from the model runs is attached as an appendix to this report. The project-related vehicular emissions burden, along with a comparison of current sub-regional emissions totals, are shown in Table 3. If final buildout occurs by the year 2000, the model predicts the following relative contribution of Green Valley to the sub-regional (San Jacinto Valley) air pollution burden:

Carbon Monoxide	-	15.3	percent
Reactive Organics	-	5.7	"
Nitrogen Oxides	-	14.6	"

Although the county- and basinwide percentage is much smaller than the above totals, the project share of the Riverside area total emissions burden is seen to be substantial. There are no standards of emissions significance on a regional basis except for general AQMD guidelines that specify when a project is of sufficient scope to create a potentially signficant regional air quality impact. Green Valley far exceeds that threshold level. The volume of emissions associated with the proposed development place a special

Table 3 - Green Valley Development Regional Vehicular Pollutant Emissions

	Emissions (tons/day)		
Build-Out Year	Reactive Organics	Carbon Monoxide	Nitrogen Oxides
1995	0.69	7.89	1.00
2000	0.61	7.33	0.94
2005	0.55	6.81	0.88
San Jacinto Valley			
- 1987 Est.	10.70	47.79	6.46

Source: URBEMIS2 Computer Model and SCAQMD Handbook for EIR's.

responsibility on project proponents and approving agencies to implement all possible transportation control measures to minimize the mobile source regional air quality impact.

The question of impact significance from growth-associated vehicular emissions, however, should not be related to the size of a project or the magnitude of its emissions, but rather whether such growth best serves the City of Perris and the Riverside County population and whether such growth has been properly anticipated within the air quality planning process. The growth assumptions for the 1988 AQMP Revisions call for an increase of 1.2 million residents in Riverside County in the next 20 years, along with an increase of 230,000 jobs (SCAG Draft Growth Management Plan). The conversion of agricultural land to more transportation-intensive land use is therefore abundantly anticipated. The project is readily consistent with the AQMP balanced land use objectives in that it will include a large employment component that will allow many residents to line and work in close proximity. Jobs/housing balance and maintaining trips internal within a development sub-area are critical AQMP measures. The balanced land use concept of the Green Valley Specific Plan will substantially reduce the project air quality impact.

In addition to evaluating the regional air quality impact of any project, microscale air quality considerations must be analyzed for any project that has the potential to create substantial traffic congestion near a project site. In order to determine whether any possible traffic congestion may contribute to localized air pollution standard violations, the California roadway dispersion model CALINE4 was run on several roadways surrounding the Green Valley area. Carbon monoxide (CO) was used an an indicator pollutant to determine "hot spot" potential. Rush hour traffic was combined with minimum dispersion conditions in order to create a theoretical worst-case impact estimate. Since future levels of service or ICUs at critical intersections were not available from the project traffic study, the microscale analysis was run for a variety of LOSs to show how roadway performance is linked to local air quality. The results of these calculations are shown in Table 4 for LOSs ranging from "C" to "F". Maximum hourly CO levels of 2.3 ppm over background will occur if LOS="D" is maintained. If system efficiency drops to an ICU>1.00 (LOS = "F"), then hourly CO impacts may be as high as 3.7 ppm above background. With low background CO

Table 4 - Green Valley Development Microscale ir Quality Impact Analysis
(Hourly CO levels above non-local background - Standard = 20 ppm)

Intersection:	LOS = C	LOS = D	LOS = E	LOS = F
Case/Goetz	0.3	0.4	0.5	0.6
Case/Murietta	0.8	1.0	1.2	1.6
Case/Mapes	0.7	0.9	1.2	1.5
Case/Ethanac	1.8	2.3	2.9	3.7
Ethanac/Goetz	0.2	0.2	0.3	0.4
Ethanac/Murietta	1.2	1.5	2.0	2.5
Ethanac/Green Valley	1.3	1.6	2.1	2.6
Murietta/Green Valley N	0.8	1.0	1.2	1.6
Murietta/Green Valley S	0.9	1.1	1.4	1.8

Source: CALINE4 Computer Model, Levels at 25' from Edge of Each Roadway
Peask hour traffic and theoretical worst-case meteorology.

concentrations expected to continue in the Green Valley area, project plus non-project traffic air emissions impacts pose no threat to the continued maintenance of the CO standard in the area if adequate roadway capacity is made a condition of approval for project development.

Secondary Impacts

Growth introduces a number of secondary emissions sources that are individually and cumulatively small, but are nevertheless a significant portion of the county pollution burden when summed over all countywide activities. These sources typically include -

- Increased fossil fuel combustion in county power plants to provide electrical energy to the project site.
- On-site combustion of natural gas for heating, hot water, and cooking.
- Increased evaporative emissions from transport, storage and dispensing of gasoline for project related vehicles.
- Evaporative emissions from cleaners, paints, solvents and other materials used in building construction and on-going maintenance.
- Dust emissions from the manufacture and use of aggregates, concrete, sand, gravel, stucco and other building materials.
- Combustion emissions from mowers, edgers, blowers and other landscape utility equipment.
- Increased business travel at regional airports.

On a single project basis, these various sources are cumulatively small, but they nevertheless attest to the basic conclusion that more people means more air pollution from a wide variety of sources.

Mitigation

The fact that the proposed development represents a very significant share of basinwide mobile source emissions places a special responsibility on project proponents and local regulatory agencies to develop effective impact mitigation. However, since almost all the project impacts derive from mobile source emissions beyond the control of project sponsors, there is only a limited potential for reducing any large percentage of project impacts. Some "standard" mitigation measures such as using dust control measures during construction mandated by the AQMD and using energy efficient design practices required by Title 24 of the state Administrative Code will be adopted, but they fail to address the basic transportation air quality impact issues. The proposed Green Valley Specific Plan incorporates a substantial emissions control through a jobs/housing balanced land use plan, but that level of control should be enhanced even more, if possible.

Effective emissions reduction will require a unified transporation system management (TSM) approach where a wide variety of transportation control measures (TCMs) are integrated into a comprehensive system of procedures and goals. An effective TSM program as a means for reducing vehicular traffic and its associated environmental effects (air pollution, noise, energy consumption, etc.) is difficult to achieve in practice. The difficulties inherent in TCM implementation notwithstanding, the City Of Perris must be committed to reduce mobile and stationary air pollutant emissions through a unified TSM program. The elements of such a program should include:

1. Coopration with the AQMD to implement regional strategies and tactics.

2. Development of park-and-ride facilities.

3. Encouragement of bicycle and pedestrian circulation alternatives.

4. Express transit access from the Green Valley area to regional employment centroids.

5. Encouragement of job-intensive uses to reduce the existing and growing

jobs-housing imbalance that promotes long commutes in and out of the local area.

Project plans will need to be reviewed to verify that these policies have been incorporated as fully as possible in order to meet these stated air quality objectives.

A P P E N D I X

URBEMIS2 Computer Output

Project Name : GREEN VALLEY Date : 05-08-1989

Analysis Year = 1995 Temperature = 60
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Residential	1.0/Unit	41738	41738	
Commercial	1.0/Unit	47925	47925	1
Industrial	1.0/Unit	4196	4196	1
Business Park	1.0/Unit	6390	6390	1
School	1.0/Unit	2400	2400	1
Park	1.0/Unit	168	168	1
Hotel	1.0/Unit	1050	1050	

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.2	40.1	58.0	77.2	27.0
Trip Speed	35	35	35	35	35
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	77.6	1.5	95.9	2.6
Light Duty Trucks	10.6	2.4	94.9	2.8
Medium Duty Trucks	5.3	5.9	94.2	0.0
Heavy Duty Trucks	2.0	33.3	66.7	N/A
Heavy Duty Trucks	3.6	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOX
Residential	712.0	7554.0	820.2
Commercial	598.4	5926.9	888.5
Industrial	67.2	704.3	90.9
Business Park	102.4	1072.6	138.4
School	31.3	312.9	45.6
Park	2.1	20.8	3.1
Hotel	17.9	190.0	20.6

Project Name : GREEN VALLEY Date : 05-08-1989

Analysis Year = 2000 Temperature = 60
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Residential	1.0/Unit	41738	41738	
Commercial	1.0/Unit	47925	47925	1
Industrial	1.0/Unit	4196	4196	1
Business Park	1.0/Unit	6390	6390	1
School	1.0/Unit	2400	2400	1
Park	1.0/Unit	168	168	1
Hotel	1.0/Unit	1050	1050	

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.3	40.2	58.3	77.4	27.2
Trip Speed	35	35	35	35	35
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	77.6	1.5	95.9	2.6
Light Duty Trucks	10.6	2.4	94.9	2.8
Medium Duty Trucks	5.3	5.9	94.2	0.0
Heavy Duty Trucks	2.0	33.3	66.7	N/A
Heavy Duty Trucks	3.6	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOX
Residential	634.6	7042.8	766.2
Commercial	532.5	5490.3	829.1
Industrial	59.9	654.0	84.9
Business Park	91.2	996.0	129.2
School	27.8	290.0	42.6
Park	1.9	19.2	2.9
Hotel	16.0	177.2	19.3

Project Name : GREEN VALLEY Date : 05-08-1989

Analysis Year = 2005 Temperature = 60
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Residential	1.0/Unit	41738	41738	
Commercial	1.0/Unit	47925	47925	1
Industrial	1.0/Unit	4196	4196	1
Business Park	1.0/Unit	6390	6390	1
School	1.0/Unit	2400	2400	1
Park	1.0/Unit	168	168	1
Hotel	1.0/Unit	1050	1050	

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.4	40.3	58.6	77.6	27.4
Trip Speed	35	35	35	35	35
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	77.6	1.5	95.9	2.6
Light Duty Trucks	10.6	2.4	94.9	2.8
Medium Duty Trucks	5.3	5.9	94.2	0.0
Heavy Duty Trucks	2.0	33.3	66.7	N/A
Heavy Duty Trucks	3.6	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOX
Residential	563.7	6545.1	718.2
Commercial	474.8	5096.4	776.2
Industrial	53.4	607.4	79.5
Business Park	81.3	925.0	121.1
School	24.8	269.2	39.9
Park	1.7	17.9	2.7
Hotel	14.2	164.7	18.1

APPENDIX E

TRAFFIC AND CIRCULATION REPORT

TRAFFIC IMPACT STUDY

FOR

GREEN VALLEY SPECIFIC PLAN

IN THE CITY OF PERRIS

PREPARED FOR:

GARY COOK CORPORATION
110 Newport Center Drive
Suite 200
Newport Beach, CA 92660

PREPARED BY:

BASMACIYAN-DARNELL, INC.
3190 Airport Loop Drive
Costa Mesa, CA 92626

MAY, 1989

GREEN VALLEY

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TRAFFIC IMPACT ANALYSIS
FOR
GREEN VALLEY

INTRODUCTION

Gary Cook Corporation proposes to develop a 1,194-acre parcel of land in the City of Perris as a mixed-use residential, commercial, and office development, to be known as Green Valley. The proposed project site is located in the southwestern portion of the City of Perris, and is bounded by Ethanac Road on the south, Goetz Road on the west, and Case Road on the north and east. Murrieta Road bisects the project site. The location of the project is shown in its regional setting on Figure 1. The project site is currently vacant and used for agricultural purposes. The area surrounding the project site can be characterized as a generally undeveloped, rural area.

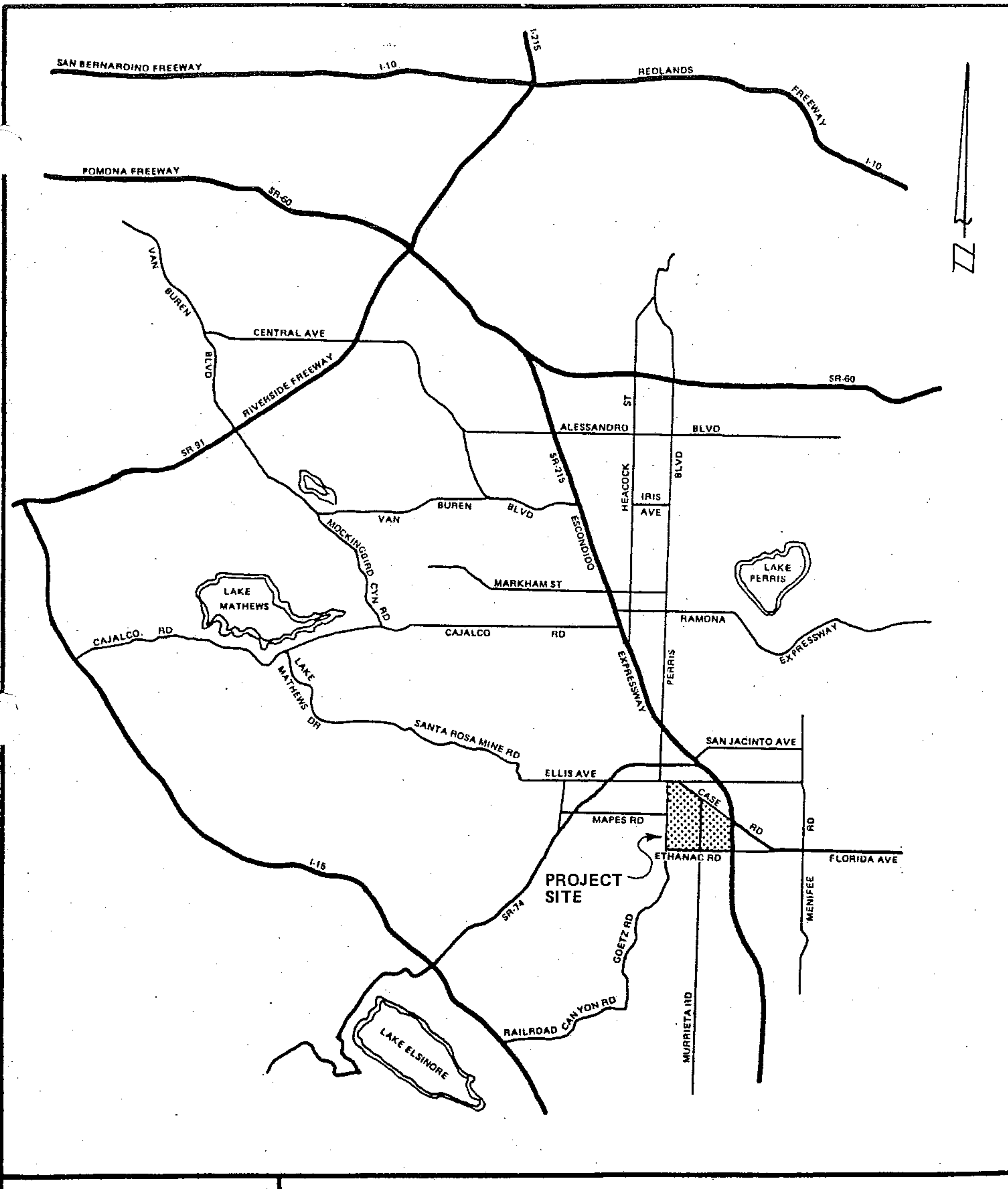
Basmaciyan-Darnell, Inc. (BDI) has been retained to prepare a traffic impact study for the proposed development. The study will address existing conditions, project-related traffic impacts on the surrounding street system, cumulative traffic conditions with other approved and proposed project in the area, and project access and internal circulation.

PROJECT DESCRIPTION

As presented in the project's Screencheck Specific Plan, the Green Valley project proposes to construct 3,712 single-family homes on lots of varying sizes, ranging from 5,000 to 7,200 square feet. The project also proposes 750 multi-family residences, 751,300 square feet of commercial development, 81 acres of industrial development, 40 acres of business park, and a 100-room hotel. Four elementary schools and five parks are also planned for the project.

Murrieta Road bisects the project site from north to south, and is planned to be the primary circulation facility through the project. Green Valley Parkway will provide additional circulation opportunities throughout the project site, crossing Murrieta Road twice, at the northern and the southern end of Murrieta within the project site, and continuing east through the project to connect with Ethanac Road toward the eastern project boundary. "A" Street connects Green Valley Parkway to Goetz Road on the western project boundary.

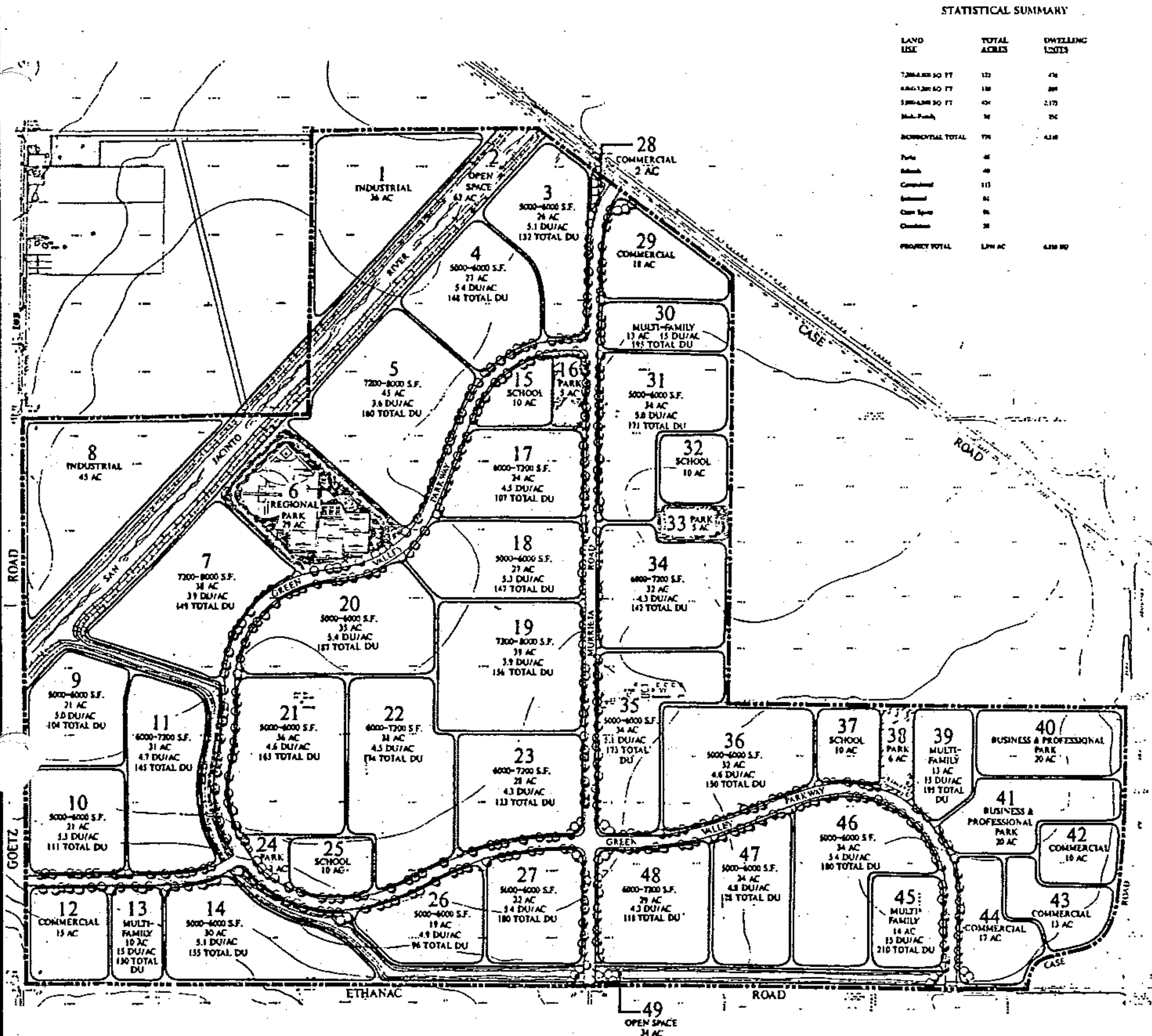
A copy of the current project site plan is provided on Figure 2. It should be noted that revisions to the site plan have been made since the Screencheck submittal, resulting in a number of differences in unit counts between the original submittal and the current site plan. The net result for all land uses is an equal or lesser number of dwelling units, square feet of development,

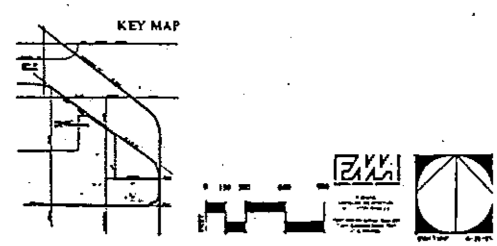


BASMACIYAN-DARNELL, INC.

FIGURE 1

VICINITY MAP





LAND USE PLAN
GREEN VALLEY
PERRIS GREEN VALLEY ASSOCIATES

NOTE: 4/28/89 VERSION OF SITE PLAN

BDI
BASMACIYAN-DARNELL, INC.

FIGURE 2

PROJECT SITE PLAN

acres of development, etc. than originally proposed. For purposes of this traffic study, the project traffic impacts will be based on the land use levels shown on the original site plan, contained in the Screencheck Site Plan. This will result in a worst-case analysis, since in all land use cases, the final submittal will be equal to or less than those analyzed.

EXISTING CONDITIONS

Roadway Characteristics and Existing Traffic Volumes

As previously stated, the area surrounding the project site can be characterized as a generally undeveloped, rural area. The circulation system in the vicinity of the project site currently consists primarily of two-lane undivided roadways with unimproved, dirt shoulders. Most intersections in the area are stop-sign controlled with stop signs on the minor streets only.

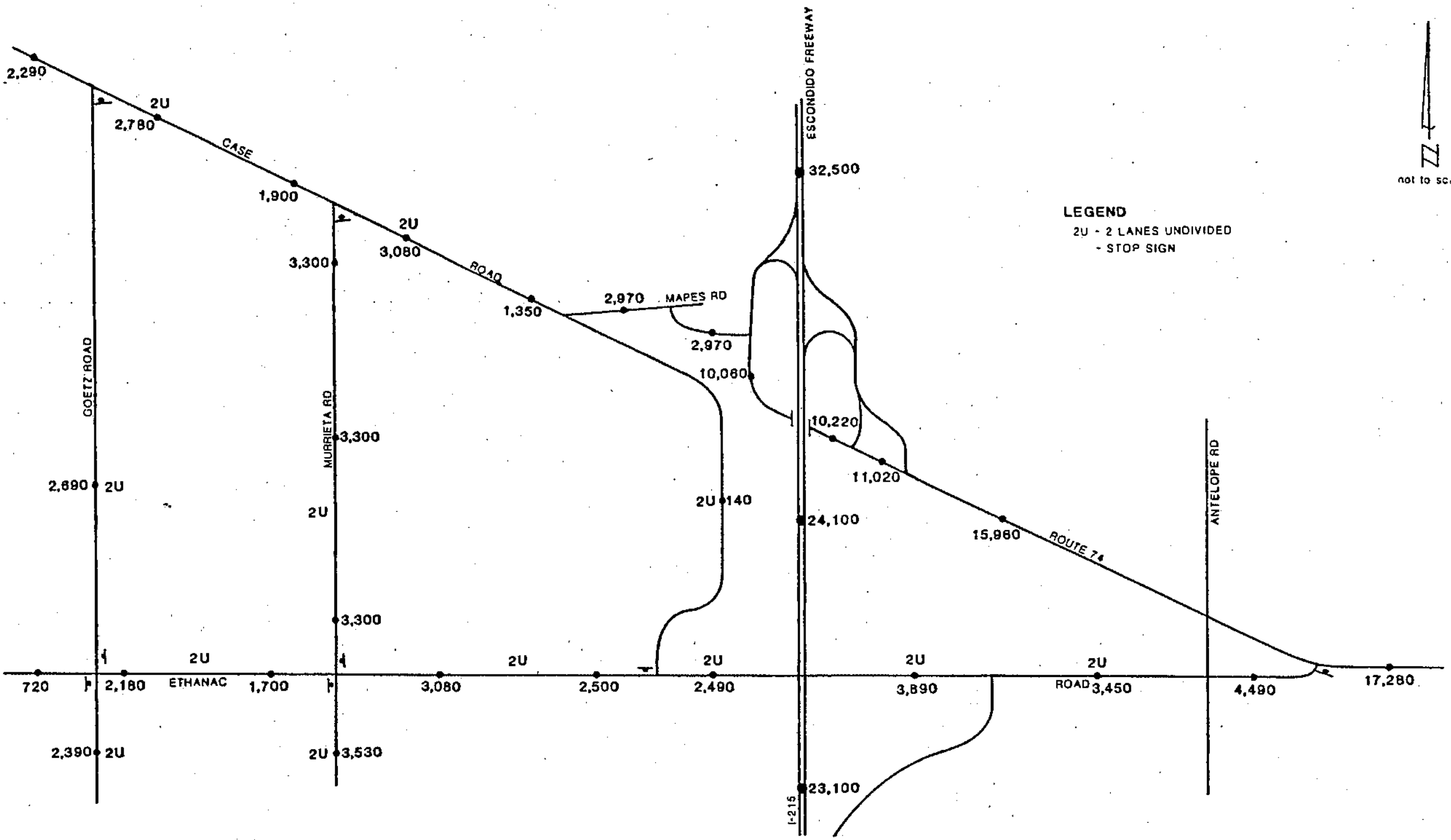
Regional access to the project area is provided by the Escondido Freeway, I-215, and Route 74. Route 74 currently interchanges with I-215 in the general vicinity of the northeast corner of the project site. Local circulation is provided by Ethanac Road, Case Road, Murrieta Road, and Goetz Road. Existing traffic volumes in the vicinity of the project are generally quite low, with the exception of I-215 and Route 74, which carry through traffic, as well as local traffic.

The existing roadway system is shown on Figure 3, with the number of lanes on each roadway segment, and type of traffic control at each intersection depicted. Also shown are existing average daily traffic (ADT) volumes. These daily traffic volumes were derived by assuming the highest peak hour traffic total at the adjacent intersections to be ten percent of the daily volume.

Existing peak hourly traffic turning movement volumes were collected at twelve intersections in the project vicinity in Spring, 1989, and are depicted on Figure 4.

Daily Capacity Operating Conditions

The operation of the existing roadway system was analyzed using the volume-to-capacity ratio methodology. The results of the analysis are depicted on Table 1. Review of Table 1 shows that the roadways in the vicinity of the project site are currently carrying traffic volumes well within their daily capacities, and are operating at Level of Service "A".



BASMACIYAN-DARNELL, INC.

FIGURE 3

EXISTING ROADWAY CHARACTERISTICS
AND
EXISTING AVERAGE DAILY TRAFFIC VOLUMES

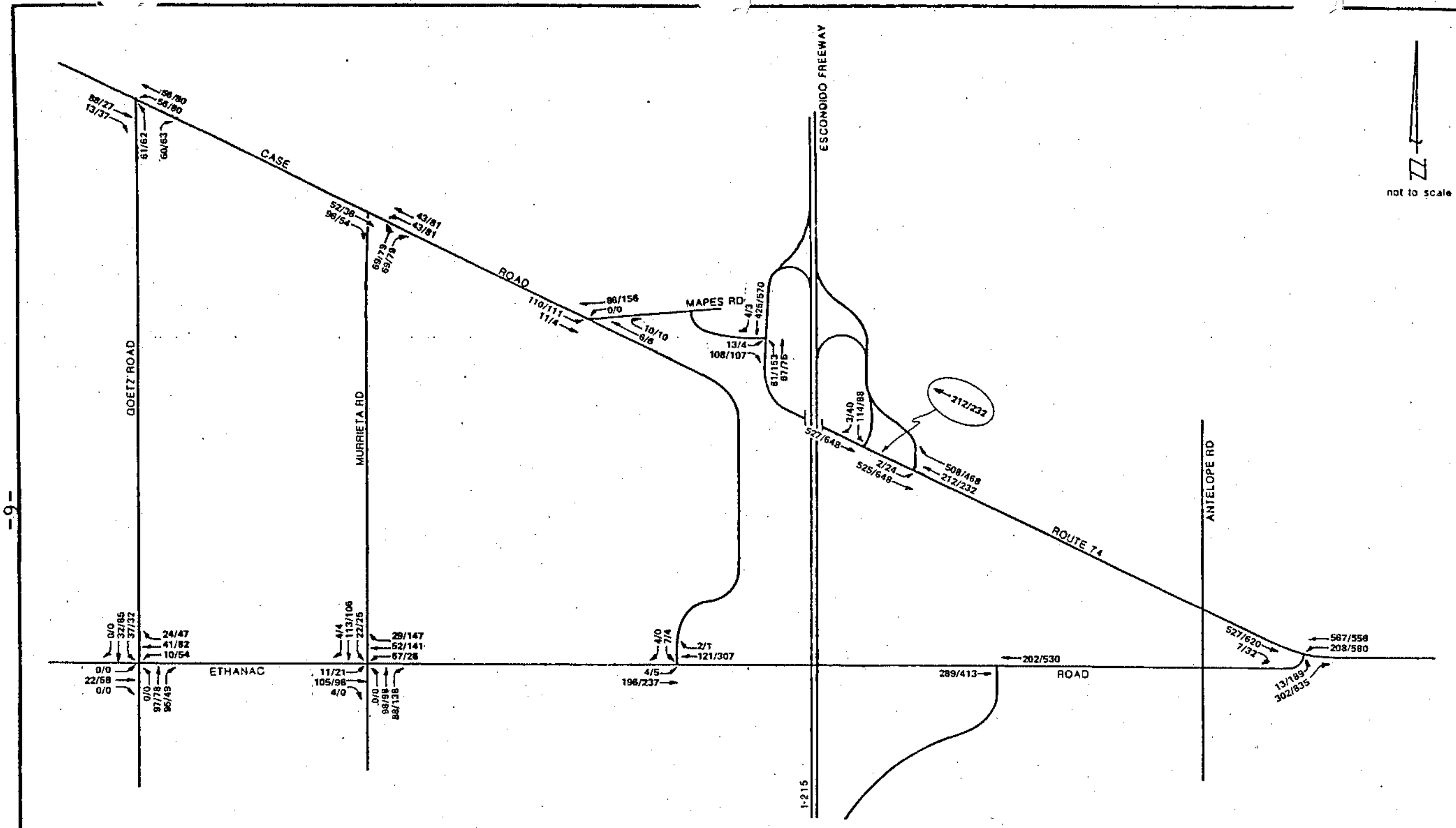


FIGURE 4

EXISTING AM/PM PEAK HOURLY TRAFFIC VOLUMES

TABLE 1

SUMMARY OF ROADWAY DAILY VOLUME-TO-CAPACITY ANALYSIS EXISTING TRAFFIC VOLUMES

Roadway Segment	Daily Roadway Capacity	Average Daily Traffic Volume	Volume-to-Capacity Ratio	Level of Service
ETHANAC ROAD:				
West of Goetz	15,000	720	.05	A
Goetz to Murrieta	15,000	2,180	.15	A
Murrieta to Case	15,000	3,080	.21	A
Case to I-215	15,000	2,490	.17	A
I-215 to Encanto	15,000	3,890	.26	A
Encanto to Antelope	15,000	3,450	.23	A
Antelope to Rt. 74	15,000	4,490	.30	A
GOETZ ROAD:				
Case to Ethanac	15,000	2,690	.18	A
South of Ethanac	15,000	2,390	.16	A
MURRIETA ROAD:				
Case to Ethanac	15,000	3,300	.22	A
South of Ethanac	15,000	3,530	.24	A
CASE ROAD				
West of Goetz	15,000	2,290	.15	A
Goetz to Murrieta	15,000	2,790	.19	A
Murrieta to Mapes	15,000	3,080	.21	A
Mapes to Watson	15,000	140	.01	A
Watson to Ethanac	15,000	140	.01	A
ESCONDIDO FREEWAY (I-215):				
North of Route 74	54,000	32,500	.60	A
Route 74 to Ethanac	54,000	24,100	.45	A
South of Ethanac	54,000	23,100	.43	A
ROUTE 74:				
I-215 to Ethanac	36,000	15,960	.44	A
East of Ethanac	36,000	17,280	.48	A

NOTE: Daily traffic volumes derived by assuming highest peak hour volumes to be 10% of daily total.

FUTURE CONDITIONS

Future Traffic Volumes

In addition to the proposed Green Valley project, a number of other parcels of land in the vicinity of the project are also proposed for development. These projects are in various stages of submittal and approval, with some expected to be on line prior to or concurrent with the Green Valley development, and others expected to follow Green Valley. Analysis of traffic volumes and circulation system requirements would not be complete without taking into account the traffic expected to be generated by these other projects, and the interaction of traffic between the projects, as well. Cumulative traffic volumes will be discussed and analyzed in the following PROJECT TRAFFIC section.

Future Roadway System

The roadway system in the vicinity of the project will carry much higher volumes of traffic than today with the construction of the proposed Green Valley project, as well as the other proposed developments in the area. Extensive improvements to the circulation system are planned to accommodate this traffic growth. The extent to which the circulation system is improved will be contingent upon the traffic demands that will be placed upon each roadway and each intersection. Generally, it is assumed that each of the intersections analyzed will need to be signalized; and that roadways will need to be improved with curb and gutters, and widened to allow two, four, or six lanes with left-turn pockets. This traffic study will analyze cumulative traffic conditions, which will include existing, project-related, and other project traffic. The results of that analysis will help to determine the number of lanes needed on each roadway and at each intersection, and any other circulation improvement recommendations. This study will also identify the portion of each improvement that should be the responsibility of the Green Valley project.

One major roadway improvement already analyzed, and assumed to be in place in the future to accommodate traffic growth is an interchange with the I-215 on Ethanac Road. This interchange is proposed to be a standard diamond interchange, with phased traffic signal control. The interchange will be assumed to be in place to accommodate future traffic. The cumulative traffic analysis will help to formulate recommendations on the specific geometrics needed.

PROJECT TRAFFIC

Project-Related Trip Generation

As previously stated, the Green Valley project proposes a mixed-use development on 1,194 acres. Development plans include single- and multi-family homes, commercial centers, industrial and business parks, and elementary schools and community parks. This traffic study will analyze the projected traffic volumes and project-related traffic impacts that would result from the level of development proposed in the Screencheck Specific Plan. Revisions to the project since submittal of the Screencheck have resulted in lesser development plans for some land uses, particularly single-family residences, which will, in turn, result in less trip-making than analyzed in this traffic study.

Land use totals for the project, as presented in the Screencheck Specific Plan, and as analyzed in this traffic study are shown on Table 2.

Trip generation rates for the project, derived from the Institute of Transportation Engineers Trip Generation Manual, Fourth Edition, are shown on Table 3. Resulting trip generation characteristics for the project are shown on Table 4. The project is estimated to generate approximately 103,867 trips on a daily basis, with 3,267 trips inbound and 3,185 trips outbound in the morning peak hour, and 5,118 trips inbound and 4,884 trips outbound in the evening peak hour.

Because of the mixed-use nature of the development, a portion of the trips will be assumed to be internal to the project, and therefore will not impact the surrounding roadway system. For example, the majority of trips to the elementary schools will be assumed to be to and from the residential areas in the immediate vicinity of each school. A portion of the residential trips will be assumed to be home-to-work or home-to-shopping trips oriented to the employment and shopping opportunities within the project. Therefore, of the 103,867 trips to be generated by the project per day, approximately 20% of those trips will remain internal to the project, and will not represent additional trips on the surrounding circulation system.

Trip Distribution and Assignment

The distribution and assignment of project traffic throughout the project's internal circulation system and onto the surrounding roadway system was accomplished by Mohle Grover and Associates, for the City of Perris through a computerized program known as QRS. The process takes into account the circulation system available for project tripmaking, as well as surrounding land uses. Through the distribution and assignment process, trips produced by residential uses are assigned along convenient paths to and from trip attractors, such as employment opportunities, shopping and commercial uses, and schools. The QRS program also

TABLE 2

GREEN VALLEY
PROJECT SUMMARY

Land Use Category	Number of Units	Comments
Single-Family Residential	3,712 DU's	
Multi-Family Residential	750 DU's	
Industrial	81 Acres	
Business Park	40 Acres	
Commercial	751.3 KSF	Five separate centers - varying sizes
Hotel	100 Rooms	
Schools	40 Acres	Four elementary schools - 10 acres each
Parks	46 Acres	Four 3-to-5-acre community parks and one 28-acre sports complex

NOTE: DU = Dwelling Units
KSF = Thousand Square Feet

TABLE 3

SUMMARY OF TRIP GENERATION RATES

Land Use	Units	Daily	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Single-Family Res.	DU	10.06	0.20	0.55	0.64	0.37
Multi-Family Res.	DU	5.86	0.07	0.38	0.38	0.18
Industrial	Acre	51.8	6.41	1.32	1.63	5.8
Business Park	Acre	159.75	17.25	2.89	3.33	14.7
Commercial (a)						
163.24	KSF	62.59	1.00	0.43	2.41	2.51
108.90	KSF	72.12	1.18	0.51	2.93	3.05
87.12	KSF	77.97	1.29	0.55	3.26	3.39
185.13	KSF	59.90	0.96	0.41	2.27	2.36
206.91	KSF	57.86	0.91	0.32	2.15	2.24
Hotel	Room	10.5	0.9	0.8	2.9	3.0
Schools	Acre	60.0	10.0	6.0	1.0	2.0
Parks	Acre	3.66	0	0	0	0

(a) Trip generation rate for each size commercial center derived by applying equation, as specified in the Trip Generation Manual - Institute of Transportation Engineers - Fourth Edition. See Appendix A.

NOTE: DU = Dwelling Units
KSF = Thousand Square Feet
AC = Acre
RM = Room

TABLE 4

SUMMARY OF PROJECT TRIP GENERATION

Land Use	Number of Units	Daily	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Single-Family Res.	3,712 DU	37,343	742	2,042	2,376	1,373
Multi-Family Res.	750 DU	4,395	54	285	285	135
Industrial	81 AC	4,196	519	107	132	470
Business Park	40 AC	6,390	690	116	133	588
Commercial	163.24 KSF	10,217	163	70	393	410
	108.90 KSF	7,854	129	56	319	332
	87.12 KSF	6,793	112	48	284	295
	185.13 KSF	11,089	178	76	420	437
	206.91 KSF	11,972	189	66	445	463
Hotel	100 RM	1,959	90	80	290	300
Schools	40 AC	2,400	400	240	40	80
Parks	46 AC	168	0	0	0	0
TOTAL		103,867	3,267	3,185	5,118	4,884

takes into account the proposed new development planned for the areas surrounding the project site.

The resulting project-related daily trips on each roadway segment is shown on Figure 5. Morning and evening peak hourly turning movement volumes at intersections are shown on Figure 6. Sixteen intersections will be analyzed with project and other project traffic, including the new intersections that would be created by the proposed Ethanac and I-215 interchange, and construction of Green Valley Parkway, internal to the project.

Cumulative Projects Analysis

Tripmaking from the other proposed or anticipated projects surrounding the Green Valley project were also taken into account in the analysis process. The areas surrounding the project were divided into six zones (A through F), as shown on Figure 7. Tripmaking assumptions for these areas were derived from the Southern California Association of Governments (SCAG) RIVSAN II Traffic Model. The daily trip generation assumptions for each of the project zones are shown on Table 5. Review of Table 5 shows that Other Project traffic is anticipated to be approximately 135,092 trips per day, for a total of 238,959 trips generated by cumulative projects within the study area. Green Valley represents approximately 43 percent of the total traffic estimated to be generated by development in the area.

Trip distribution and assignment of Other Project traffic was also accomplished through the QRS program, previously referenced. The resulting cumulative daily traffic volumes (Existing plus Green Valley plus Other Projects) are shown on Figure 8, and the peak hourly turning movements at intersections are shown on Figure 9.

TRAFFIC IMPACTS

Cumulative Traffic

As seen by review of Figures 8 and 9, the proposed developments in the City of Perris will generate large volumes of traffic, and will necessitate extensive improvements to the existing roadway system. Analysis of the impacts of cumulative traffic volumes on the existing circulation system would be meaningless, since it is clear that the future traffic volumes would be greatly in excess of the capacity of the roadway system as it exists today.

The future roadway system in the area, then, will be a product of the traffic demands that will result from the proposed developments. Projected daily traffic volumes on each roadway will determine the number of lanes required on each roadway segment, and projected peak hourly turning volumes will determine the number of turning lanes needed at each interseciton.

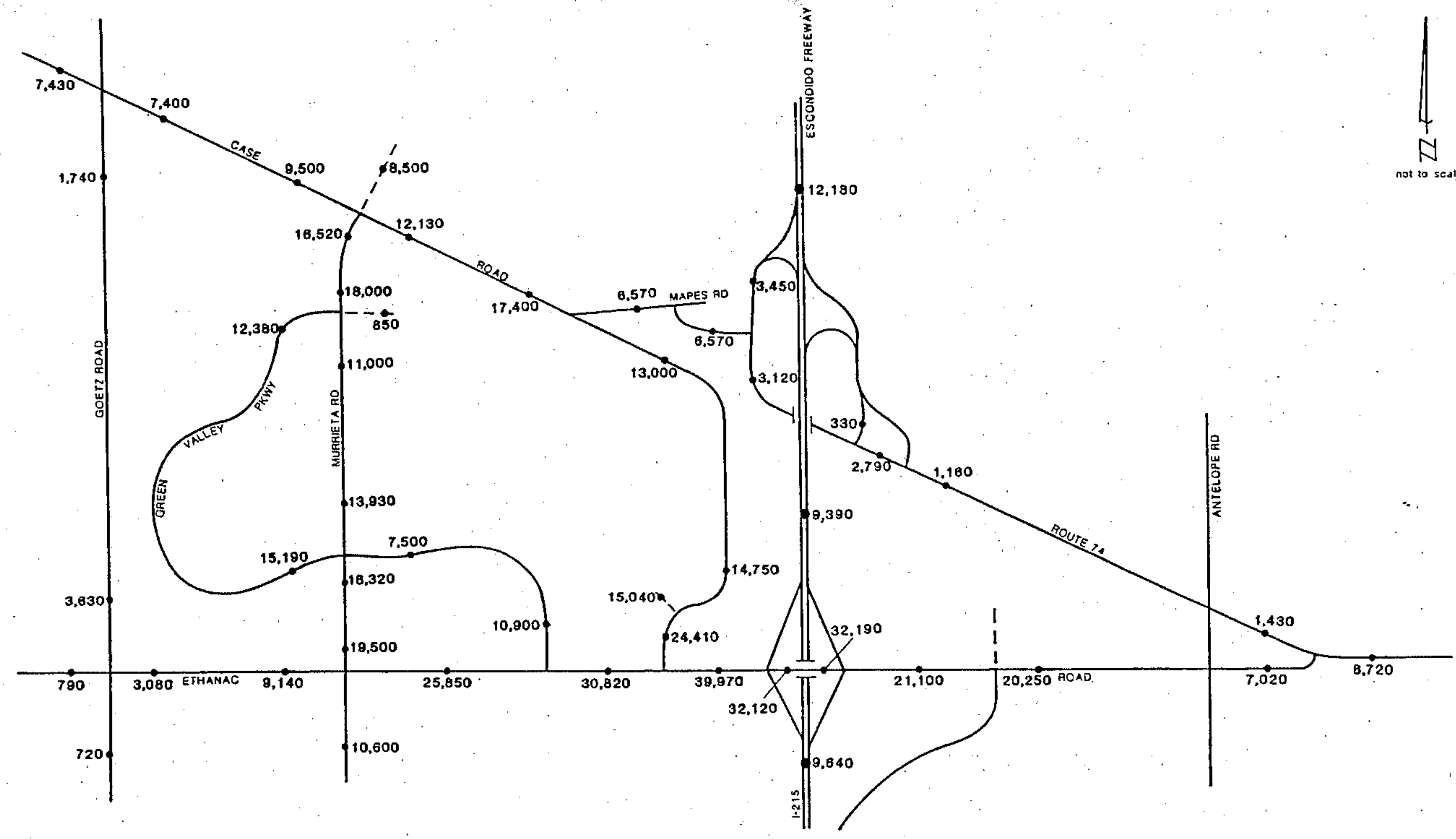


FIGURE 5

PROJECT-RELATED DAILY TRAFFIC VOLUMES

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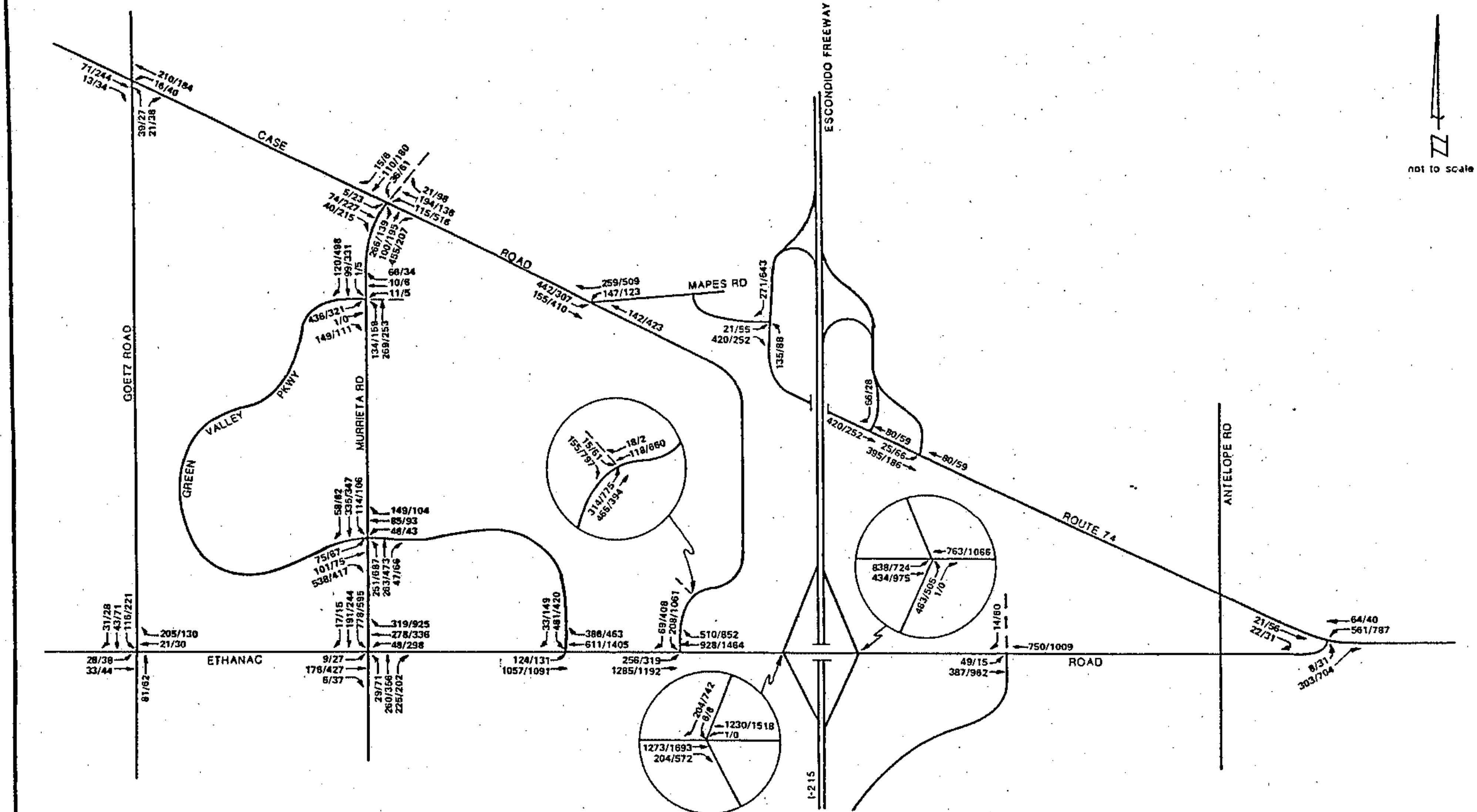

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FIGURE 6

PROJECT-RELATED AM/PM PEAK HOURLY TRAFFIC VOLUMES

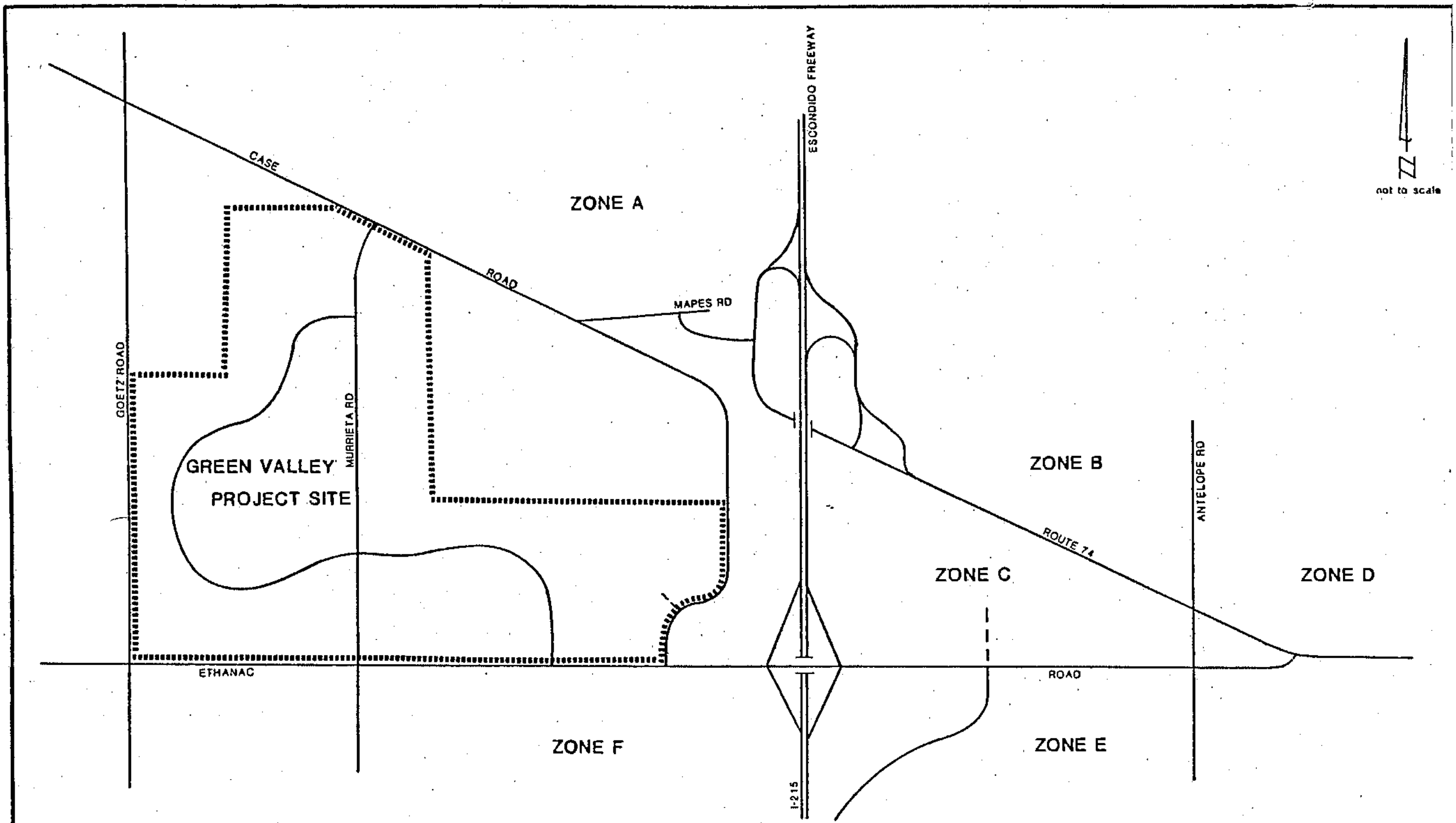

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FIGURE 7

OTHER PROJECTS
TRAFFIC ANALYSIS ZONES

TABLE 5

SUMMARY OF CUMULATIVE PROJECTS
TRIP GENERATION

Development Area	Proposed Development	Projected Daily Trip Generation
Green Valley	Mixed Use	103,867
ZONE A	Mixed Use	72,356
ZONE B	Residential	3,727
ZONE C	Business Park	5,114
ZONE D	Residential	8,019
ZONE E	Residential	21,636
ZONE F	Residential	24,240
TOTAL PROJECTED TRIP GENERATION		238,959
GREEN VALLEY PERCENTAGE OF TOTAL		43%

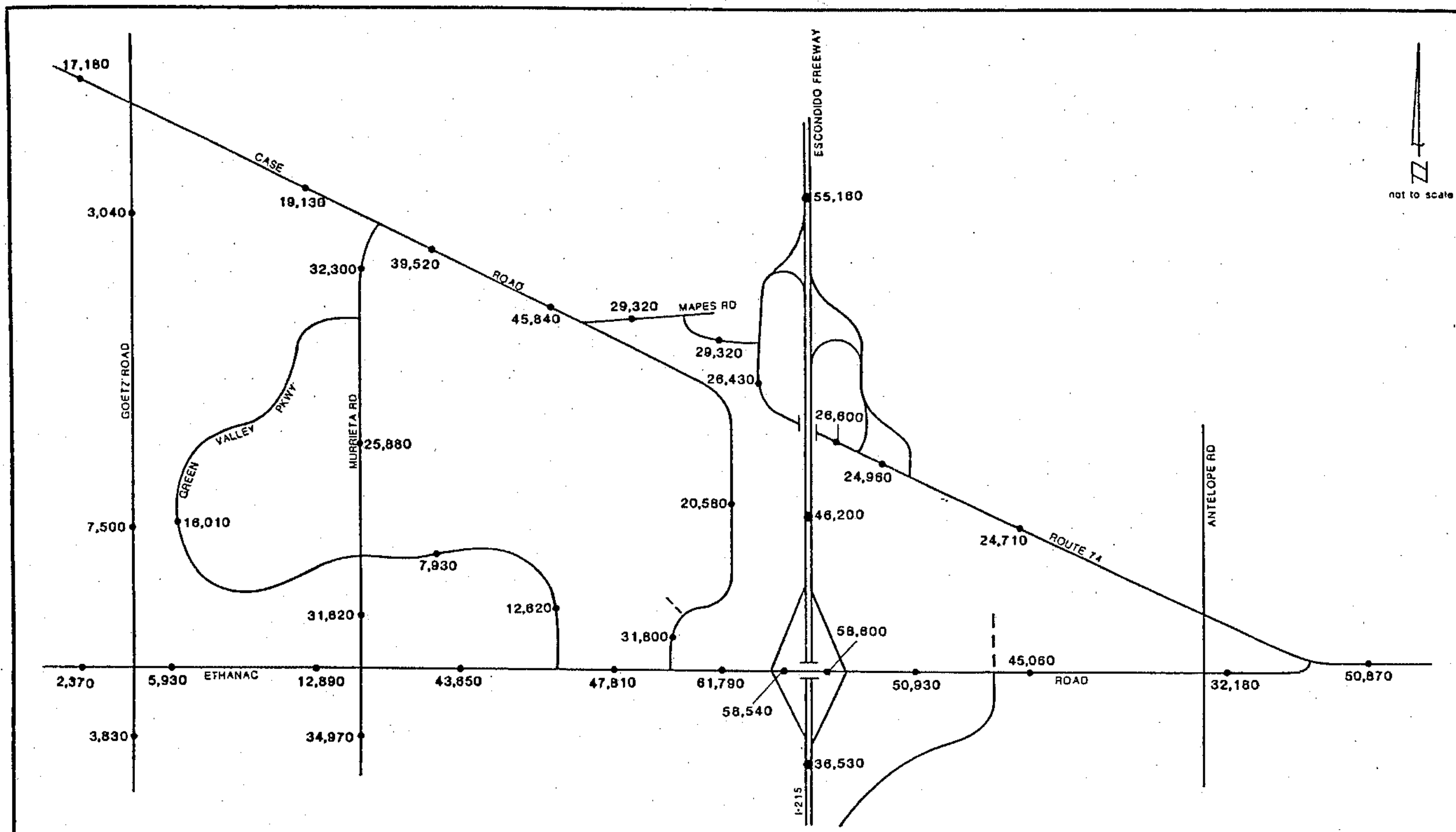

FIGURE 8

CUMULATIVE DAILY TRAFFIC VOLUMES

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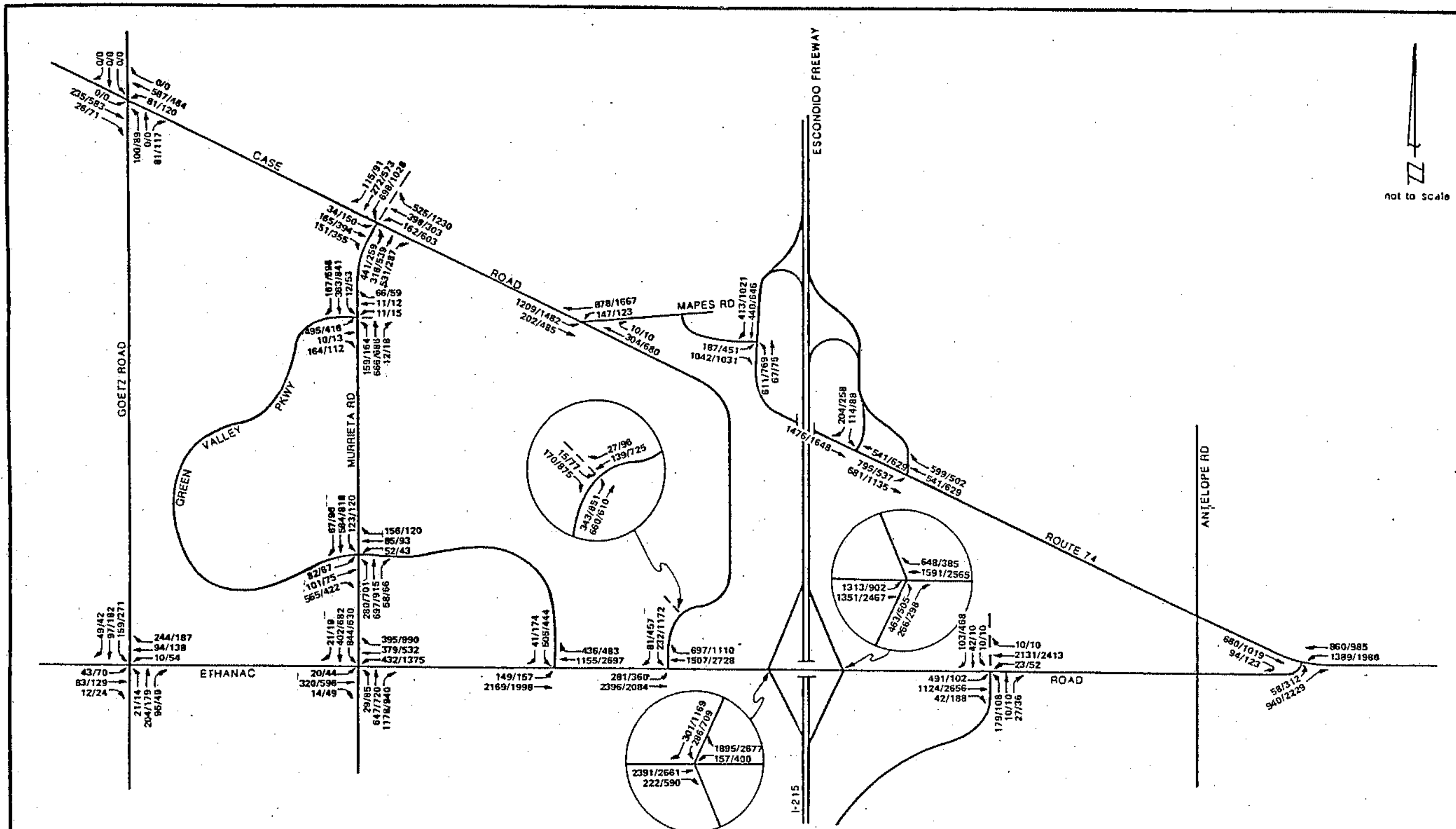

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FIGURE 9

CUMULATIVE AM/PM PEAK HOURLY TRAFFIC VOLUMES

Figure 10 shows the number of lanes on the roadways and at intersections in the study area that are recommended to accommodate the projected traffic volumes. The recommended lane configurations at intersections is also summarized in tabular form on Table 6.

The most notable of the recommended improvements is the provision of six travel lanes on Ethanac Road from Murrieta Road to Antelope Road, and on a portion of Case Road. The westbound segment of Ethanac Road from I-215 to Case Road would require four travel lanes to accommodate the anticipated traffic volumes. Double left-turn lanes and/or right-turn lanes are recommended where turning volumes warrant.

Daily volume-to-capacity analysis was conducted to evaluate the operation of the recommended roadway system with cumulative traffic. Additionally, intersection capacity analyses were conducted by Mohle Grover & Associates, through a computerized process called MONITOR, to evaluate the intersection geometrics recommended to accommodate the projected volumes.

The results of the daily volume-to-capacity analysis for the study area, assuming the recommended geometrics are shown on Table 7, and the results of the cumulative intersection capacity analysis are shown on Table 8. The summary on Table 8 includes the results of both an analysis of intersection capacity through the Intersection Capacity Utilization methodology, and analysis of vehicle delay.

Review of Table 7 shows that with the recommended roadway system, the following local roadway segments would operate at Level of Service "E" or worse:

- Ethanac Road: Case to I-215
- Ethanac Road: I-215 to Encanto

Review of Table 8 shows that with the recommended intersection configurations, the following intersections would operate at Level of Service "E" or worse in one or both peak hours:

- Ethanac Road at Murrieta Road
- Ethanac Road at Case Road
- Ethanac Road at Route 74
- Ethanac Road at I-215 northbound ramps
- Murrieta Road at Case Road
- Case Road at Mapes Road

Refinement of signal timing may improve operations if cumulative traffic volumes actually reach the projected levels. A monitoring of intersection operation as build-out of the area occurs, and appropriate improvements will be required to maintain the best intersection operation achievable.

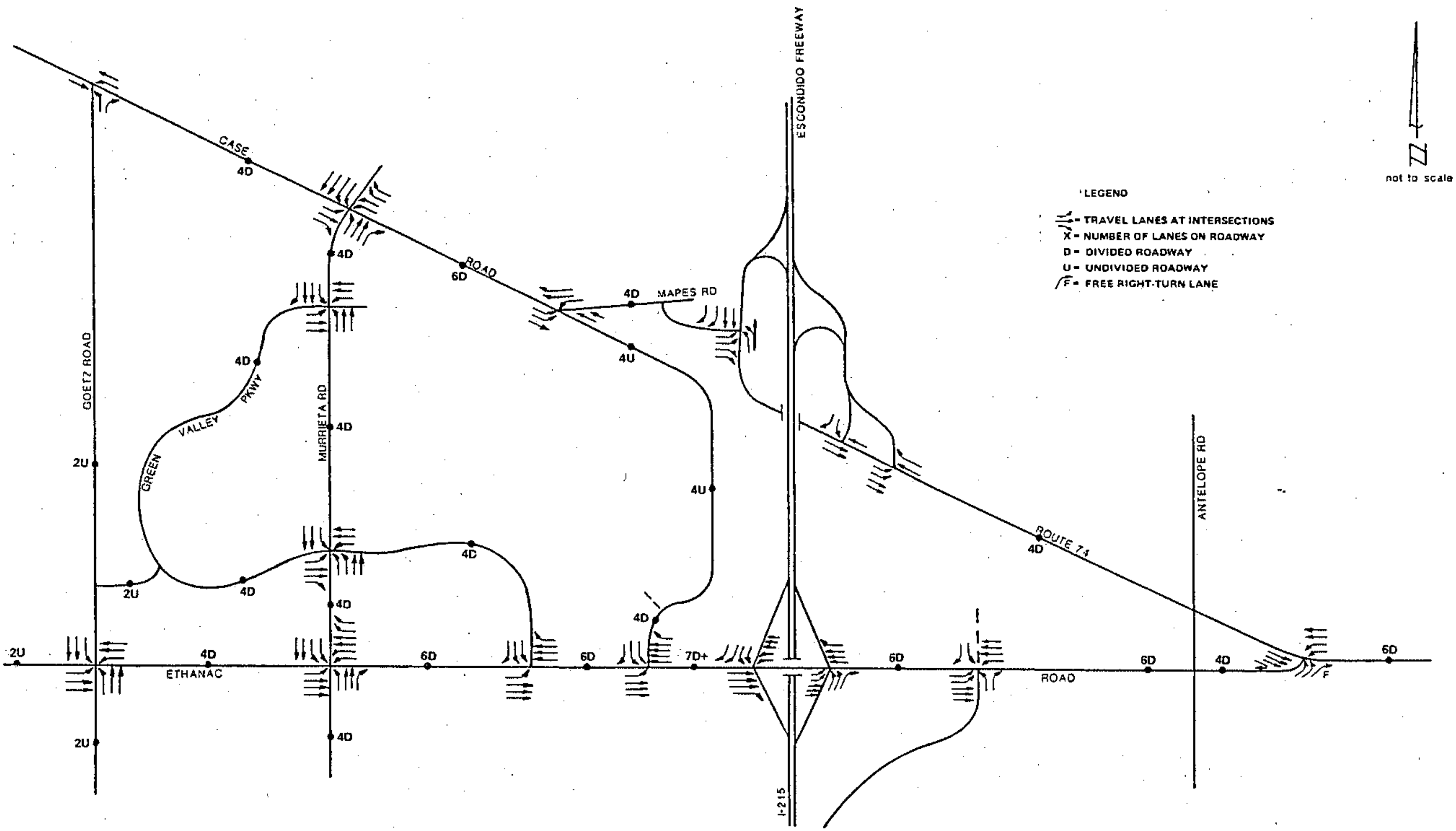

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FIGURE 10

RECCOMENDED LANE CONFIGURATION FOR CUMULATIVE TRAFFIC ANALYSIS
INCLUDING GREEN VALLEY SPECIFIC PLAN

TABLE 6

SUMMARY OF RECOMMENDED ROADWAY
AND INTERSECTION IMPROVEMENTS
FOR CUMULATIVE CONDITIONS

	Recommended Number of Lanes to Accommodate Cumulative Traffic											
Intersection	ET	EL	ER	ST	SL	SR	WT	WL	WR	NT	NL	NR
Ethanac/Goetz	2	1	0	2	1	0	2	1	0	2	1	0
Ethanac/Murrieta	3	1	0	2	2	0	2	2	2	2	1	1
Ethanac/Grn Vly Pkwy												
Ethanac/Case	3	1	NA	NA	2	1	4	NA	1	NA	NA	NA
Ethanac/I-215 SB	3	NA	1	NA	2	2	3	2	NA	NA	NA	NA
Ethanac/I-215 NB	3	2	NA	NA	NA	NA	3	NA	1	NA	2	1
Ethanac/Encanto	3	2	0	1	1	0	3	1	0	1	1	0
Ethanac/Route 74	3	NA	1	NA	NA	NA	2	2	NA	NA	2	1(F)
Case/Goetz	1	NA	0	NA	NA	NA	1	1	NA	1	NA	1
Case/Murrieta	1	1	1	2	2	0	1	2	1	2	1	1
Case/Mapes	1	2	NA	NA	1	2	2	NA	0	NA	NA	NA
Mapes/I-215 SB	NA	2	2	2	NA	2	NA	NA	NA	.5	1.5	NA
Rte 74/215 NB Off	2	NA	NA	NA	1	1	1	NA	NA	NA	NA	NA
Rte 74/215 NB On	2	2	NA	NA	NA	NA	1	1	NA	NA	NA	NA
Murrieta/Grn Vly Pkwy N	2	1	0	2	1	1	2	1	0	2	1	0
Murrieta/Grn Vly Pkwy S	1.5	1	.5	2	1	0	2	1	0	2	1	0

NA = Movement not allowed
0 = No exclusive lane provided for allowed movement
(F) = Free right-turn lane

TABLE 7

SUMMARY OF ROADWAY
DAILY VOLUME-TO-CAPACITY ANALYSIS
CUMULATIVE TRAFFIC VOLUMES

Roadway Segment	Roadway Description	Roadway Capacity	Traffic ADT	V/C Ratio	LOS
ETHANAC ROAD:					
West of Goetz	2-lane	15,000	2,370	.16	A
Goetz to Murrieta	4-lane div.	36,000	12,890	.36	A
Murrieta to Grn Vly	6-lane div.	54,000	43,650	.81	D
Grn Vly Pkwy to Case	6-lane div.	54,000	47,810	.89	D
Case to I-215 (a)	7-lane div.	63,000	61,790	.98	E
I-215 to Encanto	6-lane div.	54,000	50,930	.94	E
Encanto to Antelope	4-lane div.	54,000	45,060	.83	D
Antelope to Rt. 74		36,000	32,180	.89	D
GOETZ ROAD:					
Case to Ethanac	2-lane	15,000	7,500	.50	A
South of Ethanac	2-lane	15,000	3,830	.26	A
MURRIETA ROAD:					
North of Case	6-lane div.	54,000	41,830	.77	C
Case to Grn Vly N.	4-lane div.	36,000	32,300	.90	D
Grn Vly N. to Grn Vly S.	4-lane div.	36,000	25,880	.72	C
Grn Vly to Ethanac	4-lane div.	36,000	31,620	.88	D
South of Ethanac	4-lane div.	36,000	34,970	.77	C
CASE ROAD					
West of Goetz	4-lane undiv.	24,000	17,180	.72	C
Goetz to Murrieta	4-lane indiv.	24,000	19,130	.80	C
Murrieta to Mapes	6-lane div.	54,000	45,840	.85	D
Mapes to Watson	4-lane undiv.	24,000	20,580	.86	D
Watson to Ethanac	4-lane div.	36,000	31,800	.88	D
GREEN VALLEY PARKWAY:					
West of Murrieta (N)	4-lane div.	36,000	16,010	.44	A
West of Murrieta (S)	4-lane div.	36,000	16,010	.44	A
East of Murrieta	4-lane div.	36,000	7,930	.22	A
North of Ethanac	4-lane div.	36,000	12,620	.35	A
ESCONDIDO FREEWAY (I-215):					
North of Route 74	4-lane fwy	72,200	55,160	.76	C
Route 74 to Ethanac	4-lane fwy	72,200	36,200	.50	A
South of Ethanac	4-lane fwy	72,200	36,530	.51	A
ROUTE 74:					
I-215 to Ethanac	4-lane div.	36,000	24,710	.69	B
East of Ethanac	6-lane div.	54,000	50,870	.39	A

(a) Roadway segment 7 lanes: 4 westbound and 3 eastbound

TABLE 8

SUMMARY OF INTERSECTION OPERATION
CUMULATIVE TRAFFIC CONDITIONS

Intersection	AM Peak Hour ICU	AM Peak Hour LOS	AM Peak Hour Delay	PM Peak Hour ICU	PM Peak Hour LOS	PM Peak Hour Delay
ETHANAC ROAD at:						
Goetz Road	.25	A	B	.33	A	B
Murrieta Road	.74	C	D+	1.19	F	F
Green Valley Pkwy	.58	A	B	.78	C	B
Case Road	.54	A	B	1.01	F	E
Encanto Road	.72	C	C	.88	D	C
Route 74	.60	B	B	.95	E	D+
I-215 SB Ramp	.62	B	B	.54	A	B
I-215 NB Ramp	.97	E	E	.98	E	D
MURRIETA ROAD at:						
Green Valley Pkwy N	.68	B	C	.78	C	C
Green Valley Pkwy S	.65	B	C	.77	C	C
Case Road	.91	E	E+	.99	E	E
CASE ROAD at:						
Goetz Road	.40	A	B	.45	A	B
Mapes Road	.58	A	C	.71	C	F
MAPES ROAD at:						
I-215 SB Ramps	.65	B	C	.87	D	D+
ROUTE 74 at:						
I-215 SB Ramps	.55	A	B	.63	B	B
I-215 NB Ramps	.60	B	B	.54	A	B

Green Valley Project Traffic Impacts

In order to determine the level of impact of the Green Valley project itself on the roadway system, a number of steps were taken. First, the percentage of traffic that Green Valley contributes to cumulative traffic volumes on each roadway segment and at each intersection was calculated. It has already been established that Green Valley traffic represents approximately 43 percent of the total traffic to be added to the roadway system by cumulative projects. This indicates that the Green Valley project is a major contributor of future traffic growth in the area, but that other projects will also have a major impact on the local roadway system, as well. The paths taken by Green Valley project traffic to and from destinations will help to determine a "fair share" contribution to roadway system improvements, and determining the project's percentage contribution of traffic will assist in establishing the extent and nature of that fair share.

The percentage that Green Valley daily traffic represents of total cumulative daily traffic on each roadway segment was calculated, and is shown on Table 9. The results are also shown graphically on Figure 11. Review of Table 9 and Figure 11 shows that Green Valley traffic represents the greatest proportion of cumulative traffic roadways adjacent to and directly serving the project, and that its percentage decreases as the roadway serves other projects and distance from the project increases.

The same type of conclusions can be drawn for intersections and for particular turning movements at intersections. Those movements directly serving the project at project boundaries can be assumed to carry primarily project traffic, while turning movements not originating from or serving the project would carry very little Green Valley traffic. Intersections removed from the project area would carry a smaller portion of Green Valley and more "Other Projects" traffic. Worksheets showing the percentage of Green Valley traffic of each turning movement volume at each intersection are contained in Appendix C.

Based on these assumptions, an estimation of the roadway improvements required by the Green Valley project was derived and are depicted on Figure 12. The lane configurations for roadways and intersections shown on Figure 12 were estimated to be adequate to serve Green Valley traffic, if the Green Valley project generated the only additional traffic in the area.

The lane configurations shown on Figure 12 include extensive roadway improvements immediately adjacent to the project site, and lesser improvements as distance from the project increases.

TABLE 9

GREEN VALLEY TRAFFIC
PERCENTAGE OF CUMULATIVE DAILY TRAFFIC

Roadway Segment	Cumulative Traffic	Green Valley Traffic	Green Valley Percent of Cumulative
ETHANAC ROAD:			
West of Goetz	2,370	790	33%
Goetz to Murrieta	12,890	9,140	71%
Murrieta to Grn Vly	43,650	25,850	59%
Grn Vly Pkwy to Case	47,810	30,820	64%
Case to I-215	61,790	39,970	65%
I-215 to Encanto	50,930	21,100	41%
Encanto to Antelope	45,060	20,250	45%
Antelope to Rt. 74	32,180	7,020	22%
GOETZ ROAD:			
Case to Ethanac	7,500	3,630	48%
South of Ethanac	3,830	720	19%
MURRIETA ROAD:			
North of Case	41,830	8,500	20%
Case to Grn Vly N.	32,300	16,520	51%
Grn Vly N to Grn Vly S	25,800	11,000	43%
Grn Vly to Ethanac	31,620	19,500	62%
South of Ethanac	34,970	10,600	30%
CASE ROAD			
West of Goetz	17,180	7,430	43%
Goetz to Murrieta	19,130	9,500	50%
Murrieta to Mapes	45,840	17,400	38%
Mapes to Watson	20,580	14,750	72%
Watson to Ethanac	31,800	24,410	77%
GREEN VALLEY PARKWAY:			
West of Murrieta (N)	16,010	12,380	77%
West of Murrieta (S)	16,010	15,190	95%
East of Murrieta	7,930	7,500	95%
North of Ethanac	12,620	10,900	86%
ESCONDIDO FREEWAY (I-2			
North of Route 74	55,160	12,180	22%
Route 74 to Ethanac	46,200	9,390	20%
South of Ethanac	36,530	9,640	26%
ROUTE 74:			
I-215 to Ethanac	24,710	1,160	5%
East of Ethanac	50,870	8,720	17%

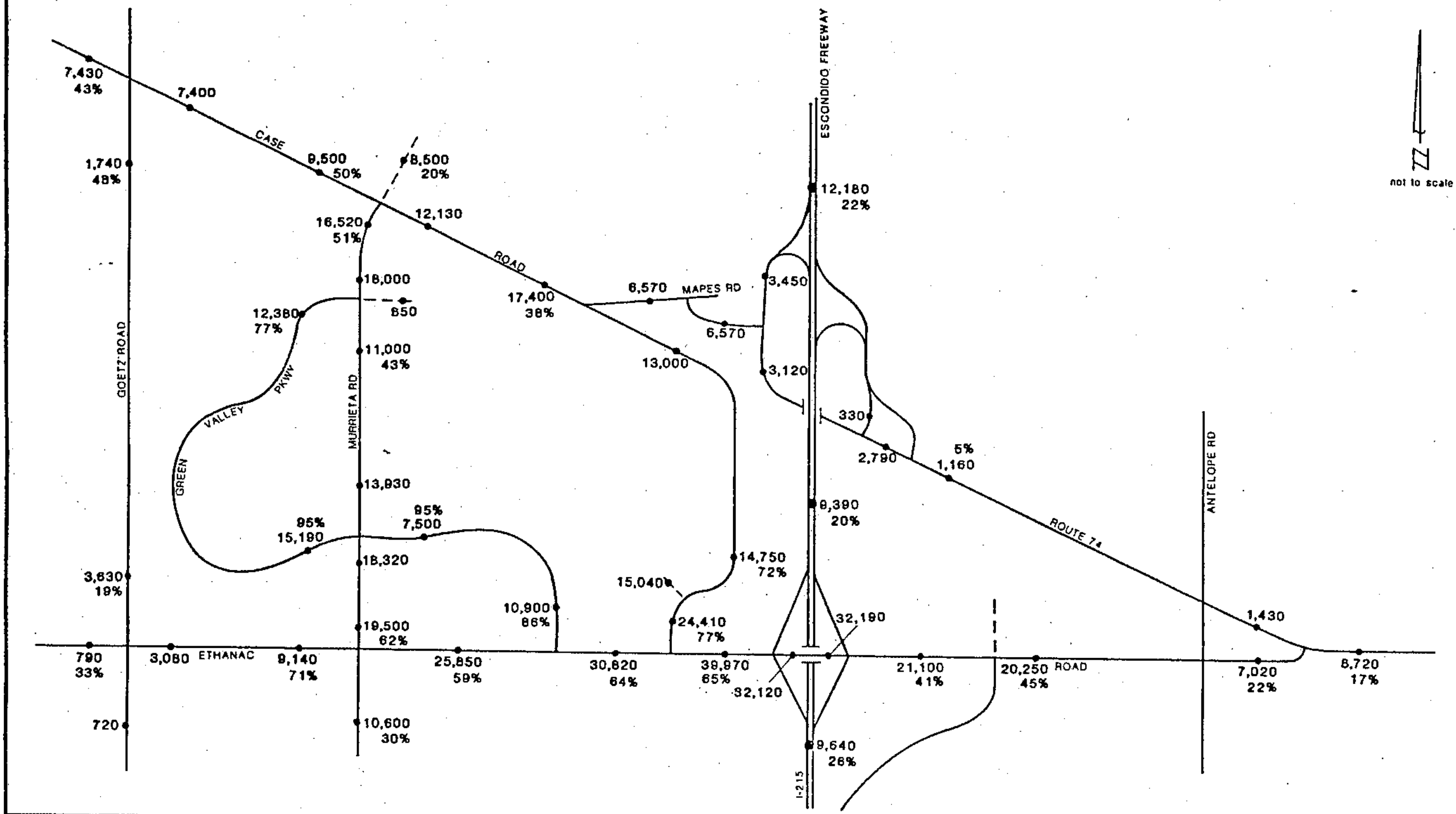

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FIGURE 11

PROJECT-RELATED DAILY TRAFFIC VOLUMES AND PERCENTAGE OF CUMULATIVE DAILY TRAFFIC

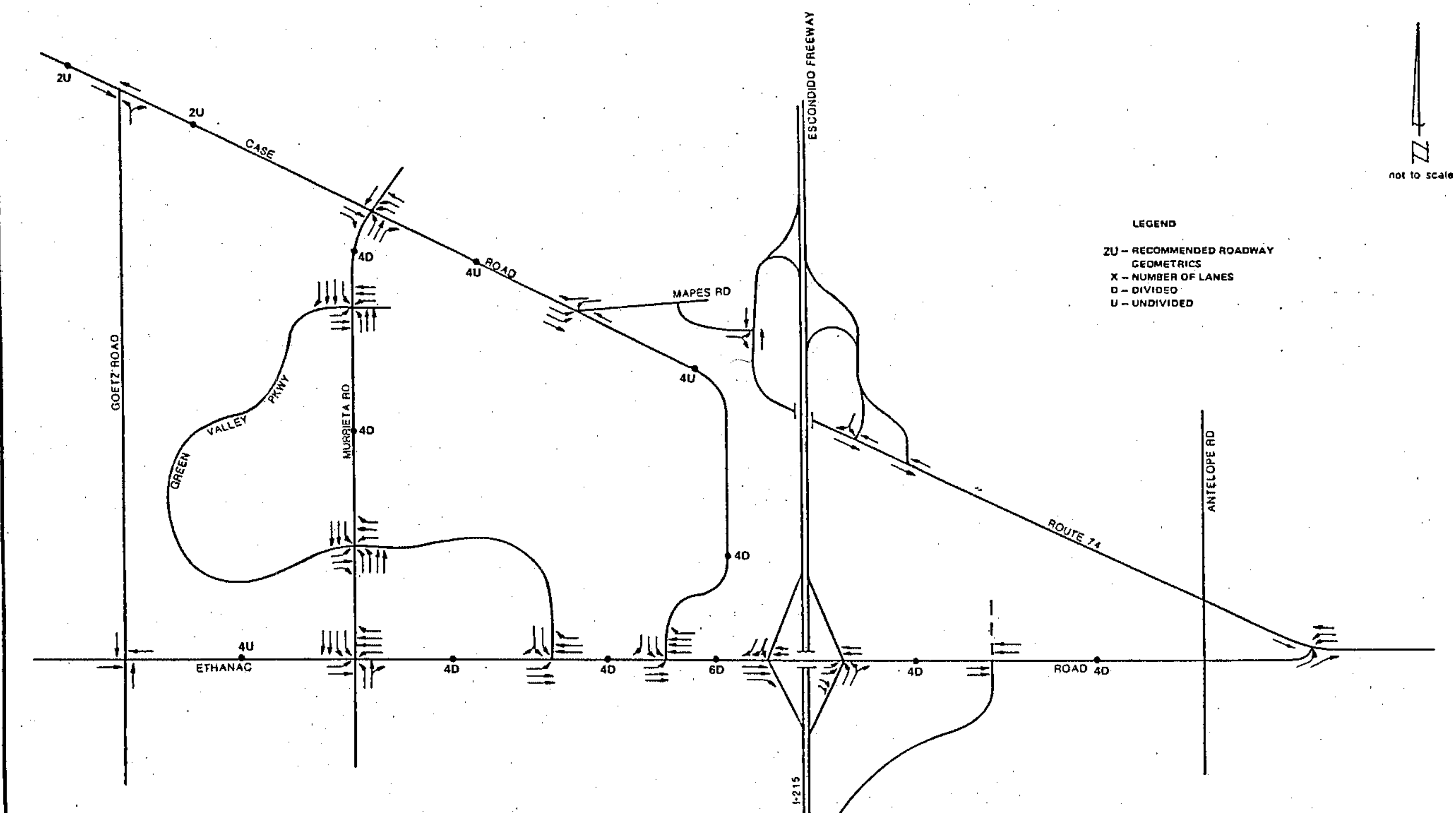

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FIGURE 12

ETHANAC ROAD CHANNELIZATION REQUIREMENTS FOR EXISTING CONDITIONS PLUS PROJECT

It is assumed that Ethanac Road and Case Road will be improved adjacent to the project site to provide 4 to 6 lanes, and intersections will be constructed with single or dual exclusive turn lanes, where necessary, to accommodate project turning movements. These improvements will be the direct responsibility of the project.

The off-site improvements required to accommodate project traffic will be less extensive, and it is assumed that the project will be required to contribute a fair-share portion of the cost of constructing these improvements as build-out of the area occurs.

PROJECT PHASING

Development Phasing

The development of Green Valley Specific Plan is anticipated to be built out over the next ten (10) years. The development phasing has been broken into three phases. Phase 1 covers project development for years 1 and 2. Phase 2 development covers years 3 through 5, and Phase 3 development will occur during years 6 through 10.

The planned development and resulting trip generation for the three development phases are presented on Table 10. Review of Table 10 shows that Phase 1 development will result in 26,494 daily vehicles generated by the project. Phase 2 development will generate 43,912 daily vehicles with a cumulative total of 70,336 daily vehicles generated by Phase 1 and 2 development. Phase 3 will complete build-out of the project, with 33,427 daily vehicles, and a cumulative total of 103,763 daily vehicles. (These traffic volumes are based on the current version of the site plan, and differ slightly from the project traffic volumes used for the intersection and roadway analysis.)

Circulation System Phasing

To ensure an adequate circulation system throughout construction of the projects the traffic for each development phase was then assigned to the surrounding street system. The results are presented on Figures 13, 14, and 15 for Phase 1, 2 and 3, respectively. The next step in the analysis process involves adding the project traffic for each development phase to existing traffic plus regional growth. The regional growth traffic was estimated to be 3% per year. The results of these forecast analyses are also presented on Figures 13, 14, and 15.

The final step in the development phasing analysis involves the assessment of each development phase and the identification of roadway improvements needed to accommodate the project traffic.

TABLE 10

SUMMARY OF GREEN VALLEY SPECIFIC PLAN
LAND USE AND TRIP GENERATION
BY PHASE

PHASE 1:

Planning Area	Land Use	No. of Units	Daily Trips
9	SF Residential	250 DU	2,513
11	SF Residential	150 DU	1,509
12	Commercial	113.8 KSF	7,123
		49.4 KSF	3,094
13	MF Residential	150 DU	879
14	SF Residential	216 DU	2,173
9	SF Residential	168 DU	1,690
21/22	SF Residential	204 DU	2,052
24	Park	NA	11
25	School	NA	600
23	SF Residential	219 DU	2,203
26/27	SF Residential	256 DU	2,575
TOTAL PHASE 1 TRAFFIC			26,424

PHASE 2:

Planning Area	Land Use	No. of Units	Daily Trips
35	SF Residential	148 DU	1,489
36	SF Residential	148 DU	1,489
37	School	NA	600
38	Park	NA	18
39	MF Residential	195 DU	1,143
40/41	Commercial/Bus Pk	1,280.9 KSF	6,390
42	Commercial	108.9 KSF	7,854
43	Hotel/Commercial	100 Rooms	1,050
		87.12 KSF	6,793
44	Commercial	185.13 KSF	11,089
45	MF Residential	210 DU	1,068
46	SF Residential	200 DU	2,012
47	SF Residential	153 DU	1,539
48	SF Residential	137 DU	1,378
TOTAL PHASE 2 TRAFFIC			43,912

TOTAL PHASE 1 AND PHASE 2 TRAFFIC 70,336

TABLE 10 (Continued)

PHASE 3:

Planning Area	Land Use	No. of Units	Daily Trips
8	Industrial	936.54 KSF	2,227
1	Industrial	827.64 KSF	1,968
3	SF Residential	137 DU	1,378
4	SF Residential	130 DU	1,308
5	SF Residential	180 DU	1,811
6	Park	NA	102
7	SF Residential	148 DU	1,489
15	School	NA	600
16	Park	NA	18
17	SF Residential	153 DU	1,539
18	SF Residential	148 DU	1,489
20	SF Residential	216 DU	2,173
28/29	Commercial	206.91 KSF	11,972
30	MF Residential	195 DU	1,143
31	SF Residential	194	1,952
32	School	NA	600
33	Park	NA	18
34	SF Residential	163 DU	1,640
TOTAL PHASE 3 TRAFFIC			33,427
TOTAL PHASE 1, 2 AND 3 TRAFFIC			103,763

NOTE: Based on current version of project site plan.

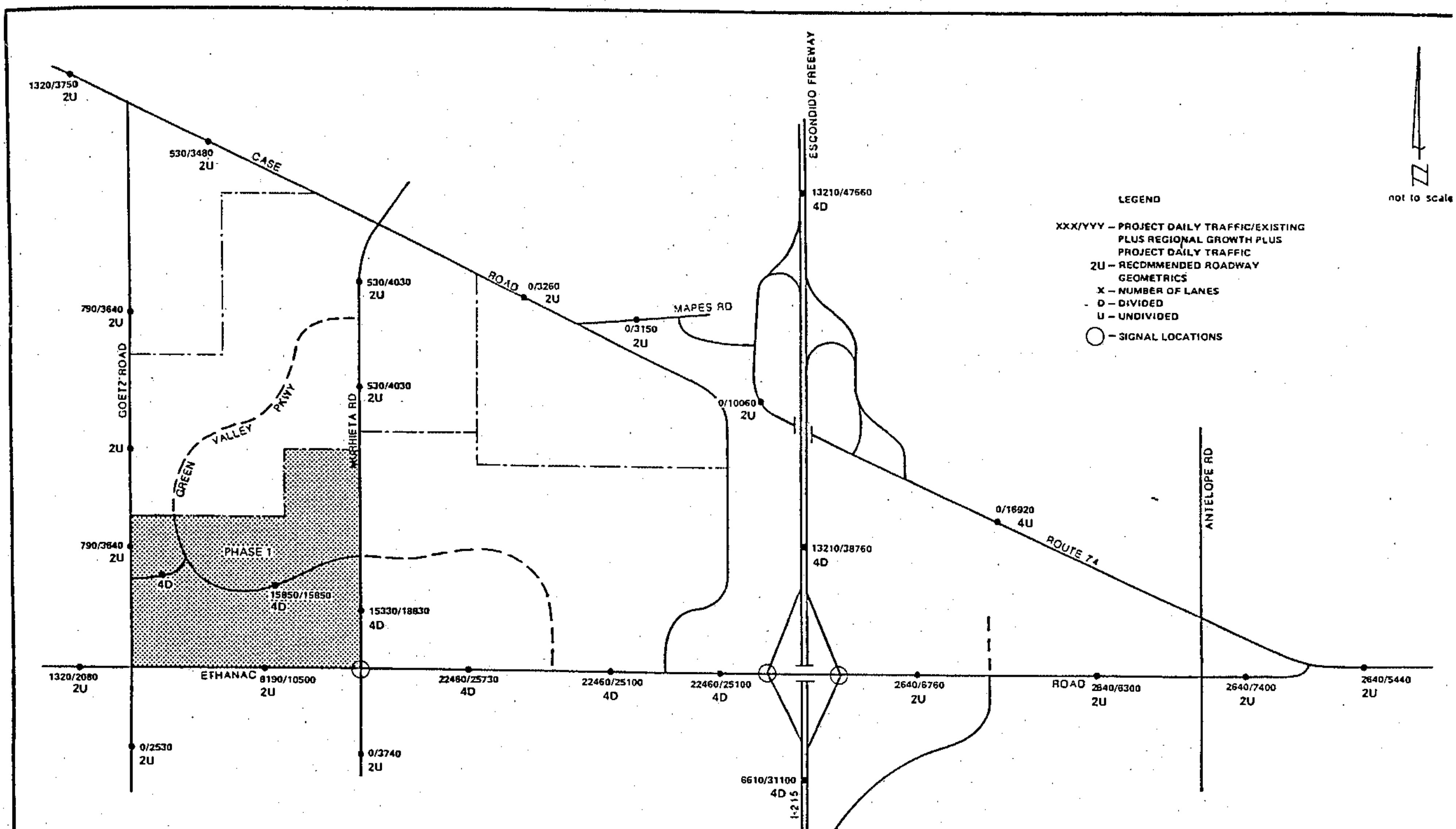

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FIGURE 13

EXISTING PLUS REGIONAL GROWTH PLUS PHASE 1
PROJECT-RELATED DAILY TRAFFIC VOLUMES AND RECOMMENDED ROADWAY GEOMETRICS

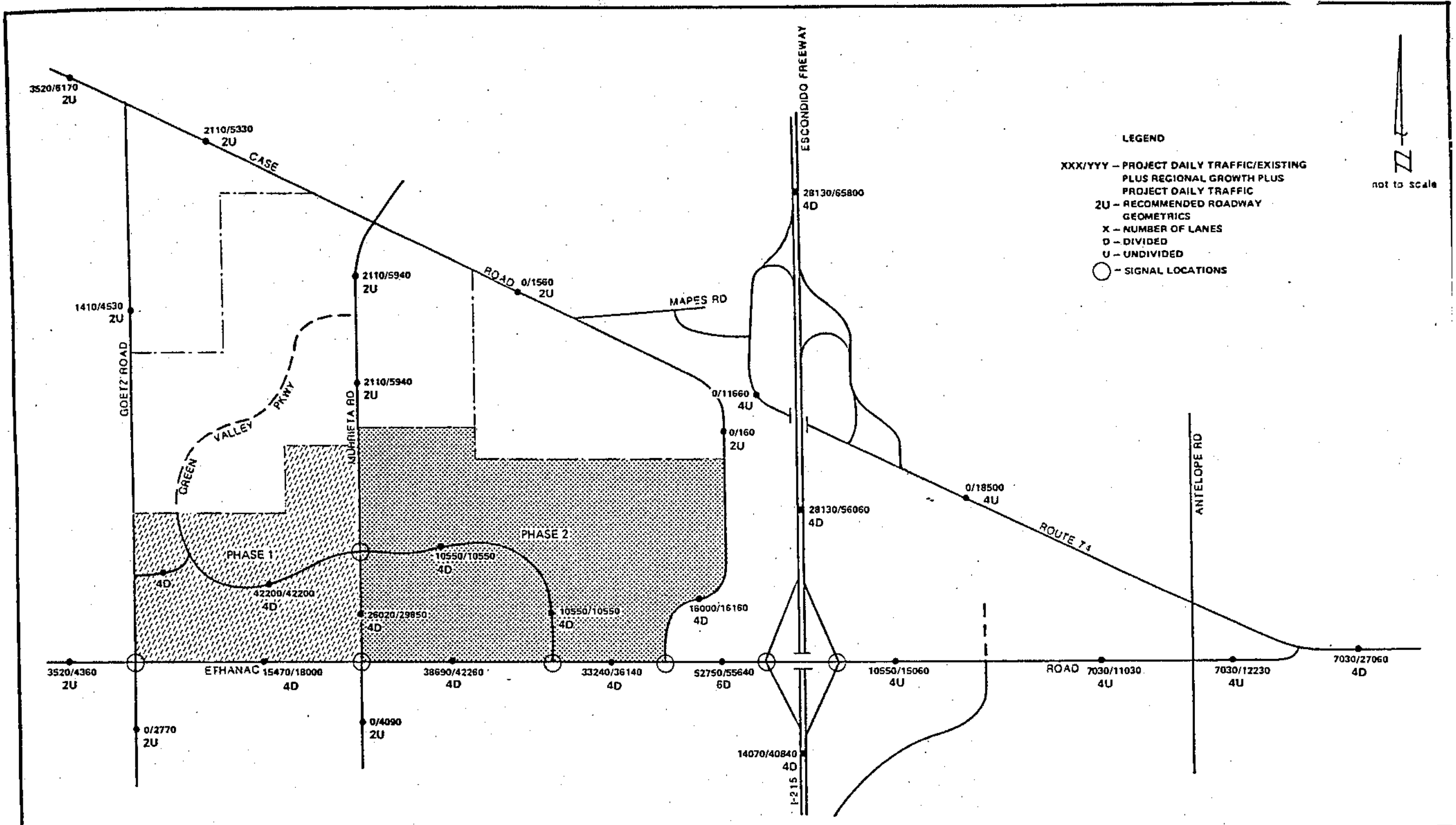

FIGURE 14

EXISTING PLUS REGIONAL GROWTH PLUS PHASE 1 AND 2
PROJECT-RELATED DAILY TRAFFIC VOLUMES AND RECOMMENDED ROADWAY GEOMETRICS

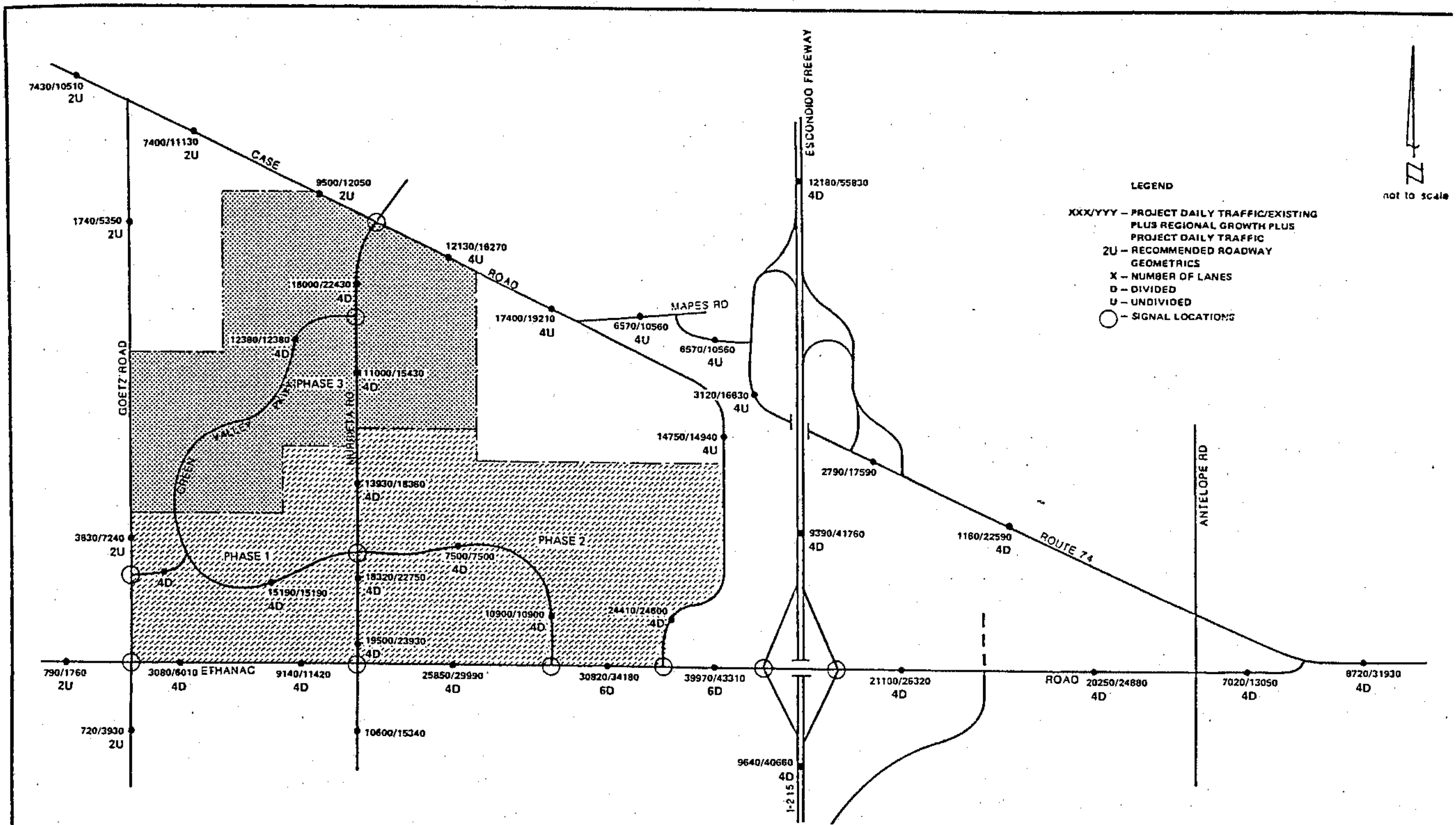

FIGURE 15

EXISTING PLUS REGIONAL GROWTH PLUS PHASE 1, 2 AND 3

PROJECT-RELATED DAILY TRAFFIC VOLUMES AND RECOMMENDED ROADWAY GEOMETRICS

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The results of these analyses are summarized on Table 11 for Phase 1, Table 12 for Phase 2, and Table 13 for Phase 3. The recommended roadway geometrics required to accommodate traffic for each phase are presented on Figures 13, 14, and 15.

A summary of these recommended roadway improvements and resulting Levels of Service for each phase are provided on Table 14.

Review of Table 14 shows that during Phase 1, all roadway segments would operate at Level of Service "B" or better, if the following improvements are made:

- o Widen Ethanac Road to four lanes divided from Murrieta Road to I-215.
- o Widen Murrieta Road to four lanes divided from Green Valley Parkway (south) to Ethanac.
- o Construct Green Valley Parkway as 4-lane divided from north Phase 1 boundary to Murrieta Road (south).
- o Construct traffic signals at the following locations:
  - Ethanac Road at Murrieta Road
  - Ethanac Road at I-215 southbound ramps
  - Ethanac Road at I-215 northbound ramps

Site access for the commercial development in Planning Area 12 should also be evaluated at time of final site design. Signalization of the access may be required.

During Phase 2, the following additional improvements are recommended:

- o Widen Ethanac Road to four lanes divided from Goetz Road to Murrieta Road.
- o Widen Ethanac Road from four to six lanes divided from Green Valley Parkway to the I-215 interchange.
- o Widen Ethanac Road to four lanes undivided from I-215 to Route 74.
- o Construct Green Valley Parkway as four-lane divided roadway from Murrieta Road to Ethanac Road.
- o Construct traffic signals at the following locations:
  - Ethanac Road at Green Valley Parkway
  - Ethanac Road at Case Road
  - Green Valley Parkway at Murrieta Road (S)

TABLE 11

SUMMARY OF ROADWAY
DAILY VOLUME-TO-CAPACITY ANALYSIS
CUMULATIVE PLUS PHASE 1 TRAFFIC

Roadway Segment	Recommended Roadway (No. of Lanes)	Daily Roadway Capacity	Cumulative Plus Phase 1 Traffic	V/C Ratio	LOS
ETHANAC ROAD:					
West of Goetz	2U	15,000	2,080	.14	A
Goetz to Murrieta	2U	15,000	10,500	.70	B
Murrieta to Case	4D	36,000	25,110	.70	B
Case to I-215	4D	36,000	25,100	.70	B
I-215 to Encanto	2U	15,000	6,760	.45	A
Encanto to Antelope	2U	15,000	6,300	.42	A
Antelope to Rt. 74	2U	15,000	7,400	.49	A
GOETZ ROAD:					
Case to Ethanac	2U	15,000	3,640	.24	A
South of Ethanac	2U	15,000	2,530	.17	A
MURRIETA ROAD:					
Case to Grn Vly Pkwy	2U	15,000	4,030	.27	A
Grn Vly to Ethanac	4D	36,000	18,830	.52	A
South of Ethanac	2U	15,000	3,740	.25	A
CASE ROAD:					
West of Goetz	2U	15,000	3,750	.25	A
Goetz to Murrieta	2U	15,000	3,480	.23	A
Murrieta to Mapes	2U	15,000	3,260	.22	A
Mapes to Watson	2U	15,000	150	.01	A
Watson to Ethanac	2U	15,000	150	.01	A
ESCONDIDO FREEWAY (I-215):					
North of Route 74	4FWY	72,200	47,660	.66	B
Route 74 to Ethanac	4FWY	72,200	38,760	.54	A
South of Ethanac	4FWY	72,200	31,100	.43	A
ROUTE 74:					
I-215 to Ethanac	4D	36,000	16,920	.47	A
East of Ethanac	4D	36,000	5,440	.15	A
GREEN VALLEY PARKWAY:					
West of Murrieta S.	4D	36,000	15,850	.44	A

Note: Cumulative Traffic Equals Existing Plus 3% Per Year Regional Growth.

TABLE 12

SUMMARY OF ROADWAY
DAILY VOLUME-TO-CAPACITY ANALYSIS
CUMULATIVE PLUS PHASE 1 AND 2 TRAFFIC

Roadway Segment	Recommended Roadway (No. of Lanes)	Daily Roadway Capacity	Cumulative Plus Ph. 1 and 2 Traffic	V/C Ratio	LOS
ETHANAC ROAD:					
West of Goetz	2U	15,000	4,360	.29	A
Goetz to Murrieta	4D	36,000	18,000	.50	A
Murrieta to Grn Vly	4D	36,000	42,260	1.17	F
Grn Vly Pkwy to Case	6D	54,000	52,140	.97	E
Case to I-215	6D	54,000	55,640	1.03	F
I-215 to Encanto	4U	24,000	15,060	.63	B
Encanto to Antelope	4U	24,000	11,030	.46	A
Antelope to Rt. 74	4U	24,000	12,230	.51	A
GOETZ ROAD:					
Case to Ethanac	2U	15,000	4,530	.30	A
South of Ethanac	2U	15,000	2,770	.18	A
MURRIETA ROAD:					
Case to Grn Vly Pkwy	2U	15,000	5,940	.40	A
Grn Vly S. to Ethanac	4D	36,000	29,850	.83	D
South of Ethanac	2U	15,000	4,090	.27	A
CASE ROAD:					
West of Goetz	2U	15,000	6,170	.41	A
Goetz to Murrieta	2U	15,000	5,330	.36	A
Murrieta to Mapes	2U	15,000	1,560	.10	A
Mapes to Watson	2U	15,000	160	.01	A
Watson to Ethanac	2U	15,000	160	.01	A
ESCONDIDO FREEWAY (I-215):					
North of Route 74	4FWY	72,200	65,800	.91	E
Route 74 to Ethanac	4FWY	72,200	56,060	.78	C
South of Ethanac	4FWY	72,200	40,840	.57	A
ROUTE 74:					
I-215 to Ethanac	4D	36,000	18,500	.51	A
East of Ethanac	4D	36,000	27,060	.75	C
GREEN VALLEY PARKWAY:					
West of Murrieta	4D	36,000	42,200	1.17	F
East of Murrieta	4D	36,000	10,550	.29	A
North of Ethanac	4D	36,000	10,550	.29	A

Note: Cumulative Traffic Equals Existing Plus 3% Per Year Regional Growth.

TABLE 13

SUMMARY OF ROADWAY
DAILY VOLUME-TO-CAPACITY ANALYSIS
CUMULATIVE PLUS PHASE 1, 2, AND 3 TRAFFIC

Roadway Segment	Recommended Roadway (No. of Lanes)	Daily Roadway Capacity	Cumulative Plus Ph. 1, 2, + 3 Traffic	V/C Ratio	LOS
ETHANAC ROAD:					
West of Goetz	2U	15,000	1,760	.12	A
Goetz to Murrieta	4D	36,000	11,420	.32	B
Murrieta to Grn Vly	4D	36,000	29,990	.83	D
Grn Vly Pkwy to Case	6D	54,000	34,180	.63	B
Case to I-215	6D	54,000	43,310	.80	C
I-215 to Encanto	4D	36,000	26,320	.73	C
Encanto to Antelope	4D	36,000	24,880	.69	B
Antelope to Rt. 74	4D	36,000	13,050	.36	A
GOETZ ROAD:					
Case to Ethanac	2U	15,000	7,240	.48	A
South of Ethanac	2U	15,000	3,930	.26	A
MURRIETA ROAD:					
Case to Grn Vly Pkwy	4D	36,000	22,430	.62	B
Grn Vly N. to Grn Vly	4D	36,000	18,360	.51	A
Grn Vly S. to Ethanac	4D	36,000	23,930	.66	B
South of Ethanac	2U	15,000	15,340	.43	A
CASE ROAD:					
West of Goetz	2U	15,000	10,510	.70	B
Goetz to Murrieta	2U	15,000	12,050	.80	C
Murrieta to Mapes	2U	15,000	19,210	.53	A
Mapes to Watson	2U	15,000	14,940	.42	A
Watson to Ethanac	2U	15,000	24,600	.68	B
ESCONDIDO FREEWAY (I-215):					
North of Route 74	4FWY	72,200	55,830	.77	C
Route 74 to Ethanac	4FWY	72,200	41,760	.58	A
South of Ethanac	4FWY	72,200	40,660	.56	A
ROUTE 74:					
I-215 to Ethanac	4D	36,000	22,590	.63	B
East of Ethanac	4D	36,000	31,930	.89	D
GREEN VALLEY PARKWAY:					
West of Murrieta N.	4D	36,000	12,380	.34	A
West of Murrieta S.	4D	36,000	15,910	.44	A
East of Murrieta	4D	36,000	7,500	.21	A
North of Ethanac	4D	36,000	10,900	.30	A

Note: Cumulative Traffic Equals Existing Plus 3% Per Year Regional Growth.

TABLE 14

RECOMMENDED ROADWAY IMPROVEMENTS BY PHASE

Roadway Segment	Existing Roadway Geometrics	Phase 1 No. of Lanes	Phase 1 LOS	Phase 2 No. of Lanes	Phase 2 LOS	Phase 3 No. of Lanes	Phase 3 LOS
ETHANAC ROAD:							
West of Goetz	2U	2U	A	2U	A	2U	A
Goetz to Murrieta	2U	2U	B	*4D	A	4D	B
Murrieta to Grn Vly	2U	*4D	B	4D	F	4D	D
Grn Vly Pkwy to Case	2U	*4D	B	*6D	E	6D	B
Case to I-215	2U	*4D	B	*6D	F	6D	C
I-215 to Encanto	2U	2U	A	*4U	B	*4D	C
Encanto to Antelope	2U	2U	A	4U	A	*4D	B
Antelope to Rt. 74	2U	2U	A	*4D	A	*4D	A
GOETZ ROAD:							
Case to Ethanac	2U	2U	A	2U	A	2U	A
South of Ethanac	2U	2U	A	2U	A	2U	A
MURRIETA ROAD:							
Case to Grn Vly Pkwy	2U	2U	A	2U	A	*4D	B
Grn Vly N. to Grn Vly	2U	2U	A	4D	A	*4D	A
Grn Vly S. to Ethanac	2U	*4D	A	4D	D	*4D	B
South of Ethanac	2U	2U	A	2U	A	2U	A
CASE ROAD:							
West of Goetz	2U	2U	A	2U	A	2U	B
Goetz to Murrieta	2U	2U	A	2U	A	2U	C
Murrieta to Mapes	2U	2U	A	2U	A	2U	A
Mapes to Watson	2U	2U	A	2U	A	2U	A
Watson to Ethanac	2U	2U	A	2U	A	2U	B
ESCONDIDO FREEWAY (I-215):							
North of Route 74	4FWY	4FWY	B	4FWY	E	4FWY	C
Route 74 to Ethanac	4FWY	4FWY	A	4FWY	C	4FWY	A
South of Ethanac	4FWY	4FWY	A	4FWY	A	4FWY	A
ROUTE 74:							
I-215 to Ethanac	4D	4D	A	4D	A	4D	B
East of Ethanac	4D	4D	A	4D	C	4D	D
GREEN VALLEY PARKWAY:							
West of Murrieta N.	NA	NA	NA	NA	NA	4D	A
West of Murrieta S.	NA	*4D	A	4D	F	4D	A
East of Murrieta	NA	NA	NA	*4D	A	4D	A
North of Ethanac	NA	NA	NA	*4D	A	4D	A

Recommended Roadway Geometrics: Phase 1, Phase 2, Phase 3.

* = Improvement constructed in that Phase.

Review of Table 14 shows that during Phase 1, all roadway segments would operate at Level of Service "B" or better, if the following improvements are made:

- o Widen Ethanac Road to four lanes divided from Murrieta Road to I-215.
- o Widen Murrieta Road to four lanes divided from Green Valley Parkway (south) to Ethanac.
- o Construct Green Valley Parkway as 4-lane divided from north Phase 1 boundary to Murrieta Road (south).

During Phase 2, the following additional improvements are recommended:

- o Widen Ethanac Road to four lanes divided from Goetz Road to Murrieta Road.
- o Widen Ethanac Road from four to six lanes divided from Green Valley Parkway to the I-215 interchange.
- o Widen Ethanac Road to four lanes undivided from I-215 to Route 74.
- o Construct Green Valley Parkway as four-lane divided roadway from Murrieta Road to Ethanac Road.

During this recommended roadway configuration for Phase 2 traffic, the following roadway segments would operate at Level of Service "E" or worse:

- Ethanac Road - Murrieta Road to Green Valley Parkway
  - Green Valley Parkway to Case Road
  - Case Road to I-215
- Escondido Freeway - North of Route 74
- Green Valley Parkway - East of Murrieta Road

In each case, operation of each of these roadway segments are expected to improve to acceptable operating conditions in Phase 3, as a result of completion of the internal circulation system, and redistribution of traffic within the project and to areas surrounding the project.

To accommodate Phase 3 traffic, the following additional improvements are recommended:

- o Widen Ethanac Road to four lanes divided from I-215 to Route 74.

Site access for the commercial and office development in Planning Areas 40 - 44 should also be evaluated at time of final site design, and may require signalization.

With this recommended roadway configuration for Phase 2 traffic, the following roadway segments would operate at Level of Service "E" or worse:

- Ethanac Road - Murrieta Road to Green Valley Parkway
  - Green Valley Parkway to Case Road
  - Case Road to I-215

- Escondido Freeway - North of Route 74

- Green Valley Parkway - East of Murrieta Road

In each case, operation of each of these roadway segments are expected to improve to acceptable operating conditions in Phase 3, as a result of completion of the internal circulation system, and redistribution of traffic within the project and to areas surrounding the project.

To accommodate Phase 3 traffic, the following additional improvements are recommended:

- o Widen Ethanac Road to four lanes divided from I-215 to Route 74.

- o Widen Murrieta Road to four lanes divided from Case Road to Ethanac Road.

- o Construct Green Valley Parkway from Murrieta (south) to Murrieta (north).

- o Construct traffic signals at the following locations:

  - Green Valley Parkway at Murrieta Road (N)
  - Murrieta Road at Case Road
  - Goetz Road at Ethanac Road
  - Goetz Road at Street A

In addition, site access for the commercial and industrial development in Planning Areas 1, 8, 28 and 29 should also be evaluated at time of final site design, and may require signalization.

With these improvements, the roadway system would accommodate Green Valley build-out traffic, with operating Levels of Service of "D" or better on all roadway segments.

ACCESS AND INTERNAL CIRCULATION

Access to and from the various residential planning units within Green Valley Specific Plan were evaluated to determine the adequacy of the proposed access locations. In addition, criteria for access to and from the non-residential planning areas has been developed to be used in preparing specific site plans.

Figure 16 depicts the tentative tract map for Green Valley Specific Plan. Shown on Figure 16 is the location of the street system and all residential streets within the project. Also shown on Figure 16 is the location of each access that intersects Murrieta Road, Green Valley Parkway, and Street A. The access locations are labeled from A to BB. The spacing between intersections is also depicted.

Review of each access location and the spacing between intersections found the spacing between intersections and the location of access points to be generally satisfactory to provide full access at each location, except for a few locations. Access locations A and B are each spaced 400 feet from Green Valley Parkway (north) intersection with Murrieta Road. This spacing between intersections is too short to provide the necessary channelization at Murrieta Road and Green Valley Parkway (north) as well as left-turn access to and from Access A and B.

Access A can be moved northerly to provide full access, whereas Access B will need to be restricted to right turns in/out only. The specific placement of Access A should be coordinated with design of Planning Area 28 and located 600 to 800 feet north of Green Valley Parkway. This spacing will permit future signalization of this access when the commercial development occurs.

Further evaluation of each access point shows that Access "P" is too close to access "Q". Access "P" is 400 feet south of access "Q". To provide proper spacing between intersections, it is recommended that access "P" be moved south 150 to 200 feet.

Access "O" has also been identified as being too close to Street A (approximately 350 feet). To properly locate this access, it is recommended that access "O" be moved northerly to provide a greater distance between access "O" and Street A.

Other areas of concern involve the future location of access drives for the two school sites located adjacent to Green Valley Parkway. As school sites are developed, it will be necessary for the School District to coordinate their planning efforts with the City of Perris to locate access drives. For example, access to and from the school site opposite access "W" would have to be restricted to right-out-only from the school site. Therefore, it can generally be concluded that primary access to this school site would occur opposite access "V".

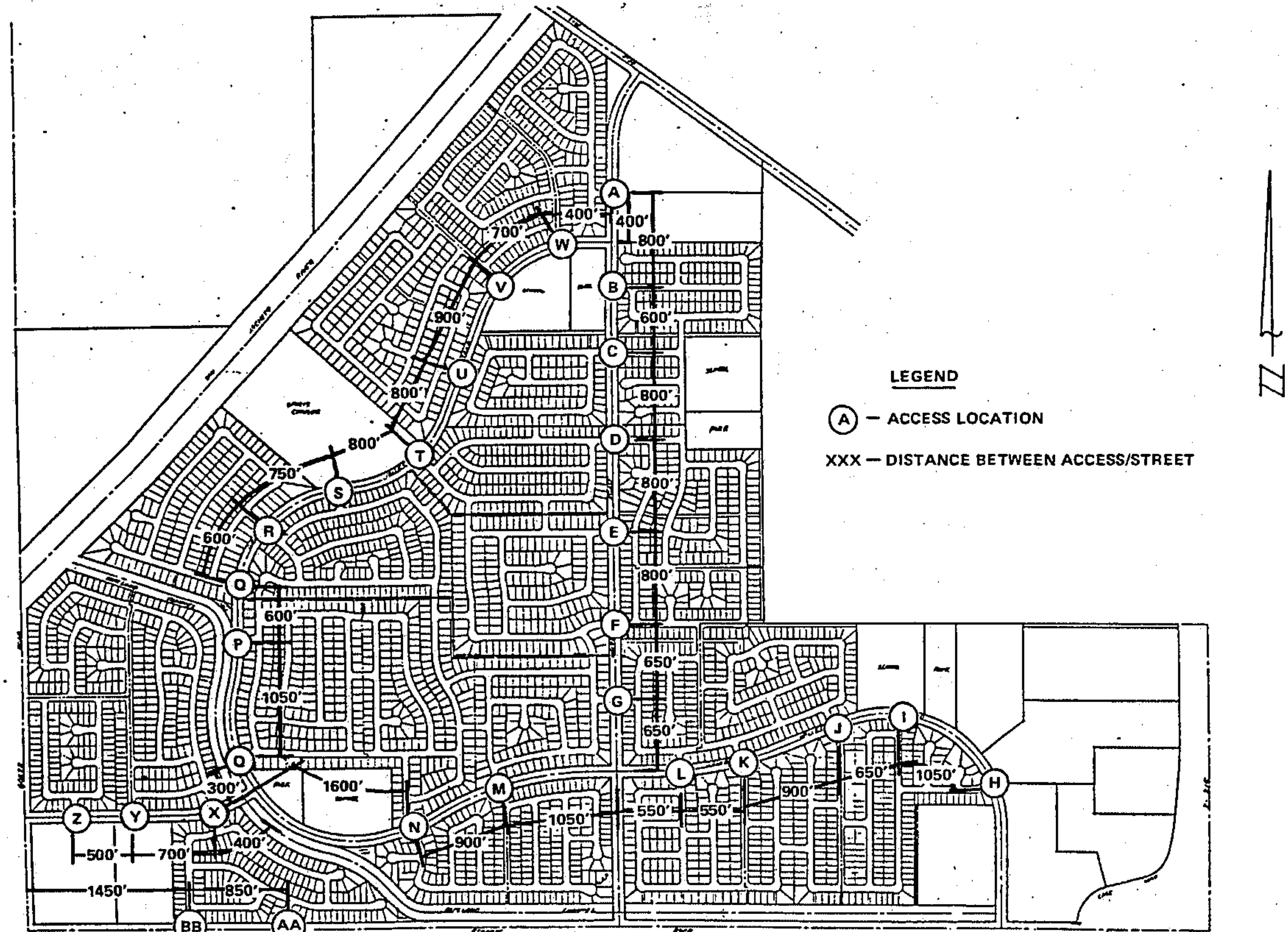

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FIGURE 16
PROJECT ACCESS LOCATIONS

Access considerations for the Multi-Family, Business Park, Industrial, and Commercial sites cannot be specifically addressed until such time that specific development plans are prepared. However, the following guidelines are suggested to be used in developing the site plans and access locations:

1. Access to Planning Area 28 will need to be restricted to right turns in/out only.

2. Access to Planning Area 29 (PA 29) can be provided with right in/out drives and a full access on Murrieta Road spaced a minimum of 600 feet south of Case Road. The specific access location needs to be coordinated with the location of Access "A". Full access to Case Road for PA 29 should be located a minimum of 600 feet east of Murrieta Road.

3. Access to Planning Area 30 will require careful consideration, and coordination with access plans for the commercial center in Planning Area 29, or with the single-family tract to the south, in Planning Area 31. Because of the short frontage on Murrieta for Planning Area 30, the access for this area is recommended to be designed in one of two ways:

   - Align with the intersection of Green Valley Parkway (N). This would require re-design of the row of homes on the north edge of Planning Area 31, or

   - A common access drive be located between Planning Areas 29 and 30, to provide shared access on Murrieta between the commercial and multi-family developments.

4. Access to Planning Areas 39, 41 and 44 along Green Valley Parkway will need to be reviewed with the City Traffic Engineer. At this time we would anticipate that full access to these planning areas can be provided as follows:

   - Opposite Access "H".

   - Approximately half-way between Access "H" and Ethanac Road.

   - Full access to PA 41 may be possible at its westerly property line. (Approximately half-way between Access "H" and "I".)

5. Access to Planning Areas 40, 41, 42, 43, and 44 along Case Road will also need to be coordinated with the City Traffic Engineer. Full access considerations for these parcels is as follows:

   - Full access to PA 44 along Case Road is not feasible.

- Full access to PA 43 should be approximately 800 feet north of Ethanac Road. The location of the access will need to reviewed and located to ensure adequate sight distance entering and leaving the property. The final design location should be approved by the City Traffic Engineer.

- To minimize full access drives along Case Road, it is recommended that full access to PA 40, 41 and 42 be designed to provide a minimum of 500 feet between drives with a maximum of three full access drives.

- The Internal Circulation within Planning Areas 40, 41, 42, 43 and 44 should be developed where feasible to provide ingress/egress between parcels. This will help in reducing the number of conflicting drives and ability to locate a minimum number of traffic signals along Case Road and Green Valley Parkway.

6. It is recommended that the access to Planning Areas 12 (Commercial) and 13 (Multi-Family) on Ethanac Road be designed as a common access located between the two developments. Signalization would be warranted if designed as recommended.

TRAFFIC CONTROL

The need for traffic signals upon buildout of the Green Valley Specific Plan was examined using the Caltrans Traffic Signal Warrant methodology, and no internal intersections were identified as meeting the minimum warrants for traffic signals. A summary of the traffic signal warrant worksheets for each access point is provided on Table 15.

A number of traffic signals are planned for the arterials adjacent to and with the project site, as described in the Project Phasing section. These locations are depcited on Figure 17. Also shown on Figure 17 are areas adjacent to the non-residential developments along Murrieta Road, Case Road and Green Valley Parkway. Specific signal locations have not been identified at this time. However, the level of development in these areas is anticipated to warrant traffic signals, depending on the site development plans. These areas will need to be analyzed further as specific development plans are prepared and processed through the City.

TABLE 15

SUMMARY OF
TRAFFIC SIGNAL WARRANT ANALYSIS
FOR INTERNAL ROADWAYS

	Warrant Satisfied				
	Minimum Vehicular		Interruption of Continuous Traffic		
Access	Major Approach (9,000)	Minor Approach (2,400)	Major Approach (14,400)	Minor Approach (1,200)	Signalization Warranted
A	YES	NO	YES	NO	NO
B	YES	NO	YES	NO	NO
C	YES	NO	YES	NO	NO
D	YES	NO	YES	NO	NO
E	YES	NO	YES	NO	NO
F	YES	NO	YES	NO	NO
G	YES	NO	YES	NO	NO
H	YES	NO	NO	NO	NO
I	YES	NO	NO	NO	NO
J	YES	NO	NO	NO	NO
K	NO	NO	NO	NO	NO
L	NO	NO	NO	NO	NO
M	YES	NO	YES	NO	NO
N	YES	NO	YES	NO	NO
O	YES	NO	YES	NO	NO
P	YES	NO	YES	NO	NO
Q	YES	NO	YES	NO	NO
R	YES	NO	YES	NO	NO
S	YES	NO	YES	NO	NO
T	YES	NO	YES	NO	NO
U	YES	NO	YES	NO	NO
V	YES	NO	YES	NO	NO
W	YES	NO	YES	NO	NO
X	YES	NO	YES	NO	NO
Y	YES	NO	YES	NO	NO
Z	YES	NO	YES	NO	NO
AA	NO	NO	NO	NO	NO
BB	NO	NO	NO	NO	NO

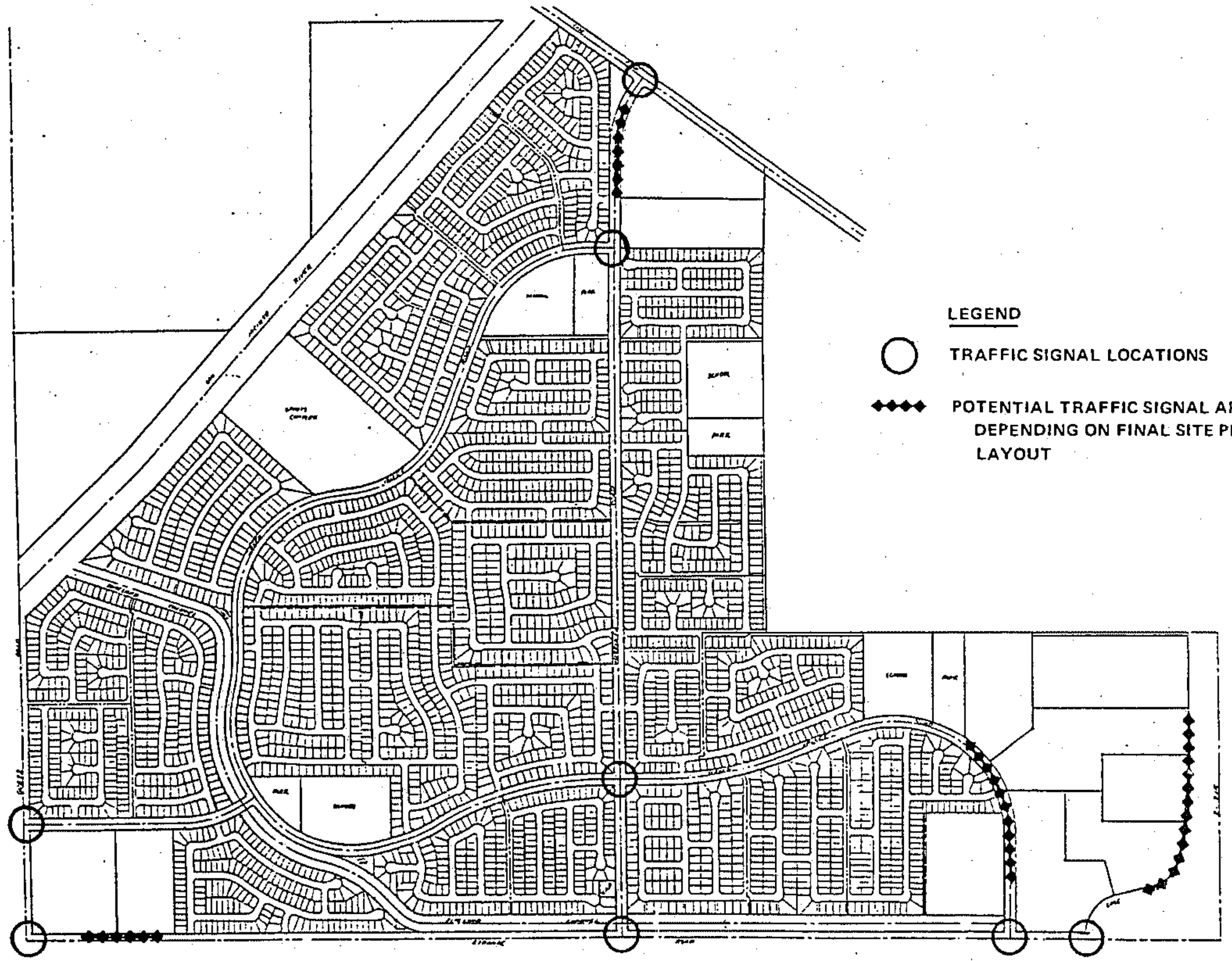

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FIGURE 17

RECOMMENDED TRAFFIC CONTROL LOCATIONS

MITIGATIONS

The proposed Green Valley project will generate approximately 103,867 daily trips, a large portion of which will impact the roadway system surrounding the project site. An analysis of project traffic impacts on the existing roadway system was not conducted, because it is clear that projected traffic volumes will by far exceed the capacity of the roadway system as it exists today.

An analysis of the ultimate roadway system that would be required to accommodate project traffic was conducted. In addition, a phasing analysis was conducted, to ensure that adequate circulation would be provided during project build-out. Improvements to the roadways and intersections immediately adjacent to and within the project site will be the responsibility of the project developer. Improvements to the roadway system beyond the project site are anticipated to be the shared responsibility of the Green Valley project developer and other developers of areas surrounding the Green Valley project site.

The following outlines the roadway system improvements required to accommodate project traffic by phase:

Phase 1:

- o Widen Ethanac Road to four lanes divided from Murrieta Road to I-215.
- o Widen Murrieta Road to four lanes divided from Green Valley Parkway (south) to Ethanac.
- o Construct Green Valley Parkway as 4-lane divided from north Phase 1 boundary to Murrieta Road (south).
- o Construct traffic signals at the following locations:
  - Ethanac Road at Murrieta Road
  - Ethanac Road at I-215 southbound ramps
  - Ethanac Road at I-215 northbound ramps

Phase 2:

- o Widen Ethanac Road to four lanes divided from Goetz Road to Murrieta Road.
- o Widen Ethanac Road from four to six lanes divided from Green Valley Parkway to the I-215 interchange.
- o Widen Ethanac Road to four lanes undivided from I-215 to Route 74.

- o Construct Green Valley Parkway as four-lane divided roadway from Murrieta Road to Ethanac Road.

- o Construct traffic signals at the following locations:

  - Ethanac Road at Green Valley Parkway
  - Ethanac Road at Case Road
  - Green Valley Parkway at Murrieta Road (S)

Phase 3:

- o Widen Ethanac Road to four lanes divided from I-215 to Route 74.

- o Widen Murrieta Road to four lanes divided from Case Road to Ethanac Road.

- o Construct Green Valley Parkway from Murrieta (south) to Murrieta (north).

- o Construct traffic signals at the following locations:

  - Green Valley Parkway at Murrieta Road (N)
  - Murrieta Road at Case Road
  - Goetz Road at Ethanac Road
  - Goetz Road at Street A

Additional improvements to the roadway system beyond these improvements are anticipated to be the shared responsibility of all developments in the area, with Green Valley contributing a fair share of the cost of each.

In addition, as build-out occurs, it will necessary to monitor project access points along Case Road, Ethanac Road, Goetz Road, and Green Valley Parkway for the commercial and office sites. Signalization of these points may be warranted at some point in the future, depending on actual access location, and site design.

Signalization of intersections beyond the project site are anticipated to be the responsibility of all developments in the area, with Green Valley contributing a fair share of the cost of each.

APPENDIX A

INTERSECTION CAPACITY WORKSHEETS

TRAFFIC SIGNAL SYSTEM CAPACITY ... VEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
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MONITOR

INTERSECTION # 1 - CASE RD @ GOETZ RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	110	1800 1	45	235	1315	18	1.0	1.4	A	1	1.39	75	73	0	110	EBT	
	EBR	112	-	-	26	145	18	1.0	1.4	A	-	-	75	73	0	112	EBR	
*	WBT	130	1800	45	587	1460	40	1.0	1.9	A	2	.83	75	73	0	130	WBT	*
	WBL	131	1100	45	81	892	9	1.0	1.3	A	0	.42	75	73	0	131	WBL	
*	NBL	141	1700	45	100	246	41	1.0	27.3	D+	2	1.37	15	13	75	141	NBL	*
	NBR	142	1800	45	81	260	31	1.0	26.5	D+	2	1.36	15	13	75	142	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 1110 WEIGHTED AVERAGE DELAY = 5.8 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .40/A WEIGHTED AVERAGE DELAY = 5.6 DELAY LOS = B

INTERSECTION # 2 - CASE RD @ MURRIETA RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	210	1800 1	45	165	440	38	1.0	21.8	C	3	1.24	24	22	7	210	EBT	
	EBL	211	1700 1	45	34	94	36	1.0	32.2	D	1	1.45	7	5	0	211	EBL	
	EBR	212	1800 1	45	151	440	34	1.0	21.5	C	3	1.33	24	22	7	212	EBR	
	SBT	220	3600 2	45	272	815	33	1.0	17.7	C	3	1.33	31	29	59	220	SBT	
	SBL	221	3300 2	45	698	953	73	1.0	24.1	C	7	1.27	28	26	31	221	SBL	
	SBR	222	- 0	-	115	345	33	1.0	17.7	C	-	-	31	29	59	222	SBR	
*	WBT	230	1800 1	45	398	440	90	1.0	41.3	E+	10	1.25	24	22	7	230	WBT	*
*	WBL	231	3300 2	45	162	183	88	1.0	58.0	E-	2	1.27	7	5	0	231	WBL	*
	WBR	232	1800 1	45	523	1800	29	1.0	.0	A	0	.00	90	90	0	232	WBR	
	NBT	240	3600 2	40	318	1160	27	1.0	17.[illegible]	C	3	1.51	31	29	59	240	NBT	
*	NBL	241	1700 1	40	441	491	90	1.0	37.6	D-	11	1.20	28	26	31	241	NBL	*
*	NBR	242	1800 1	45	531	580	92**	1.0	36.8	D-	13	1.21	31	29	59	242	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 3808 WEIGHTED AVERAGE DELAY = 26.0 DELAY LOS = D+ CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .91/E WEIGHTED AVERAGE DELAY = 40.4 DELAY LOS = E+

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
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MONITOR

INTERSECTION # 3 - CASE RD @ MAPES RD GREEN VALLEY A.M.peak RECOMMENDED IMPROVEMENTS 5/4/89 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	310	1800 1	45	202	1120	18	1.0	5.5	B	2	1.52	58	56	0	310	EBT	
*	EBL	311	3300 2	45	1209	1613	75	1.0	15.6	C	12	1.27	46	44	0	311	EBL	*
*	SBL	321	1700 1	40	147	567	26	1.0	16.7	C	3	.98	32	30	58	321	SBL	*
	SBR	322	3600 2	45	878	3600	24	1.0	.0	A	0	.00	90	90	0	322	SBR	
*	WBT	330	3600 2	45	304	387	79	1.0	36.7	D-	4	1.27	12	10	46	330	WBT	*
	WBR	332	0	-	10	13	79	1.0	36.7	D-	-	-	12	10	46	332	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2750 WEIGHTED AVERAGE DELAY = 12.4 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .58/A WEIGHTED AVERAGE DELAY = 19.7 DELAY LOS = C

INTERSECTION # 4 - MAPES RD @ I-215 S/B GREEN VALLEY A.M.peak RECOMMENDED IMPROVEMENTS 5/4/89 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBL	411	3300 2	35	187	1467	13	1.0	11.2	B	1	.37	42	40	48	411	EBL	
*	EBR	412	3600 2	45	1042	1600	65	1.0	15.6	C	10	1.32	42	40	48	412	EBR	*
*	SBT	420	3600 2	45	440	680	65	1.0	27.2	D+	5	1.33	19	17	29	420	SBT	*
	SBR	422	3600 2	45	413	680	61	1.0	26.6	D+	4	1.33	19	17	29	422	SBR	
*	NBT	440	3450 2	45	67	102	66	1.0	22.0	C	7	.44	29	27	0	440	NBT	*
	NBL	441	- 0	-	611	933	66	1.0	22.0	C	-	-	29	27	0	441	NBL	

INTERSECTION SUMMARY : TOTAL FLOW = 2760 WEIGHTED AVERAGE DELAY = 20.4 DELAY LOS = C CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .65/B WEIGHTED AVERAGE DELAY = 20.0 DELAY LOS = C

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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MONITOR

INTERSECTION # 5 - RT 74 @ I-215 N/B OFF RAMP   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	510	3600 2	45	1476	2680	55	1.0	4.0	A	13	3.36	69	67	0	510	EBT	*
	SBL	521	1700 1	45	114	359	32	1.0	23.0	C	2	1.35	21	19	69	521	SBL	
*	SBR	522	1800 1	45	204	380	54	1.0	25.3	D+	5	1.36	21	19	69	522	SBR	*
	WBT	530	1800 1	35	541	1340	40	1.0	3.3	A	5	1.11	69	67	0	530	WBT	

INTERSECTION SUMMARY : TOTAL FLOW = 2335   WEIGHTED AVERAGE DELAY = 6.6   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .55/A   WEIGHTED AVERAGE DELAY = 6.6   DELAY LOS = B

INTERSECTION # 6 - RT 74 @ I-215 N/B ON RAMP   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	610	3600 2	35	681	3600	19	1.0	.0	A	0	.00	90	90	0	610	EBT	
*	EBL	611	3300 2	35	795	1320	60	1.0	16.9	C	3	.63	38	36	0	611	EBL	*
	WBT	630	1800 1	45	541	1000	54	1.0	10.2	B	9	1.76	52	50	38	630	WBT	
*	WBR	632	1800 1	45	599	1000	60	1.0	10.9	B	10	1.34	52	50	38	632	WBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 2616   WEIGHTED AVERAGE DELAY = 9.7   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .60/B   WEIGHTED AVERAGE DELAY = 14.3   DELAY LOS = B

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 7 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
EBT	710	3600 2	45	10	108	9	1.0	8.2	B	1	1.29	49	47	0	710	EBT
* EBL	711	1400 1	45	495	731	68	1.0	14.0	B	9	1.30	49	47	0	711	EBL *
EBR	712	- 0	-	164	1772	9	1.0	8.2	B	-	-	49	47	0	712	EBR
SBT	720	3600 2	40	363	1000	36	1.0	20.0	C	4	1.82	27	25	63	720	SBT
SBL	721	1700 1	40	12	227	5	1.0	25.9	D+	0	1.67	14	12	49	721	SBL
SBR	722	1800 1	45	167	500	33	1.0	19.9	C	3	1.35	27	25	63	722	SBR
WBT	730	1800 1	45	11	134	8	1.0	8.2	B	1	1.29	49	47	0	730	WBT
WBL	731	1400 1	45	11	731	2	1.0	7.9	B	0	1.29	49	47	0	731	WBL
WBR	732	- 0	-	66	806	8	1.0	8.2	B	-	-	49	47	0	732	WBR
* NBT	740	3600 2	40	665	982	68	1.0	23.4	C	7	1.02	27	25	63	740	NBT *
* NBL	741	1700 1	40	159	227	70	1.0	34.9	D	4	1.08	14	12	49	741	NBL *
NBR	742	- 0	-	12	18	68	1.0	23.4	C	-	-	27	25	63	742	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 2136   WEIGHTED AVERAGE DELAY = 19.4   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY   ICU = .68/B   WEIGHTED AVERAGE DELAY = 21.3   DELAY LOS = C

INTERSECTION # 8 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
EBT	810	1800 1	45	101	860	12	1.0	9.9	B	1	1.32	45	43	0	810	EBT
EBL	811	1300 1	45	82	621	13	1.0	10.0	B	1	1.33	45	43	0	811	EBL
* EBR	812	1800 1	45	565	860	66	1.0	15.0	B	11	1.33	45	43	0	812	EBR *
SBT	820	3600 2	40	584	1041	56	1.0	19.7	C	6	1.03	31	29	59	820	SBT
SBL	821	1700 1	40	123	227	54	1.0	29.9	D+	2	1.17	14	12	45	821	SBL
SBR	822	- 0	-	67	119	56	1.0	19.7	C	-	-	31	29	59	822	SBR
WBT	830	3600 2	45	85	607	14	1.0	10.0	B	1	1.32	45	43	0	830	WBT
WBL	831	1300 1	45	52	621	8	1.0	9.7	B	1	1.33	45	43	0	831	WBL
WBR	832	- 0	-	156	1113	14	1.0	10.0	B	-	-	45	43	0	832	WBR
* NBT	840	3600 2	40	697	1071	65	1.0	20.9	C	9	1.76	31	29	59	840	NBT *
* NBL	841	3300 2	40	280	440	64	1.0	30.3	D	3	1.31	14	12	45	841	NBL *
NBR	842	- 0	-	58	89	65	1.0	20.9	C	-	-	31	29	59	842	NBR

INTERSECTION SUMMARY : TOTAL FLOW = 2850   WEIGHTED AVERAGE DELAY = 18.9   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY :   ICU = .65/B   WEIGHTED AVERAGE DELAY = 20.5   DELAY LOS = C

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 9 - ETHANAC RD @ GOETZ RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
EBT	910	3600 2	45	83	1188	7	1.0	13.6	B	1	1.32	36	34	0	910	EBT
EBL	911	1300 1	45	43	491	9	1.0	13.7	B	1	1.33	36	34	0	911	EBL
EBR	912	- 0	-	12	172	7	1.0	13.6	B	-	-	36	34	0	912	EBR
SBT	920	3600 2	45	97	1382	7	1.0	6.4	B	1	1.32	54	52	36	920	SBT
* SBL	921	1100 1	45	159	636	25	1.0	7.2	B	2	1.37	54	52	36	921	SBL *
SBR	922	- 0	-	49	698	7	1.0	6.4	B	-	-	54	52	36	922	SBR
* WBT	930	3600 2	45	94	378	25	1.0	14.7	B	2	.68	36	34	0	930	WBT *
WBL	931	1300 1	45	10	491	2	1.0	13.4	B	0	.51	36	34	0	931	WBL
WBR	932	- 0	-	244	982	25	1.0	14.7	B	-	-	36	34	0	932	WBR
NBT	940	3600 2	45	204	1419	14	1.0	6.7	B	1	1.32	54	52	36	940	NBT
NBL	941	1300 1	45	21	751	3	1.0	6.2	B	0	1.31	54	52	36	941	NBL
NBR	942	- 0	-	95	661	14	1.0	6.7	B	-	-	54	52	36	942	NBR

INTERSECTION SUMMARY :   TOTAL FLOW = 1111   WEIGHTED AVERAGE DELAY = 10.1   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY :   ICU = .25/A   WEIGHTED AVERAGE DELAY = 12.3   DELAY LOS = B

INTERSECTION # 10 - ETHANAC RD @ MURRIETA RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
EBT	1010	5400 3	45	320	747	43	1.0	27.0	D+	2	1.30	15	13	18	1010	EBT
EBL	1011	1700 1	45	20	302	7	1.0	23.4	C	0	.88	18	16	0	1011	EBL
EBR	1012	- 0	-	14	33	43	1.0	27.0	D+	-	-	15	13	18	1012	EBR
SBT	1020	3600 2	40	402	836	48	1.0	22.5	C	5	1.29	24	22	66	1020	SBT
* SBL	1021	3300 2	45	844	1137	74	1.0	21.7	C	9	1.30	33	31	33	1021	SBL *
SBR	1022	- 0	-	21	44	48	1.0	22.5	C	-	-	24	22	66	1022	SBR
WBT	1030	3600 2	45	379	520	73	1.0	31.7	D	4	.87	15	13	18	1030	WBT
* WBL	1031	3300 2	45	432	587	74	1.0	30.1	D	4	1.10	18	16	0	1031	WBL *
* WBR	1032	3600 2	45	395	520	76	1.0	32.8	D	4	1.29	15	13	18	1032	WBR *
* NBT	1040	3600 2	45	647	880	74	1.0	26.2	D+	7	1.30	24	22	66	1040	NBT *
NBL	1041	1700 1	45	29	586	5	1.0	15.0	B	0	1.31	33	31	33	1041	NBL
NBR	1042	1800 1	45	1178	1800	65	1.0	.6	A	0	.00	90	90	0	1042	NBR

INTERSECTION SUMMARY :   TOTAL FLOW = 581   WEIGHTED AVERAGE DELAY = 20.0   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY :   ICU = .74/C   WEIGHTED AVERAGE DELAY = 26.4   DELAY LOS = D+

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 11 - ETHANAC RD @ GREEN VALLEY PKWY   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
* EBT	1110	5400 3	45	2169	3780	57	1.0	5.3	B	13	1.63	65	63	0	1110	EBT *
* EBL	1111	1700 1	45	149	246	61	1.0	30.6	D	4	.95	15	13	0	1111	EBL *
* SBL	1121	3300 2	45	505	843	60	1.0	23.3	C	5	1.33	25	23	65	1121	SBL *
SBR	1122	1800 1	45	41	460	9	1.0	19.4	C	1	1.32	25	23	65	1122	SBR
WBT	1130	5400 3	40	1155	2880	40	1.0	9.6	B	2	.71	50	48	15	1130	WBT
WBR	1132	1800 1	45	436	960	45	1.0	10.1	B	7	1.29	50	48	15	1132	WBR

INTERSECTION SUMMARY : TOTAL FLOW = 4455   WEIGHTED AVERAGE DELAY = 9.9   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .58/A   WEIGHTED AVERAGE DELAY = 9.9   DELAY LOS = B

INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)
* EBT	1210	5400	40	2396	3180	75	1.0	11.2	B	11	.70	55	53	0	1210	EBT *
EBL	1211	1700	40	281	623	45	1.0	16.9	C	3	1.09	35	33	0	1211	EBL
SBL	1221	3300	45	232	1210	19	1.0	14.8	B	2	1.33	35	33	55	1221	SBL
SBR	1222	1800	45	81	660	12	1.0	14.4	B	1	1.33	35	33	55	1222	SBR
* WBT	1230	7200	40	1507	1440	105**	1.0	60.5	F	14	2.27	20	18	35	1230	WBT *
* WBR	1232	1800	45	697	1800	39	1.0	.1	A	0	.00	90	90	0	1232	WBR *

INTERSECTION SUMMARY : TOTAL FLOW = 5194   WEIGHTED AVERAGE DELAY = 24.5   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .58/A   WEIGHTED AVERAGE DELAY = 25.7   DELAY LOS = D+

Revised
See new Sheet

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
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MONITOR

INTERSECTION # 13 - ETHANAC RD @ I-215 S/B   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1310	5400 3	40	2391	3840	62	1.0	5.4	B	0	.18	66	64	9	1310	EBT	*
	EBR	1312	1800 1	45	222	1280	17	1.0	3.3	A	2	1.35	66	64	9	1312	EBR	
*	SBL	1321	3300 2	45	286	477	60	1.0	29.0	D+	3	1.34	15	13	75	1321	SBL	*
	SBR	1322	3600 2	45	301	520	58	1.0	28.6	D+	3	1.34	15	13	75	1322	SBR	
	WBT	1330	5400 3	40	1895	4380	43	1.0	1.9	A	6	2.14	75	73	0	1330	WBT	
*	WBL	1331	3300 2	40	157	257	61	1.0	33.7	D	2	.91	9	7	0	1331	WBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 5252   WEIGHTED AVERAGE DELAY = 7.5   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .62/B   WEIGHTED AVERAGE DELAY = 9.3   DELAY LOS = B

INTERSECTION # 14 - ETHANAC RD @ I-215 N/B   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1410	5400 3	40	1351	4320	31	1.0	1.8	A	2	.72	74	72	0	1410	EBT	
*	EBL	1411	3300 2	40	1313	1357	97**	1.0	33.5	D	14	1.48	39	37	0	1411	EBL	*
	WBT	1430	54[illegible] 3	40	1591	1980	80	1.0	21.4	C	11	.77	35	33	39	1430	WBT	
*	WBR	[illegible]	18[illegible] 1	45	648	660	98**	1.0	45.5	E	16	1.36	35	33	39	1432	WBR	*
	NBL	[illegible]	330[illegible] 2	45	463	513	90	1.0	42.6	E+	5	1.22	16	14	74	1441	NBL	
*	NBR	1442	1800 1	45	266	280	95**	1.0	59.2	E-	7	1.33	16	14	74	1442	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 5632   WEIGHTED AVERAGE DELAY = 25.8   DELAY LOS = D+   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .97/E   WEIGHTED AVERAGE DELAY = 40.0   DELAY LOS = E+

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INTERSECTION # 15 - ETHANAC RD @ E FRONTAGE RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1510	5400 3	40	1124	2834	40	1.0	9.1	B	5	1.36	51	49	21	1510	EBT	
*	EBL	1511	3300 2	40	491	697	70	1.0	27.4	D+	5	1.27	21	19	0	1511	EBL	*
	EBR	1512	- 0	-	42	106	40	1.0	9.1	B	-	-	51	49	21	1512	EBR	
	SBT	1520	1800 1	45	10	28	35	1.0	25.0	D+	2	1.36	18	16	72	1520	SBT	
	SBL	1521	1400 1	45	10	249	4	1.0	23.3	C	0	1.32	18	16	72	1521	SBL	
	SBR	1522	- 0	-	103	292	35	1.0	25.0	D+	-	-	18	16	72	1522	SBR	
*	WBT	1530	5400 3	45	2131	2926	73	1.0	12.5	B	13	1.30	51	49	21	1530	WBT	*
	WBL	1531	1700 1	45	23	359	6	1.0	21.6	C	0	1.31	21	19	0	1531	WBL	
	WBR	1532	- 0	-	10	14	73	1.0	12.5	B	-	-	51	49	21	1532	WBR	
	NBT	1540	1800 1	45	10	86	12	1.0	23.6	C	1	1.33	18	16	72	1540	NBT	
*	NBL	1541	1400 1	45	179	249	72	1.0	33.3	D	4	1.32	18	16	72	1541	NBL	*
	NBR	1542	- 0	-	27	234	12	1.0	23.6	C	-	-	18	16	72	1542	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 4160 — WEIGHTED AVERAGE DELAY = 14.7 — DELAY LOS = B — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .72/C — WEIGHTED AVERAGE DELAY = 16.4 — DELAY LOS = C

INTERSECTION # 16 - RT 74 @ ETHANAC RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400	45	680	540	126**	1.0	195.4	F	7	2.17	11	9	39	1610	EBT	*
	EBR	1612	1800	45	94	180	52	1.0	31.5	D	2	1.36	11	9	39	1612	EBR	
	WBT	1630	3600	45	860	1920	45	1.0	9.9	B	6	1.27	50	48	0	1630	WBT	
*	WBL	1631	3300	45	1389	1357	102**	1.0	46.7	E	27	1.89	39	37	0	1631	WBL	*
	NBL	1641	3300	45	58	1393	4	1.0	11.6	B	0	1.31	40	38	50	1641	NBL	
*	NBR	1642	1800	45	940	1800	52	1.0	.2	A	0	.00	90	90	0	1642	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 4021 — WEIGHTED AVERAGE DELAY = 52.3 — DELAY LOS = E — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .71/C — WEIGHTED AVERAGE DELAY = 65.8 — DELAY LOS = F

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INTERSECTION # 17 - W FRONTAGE RD @ ACCESS RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBL	1711	1700	45	15	189	8	1.0	27.3	D+	0	1.33	12	10	78	1711	EBL	
*	EBR	1712	3600	45	170	400	42	1.0	28.9	D+	2	1.35	12	10	78	1712	EBR	*
	SBT	1720	1800	45	139	888	16	1.0	6.4	B	2	1.33	55	53	23	1720	SBT	
	SBR	1722	-	-	27	172	16	1.0	6.4	B	-	-	55	53	23	1722	SBR	
*	NBT	1740	1800	40	660	1520	43	1.0	1.5	A	2	1.03	78	76	0	1740	NBT	*
*	NBL	1741	3300	45	343	770	45	1.0	22.8	C	3	1.30	23	21	0	1741	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 1354   WEIGHTED AVERAGE DELAY = 11.2   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .44/A   WEIGHTED AVERAGE DELAY = 11.7   DELAY LOS = B

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INTERSECTION # 1 - CASE RD @ GOETZ RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	110	1800 |	45	583	1301	45	1.0	2.1	A	5	1.44	75	73	0	110	EBT	*
	EBR	112	- U	-	71	159	45	1.0	2.1	A	-	-	75	73	0	112	EBR	
	WBT	130	1800 |	45	464	1460	32	1.0	1.7	A	2	1.06	75	73	0	130	WBT	
	WBL	131	800 |	45	120	649	18	1.0	1.5	A	0	.60	75	73	0	131	WBL	
	NBL	141	1700 |	45	89	246	36	1.0	26.9	D+	2	1.37	15	13	75	141	NBL	
*	NBR	142	1800 |	45	117	260	45	1.0	27.7	D+	3	1.37	15	13	75	142	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 1444   WEIGHTED AVERAGE DELAY = 5.5   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .45/A   WEIGHTED AVERAGE DELAY = 6.0   DELAY LOS = B

INTERSECTION # 2 - CASE RD @ MURRIETA RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	210	1800	45	394	400	98**	1.0	58.7	E-	10	1.41	22	20	19	210	EBT	*
	EBL	211	1700	45	150	321	47	1.6	25.6	D+	3	1.36	19	17	0	211	EBL	
	EBR	212	1800	45	355	400	89	1.0	41.0	E+	8	1.20	22	20	19	212	EBR	
*	SBT	220	3600	45	573	587	98**	1.0	50.1	E	8	1.34	19	17	71	220	SBT	*
*	SBL	221	3300	45	1028	1027	100**	1.0	46.8	E	15	1.50	30	28	41	221	SBL	*
	SBR	222	-	-	91	93	98**	1.0	50.1	E	-	-	19	17	71	222	SBR	
	WBT	230	1800	45	303	400	76	1.0	30.7	D	7	1.35	22	20	19	230	WBT	
*	WBL	231	3300	45	603	623	97**	1.0	49.3	E	6	1.36	19	17	0	231	WBL	*
	WBR	232	1800	45	1230	1800	68	1.0	.8	A	0	.00	90	90	0	232	WBR	
	NBT	240	3600	40	539	680	79	1.0	31.1	D	6	1.18	19	17	71	240	NBT	
	NBL	241	1700	40	259	529	49	1.0	19.8	C	6	2.10	30	28	41	241	NBL	
	NBR	242	1800	45	287	340	84	1.0	39.3	D-	7	1.24	19	17	71	242	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 5812   WEIGHTED AVERAGE DELAY = 33.7   DELAY LOS = D   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .99/E   WEIGHTED AVERAGE DELAY = 49.9   DELAY LOS = E

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INTERSECTION # 3 - CASE RD @ MAPES RD — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	310	1800	45	485	1020	48	1.0	9.1	B	8	1.83	53	51	0	310	EBT	
*	EBL	311	3300	45	1482	1283	115**	1.0	107.0	F	29	2.63	37	35	0	311	EBL	*
	SBL	321	1700	40	123	661	19	1.0	13.8	B	3	.73	37	35	53	321	SBL	
*	SBR	322	3600	45	1667	3600	46	1.0	.1	A	0	.00	90	90	0	322	SBR	*
*	WBT	330	3600	45	680	552	123**	1.0	173.2	F	12	2.25	16	14	37	330	WBT	*
	WBR	332	-	-	10	8	123**	1.0	173.2	F	-	-	16	14	37	332	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 4447 — WEIGHTED AVERAGE DELAY = 64.0 — DELAY LOS = F — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .71/C — WEIGHTED AVERAGE DELAY = 72.5 — DELAY LOS = F

INTERSECTION # 4 - MAPES RD @ I-215 S/B — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBL	411	3300	35	451	1100	41	1.0	17.8	C	3	.49	32	30	58	411	EBL	
*	EBR	412	3600	45	1031	1200	86	1.0	26.2	D+	12	1.24	32	30	58	412	EBR	*
	SBT	420	3600	45	646	1160	56	1.0	19.7	C	6	1.31	31	29	27	420	SBT	
*	SBR	422	3600	45	1021	1160	88	1.0	28.0	D+	12	1.21	31	29	27	422	SBR	*
*	NBT	440	3450	45	75	85	88	1.0	30.8	D	10	.63	27	25	0	440	NBT	*
	NBL	441	-	-	769	873	88	1.0	30.8	D	-	-	27	25	0	441	NBL	

INTERSECTION SUMMARY : TOTAL FLOW = 3993 — WEIGHTED AVERAGE DELAY = 25.6 — DELAY LOS = D+ — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .87/D — WEIGHTED AVERAGE DELAY = 28.2 — DELAY LOS = D+

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INTERSECTION # 5 - RT 74 @ I-215 N/B OFF RAMP GREEN VALLEY P.M.peak RECOMMENDED IMPROVEMENTS 5/4/89 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	510	3600	45	1648	2600	63	1.0	5.3	B	14	1.88	67	65	0	510	EBT	*
	SBL	521	1700	45	88	397	22	1.0	21.3	C	2	1.34	23	21	67	521	SBL	
*	SBR	522	1800	45	258	420	61	1.0	25.5	D+	6	1.34	23	21	67	522	SBR	*
	WBT	530	1800	35	629	1300	48	1.0	4.3	A	5	.92	67	65	0	530	WBT	

INTERSECTION SUMMARY : TOTAL FLOW = 2623 WEIGHTED AVERAGE DELAY = 7.6 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .63/B WEIGHTED AVERAGE DELAY = 8.0 DELAY LOS = B

INTERSECTION # 6 - RT 74 @ I-215 N/B ON RAMP GREEN VALLEY P.M.peak RECOMMENDED IMPROVEMENTS 5/4/89 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	610	3600	35	1135	3600	32	1.0	.0	A	0	.00	90	90	0	610	EBT	
*	EBL	611	3300	35	537	990	54	1.0	20.6	C	4	1.27	29	27	0	611	EBL	*
*	WBT	630	1800	45	629	1180	53	1.0	6.7	B	10	1.71	61	59	29	630	WBT	*
	WBR	632	1800	45	502	1180	43	1.0	5.8	B	6	1.37	61	59	29	632	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2803 WEIGHTED AVERAGE DELAY = 6.5 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .54/A WEIGHTED AVERAGE DELAY = 13.1 DELAY LOS = B

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INTERSECTION # 7 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	710	3600	45	13	141	9	1.0	13.7	B	1	1.32	36	34	0	710	EBT	
*	EBL	711	1400	45	416	529	79	1.0	24.5	C	9	1.26	36	34	0	711	EBL	*
	EBR	712	-	-	112	1219	9	1.0	13.7	B	-	-	36	34	0	712	EBR	
	SBT	720	3600	40	841	1560	54	1.0	14.7	B	9	1.50	41	39	49	720	SBT	
	SBL	721	1700	40	53	208	26	1.0	27.4	D+	1	.75	13	11	36	721	SBL	
*	SBR	722	1800	45	598	780	77	1.0	19.9	C	12	1.28	41	39	49	722	SBR	*
	WBT	730	1800	45	12	115	10	1.0	13.8	B	1	1.32	36	34	0	730	WBT	
	WBL	731	1400	45	15	529	3	1.0	13.4	B	0	1.31	36	34	0	731	WBL	
	WBR	732	-	-	59	565	10	1.0	13.8	B	-	-	36	34	0	732	WBR	
	NBT	740	3600	40	686	1520	45	1.0	13.8	B	4	.66	41	39	49	740	NBT	
*	NBL	741	1700	40	164	208	79	1.0	41.9	E+	3	1.30	13	11	36	741	NBL	*
	NBR	742	-	-	18	40	45	1.0	13.8	B	-	-	41	39	49	742	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 2987   WEIGHTED AVERAGE DELAY = 18.5   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .78/C   WEIGHTED AVERAGE DELAY = 24.6   DELAY LOS = C

INTERSECTION # 8 - GREEN VALLEY PKWY @ MURRIETA R   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	810	1800	45	75	540	14	1.0	17.5	C	1	1.29	29	27	0	810	EBT	
	EBL	811	1300	45	67	390	17	1.0	17.7	C	1	1.30	29	27	0	811	EBL	
*	EBR	812	1800	45	422	540	78	1.0	27.2	D+	9	1.24	29	27	0	812	EBR	*
	SBT	820	3600	40	818	1146	71	1.0	20.5	C	9	1.03	34	32	56	820	SBT	
	SBL	821	1700	40	120	472	25	1.0	19.3	C	1	.82	27	25	29	821	SBL	
	SBR	822	-	-	96	134	71	1.0	20.5	C	-	-	34	32	56	822	SBR	
	WBT	830	3600	45	93	472	20	1.0	17.9	C	2	1.28	29	27	0	830	WBT	
	WBL	831	1300	45	43	390	11	1.0	17.4	C	1	1.29	29	27	0	831	WBL	
	WBR	832	-	-	120	608	20	1.0	17.9	C	-	-	29	27	0	832	WBR	
*	NBT	840	3600	40	915	1194	77	1.0	21.7	C	3	.32	34	32	56	840	NBT	*
*	NBL	841	3300	40	701	917	76	1.0	25.5	D+	7	.73	27	25	29	841	NBL	*
	NBR	842	-	-	66	86	77	1.0	21.7	C	-	-	34	32	56	842	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 3536   WEIGHTED AVERAGE DELAY = 22.3   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .77/C   WEIGHTED AVERAGE DELAY = 24.1   DELAY LOS = C

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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MONITOR

INTERSECTION # 9 - ETHANAC RD @ GOETZ RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	910	3600	45	129	838	15	1.0	18.7	C	1	1.32	27	25	0	910	EBT	
	EBL	911	1200	45	70	333	21	1.0	19.0	C	1	1.35	27	25	0	911	EBL	
	EBR	912	-	-	25	162	15	1.0	18.7	C	-	-	27	25	0	912	EBR	
	SBT	920	3600	45	182	1982	9	1.0	3.8	A	1	1.32	63	61	27	920	SBT	
*	SBL	921	1200	45	271	813	33	1.0	4.7	A	3	1.40	63	61	27	921	SBL	*
	SBR	922	-	-	42	457	9	1.0	3.8	A	-	-	63	61	27	922	SBR	
*	WBT	930	3600	45	138	425	32	1.0	19.7	C	2	1.09	27	25	0	930	WBT	*
	WBL	931	1200	45	54	333	16	1.0	18.7	C	0	.95	27	25	0	931	WBL	
	WBR	932	-	-	187	575	32	1.0	19.7	C	-	-	27	25	0	932	WBR	
	NBT	940	3600	45	179	1916	9	1.0	3.8	A	1	1.32	63	61	27	940	NBT	
	NBL	941	1200	45	14	813	2	1.0	3.6	A	0	1.32	63	61	27	941	NBL	
	NBR	942	-	-	49	524	9	1.0	3.8	A	-	-	63	61	27	942	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 1340   WEIGHTED AVERAGE DELAY = 10.9   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .33/A   WEIGHTED AVERAGE DELAY = 12.9   DELAY LOS = B

INTERSECTION # 10 - ETHANAC RD @ MURRIETA RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1010	5400	45	596	1164	51	1.0	23.2	C	4	1.30	23	21	34	1010	EBT	
	EBL	1011	1700	45	44	684	7	1.0	14.6	B	1	.91	34	32	0	1011	EBL	
	EBR	1012	-	-	49	96	51	1.0	23.2	C	-	-	23	21	34	1012	EBR	
	SBT	1020	3600	40	682	584	117**	1.0	129.9	F	17	2.48	17	15	73	1020	SBT	
*	SBL	1021	3300	40	630	513	123**	1.0	171.1	F	9	2.32	16	14	57	1021	SBL	*
	SBR	1022	-	-	19	16	117**	1.0	129.9	F	-	-	17	15	73	1022	SBR	
	WBT	1030	3600	45	532	840	63	1.0	24.8	C	4	.78	23	21	34	1030	WBT	
*	WBL	1031	3300	45	1375	1173	117**	1.0	119.0	F	8	2.33	34	32	0	1031	WBL	*
*	WBR	1032	3600	45	990	840	118**	1.0	129.8	F	17	2.46	23	21	34	1032	WBR	*
*	NBT	1040	3600	45	720	600	120**	1.0	149.7	F	18	2.40	17	15	73	1040	NBT	*
	NBL	1041	1700	45	85	264	32	1.0	26.0	D+	2	1.34	16	14	57	1041	NBL	
	NBR	1042	1800	45	940	1800	52	1.0	.2	A	0	.00	90	90	0	1042	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 6662   WEIGHTED AVERAGE DELAY = 94.6   DELAY LOS = F   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.19/F   WEIGHTED AVERAGE DELAY = 136.7   DELAY LOS = F
<<<< INTERSECTION OVERSATURATED - DELAY VALUE[illegible]E UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 11 - ETHANAC RD @ GREEN VALLEY PKWY — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1110	5400	45	1998	4260	47	1.0	2.5	A	5	1.18	73	71	0	1110	EBT	
*	EBL	1111	1700	45	157	208	76	1.0	39.2	D-	4	.88	13	11	0	1111	EBL	*
*	SBL	1121	3300	45	444	550	81	1.0	33.8	D	5	1.27	17	15	73	1121	SBL	*
	SBR	1122	1800	45	174	300	58	1.0	28.5	D+	4	1.36	17	15	73	1122	SBR	
*	WBT	1130	5400	40	2697	3480	78	1.0	9.5	B	7	.43	60	58	13	1130	WBT	*
	WBR	1132	1800	45	483	1160	42	1.0	6.1	B	6	1.33	60	58	13	1132	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 5953 WEIGHTED AVERAGE DELAY = 10.0 DELAY LOS = B CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .78/C WEIGHTED AVERAGE DELAY = 14.2 DELAY LOS = B

INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1210	5400	40	2084	3240	64	1.0	9.3	B	7	.62	56	54	0	1210	EBT	*
	EBL	1211	1700	40	360	604	60	1.0	19.3	C	4	1.11	34	32	0	1211	EBL	
*	SBL	1221	3300	45	1172	1173	100**	1.0	43.2	E+	14	1.49	34	32	56	1221	SBL	*
	SBR	1222	1800	45	457	640	71	1.0	21.8	C	10	1.31	34	32	56	1222	SBR	
*	WBT	1230	7200	40	2728	1600	170**	1.0	757.9	F	34	1.06	22	20	34	1230	WBT	*
	WBR	1232	1800	45	1110	1800	62	1.0	.5	A	0	.00	90	90	0	1232	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 7911 WEIGHTED AVERAGE DELAY = 272.4 DELAY LOS = F CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .95/E WEIGHTED AVERAGE DELAY = 357.2 DELAY LOS = F

Revised
See New Sheet

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INTERSECTION # 13 - ETHANAC RD @ I-215 S/B   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1310	5400	40	2661	2640	101**	1.0	34.1	D	21	1.54	46	44	13	1310	EBT	*
	EBR	1312	1800	45	590	880	67	1.0	14.8	B	11	1.27	46	44	13	1312	EBR	
	SBL	1321	3300	45	709	1063	67	1.0	21.2	C	7	1.32	31	29	59	1321	SBL	
*	SBR	1322	3600	45	1170	1160	101**	1.0	47.0	E	29	1.63	31	29	59	1322	SBR	*
	WBT	1330	5400	40	2677	3420	78	1.0	10.1	B	15	2.05	59	57	0	1330	WBT	
*	WBL	1331	3300	40	400	403	99**	1.0	63.7	F	5	1.37	13	11	0	1331	WBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 8207   WEIGHTED AVERAGE DELAY = 27.1   DELAY LOS = D+   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.01/F   WEIGHTED AVERAGE DELAY = 40.5   DELAY LOS = E+
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

INTERSECTION # 14 - ETHANAC RD @ I-215 N/B   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1410	5400	40	2467	4260	58	1.0	3.0	A	6	1.37	73	71	0	1410	EBT	
*	EBL	1411	3300	40	902	917	98**	1.0	45.1	E	11	1.77	27	25	0	1411	EBL	*
*	WBT	1430	5400	40	2565	2640	97**	1.0	26.5	D+	20	1.07	46	44	27	1430	WBT	*
	WBR	1432	1800	45	385	880	44	1.0	11.6	B	6	1.32	46	44	27	1432	WBR	
	NBL	1441	3300	45	505	550	92**	1.0	43.5	E+	6	1.22	17	15	73	1441	NBL	
*	NBR	1442	1800	45	298	300	99**	1.0	68.1	F	7	1.51	17	15	73	1442	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 7122   WEIGHTED AVERAGE DELAY = 22.9   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .98/E   WEIGHTED AVERAGE DELAY = 34.3   DELAY LOS = D

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INTERSECTION # 17 - W FRONTAGE RD @ ACCESS RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBL	1711	1700	45	77	397	19	1.0	21.1	C	2	1.34	23	21	67	1711	EBL	
*	EBR	1712	3600	45	875	840	104**	1.0	63.7	F	22	2.04	23	21	67	1712	EBR	*
*	SBT	1720	1800	45	725	706	103**	1.0	52.3	E	26	1.86	42	40	25	1720	SBT	*
	SBR	1722	-	-	96	94	103**	1.0	52.3	E	-	-	42	40	25	1722	SBR	
	NBT	1740	1800	40	610	1300	47	1.0	4.2	A	5	.97	67	65	0	1740	NBT	
*	NBL	1741	3300	45	851	843	101**	1.0	53.0	E	18	1.61	25	23	0	1741	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 3234   WEIGHTED AVERAGE DELAY = 45.8   DELAY LOS = E   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.03/F   WEIGHTED AVERAGE DELAY = 56.4   DELAY LOS = E-
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

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INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1210	5400 3	40	2396	4440	54	1.0	2.1	A	4	1.21	76	74	0	1210	EBT	*
*	EBL	1211	1700 1	40	281	510	55	1.0	21.2	C	4	1.43	29	27	0	1211	EBL	*
*	SBL	1221	3300 2	45	232	440	53	1.0	28.7	D+	2	1.35	14	12	76	1221	SBL	*
	SBR	1222	1800 1	45	81	240	34	1.0	27.3	D+	2	1.37	14	12	76	1222	SBR	
	WBT	1230	7200 4	40	1507	3600	42	1.0	10.9	B	7	2.10	47	45	29	1230	WBT	
	WBR	1232	1800 1	45	697	1800	39	1.0	.1	A	0	.00	90	90	0	1232	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 5194 — WEIGHTED AVERAGE DELAY = 7.0 — DELAY LOS = B — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .54/A — WEIGHTED AVERAGE DELAY = 6.0 — DELAY LOS = B

INTERSECTION # 16 - RT 74 @ ETHANAC RD — GREEN VALLEY — A.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400 3	45	680	1080	63	1.0	26.0	D+	5	1.44	20	18	63	1610	EBT	*
	EBR	1612	1800 1	45	94	360	26	1.0	23.2	C	2	1.31	20	18	63	1612	EBR	
	WBT	1630	3600 2	45	860	3240	27	1.0	.5	A	1	1.20	83	81	0	1630	WBT	
*	WBL	1631	3300 2	45	1389	2237	62	1.0	6.6	B	9	1.33	63	61	0	1631	WBL	*
*	NBL	1641	3300 2	45	58	183	32	1.0	31.4	D	0	1.37	7	5	83	1641	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 3081 — WEIGHTED AVERAGE DELAY = 10.1 — DELAY LOS = B — CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .60/B — WEIGHTED AVERAGE DELAY = 13.4 — DELAY LOS = B

TRAFFIC SIGNAL SYSTEM CAPACI... LEVEL OF SERVICE ANALYSIS SUMMARY
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INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1210	5400	40	2084	3240	64	1.0	9.3	B	7	.62	56	54	0	1210	EBT	
*	EBL	1211	1700	40	360	359	100**	1.0	65.9	F	8	1.63	21	19	0	1211	EBL	*
*	SBL	1221	3300	45	1172	1173	100**	1.0	43.2	E+	14	1.49	34	32	56	1221	SBL	*
	SBR	1222	1800	45	457	640	71	1.0	21.8	C	10	1.31	34	32	56	1222	SBR	
*	WBT	1230	7200	40	2728	2640	103**	1.0	45.8	E	23	2.09	35	33	21	1230	WBT	*

INTERSECTION SUMMARY : TOTAL FLOW = 6801   WEIGHTED AVERAGE DELAY = 33.6   DELAY LOS = D   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.01/F   WEIGHTED AVERAGE DELAY = 46.8   DELAY LOS = E
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

INTERSECTION # 16 - RT 74 @ ETHANAC RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400	45	1019	1080	94**	1.0	39.2	D-	8	1.27	20	18	59	1610	EBT	*
	EBR	1612	1800	45	123	360	34	1.0	23.8	C	3	1.34	20	18	59	1612	EBR	
	WBT	1630	3600	45	985	3080	32	1.0	1.0	A	2	1.32	79	77	0	1630	WBT	
*	WBL	1631	3300	45	1986	2090	95**	1.0	19.8	C	23	1.13	59	57	0	1631	WBL	*
*	NBL	1641	3300	45	312	330	95**	1.0	57.4	E-	4	1.30	11	9	79	1641	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 4425   WEIGHTED AVERAGE DELAY = 22.9   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .95/E   WEIGHTED AVERAGE DELAY = 29.3   DELAY LOS = D+

APPENDIX B

ITE RETAIL TRIP GENERATION RATE DOCUMENTATION

LAND USE: 820. SHOPPING CENTER

DESCRIPTION

A shopping center is an integrated group of commercial establishments which is planned, developed, owned and managed as a unit. It is related to its market area in terms of size, location, and type of store. It is provided with on-site parking facilities.[1]

Studies of over 500 different shopping centers were obtained for this analysis and included centers as small as 6,900 to as large as 1,600,000 gross square feet of leasable area. The centers studied are located throughout the United States and throughout urban areas, and therefore reflect average conditions anywhere within the United States.

Some of the centers included nonmerchandising uses: office buildings, theatres, post offices, banks, health clubs, and recreational facilities such as ice skating rinks.

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points. These buildings are generally drive-in banks, restaurants, or small offices. The data herein do not indicate which centers included peripheral buildings. Therefore, in general, it can be assumed that the data do reflect the effect of the peripheral buildings. However, it is suggested when estimating driveway volumes for a shopping center for the purpose of designing the access, a conservative approach be taken and calculate the trips generated by the peripheral buildings as part of a shopping center as a whole and as a multi-use development and then use the higher of the two estimates.

TRIP CHARACTERISTICS

The vehicle trips generated at a shopping center are based upon the gross leasable area (GLA) of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the gross leasable area could be the same as the gross area of the building.

The shopping center data indicate that the rate of trip making decreases as the size of the center increases. This change in rate is an exponential function rather than a linear function. The most accurate method to estimate the driveway volumes at a shopping center is to utilize regression equations to determine the average weekday vehicle trip ends (24-hour two-way volume) and the total A.M. and P.M. peak hour trips (two-way volume) and then to apply the directional distribution ratio to determine the peak hour entering and exiting volumes.

Equations have been developed for the entire size range of shopping centers for both the entire year excluding the Christmas shopping season, and for the Christmas shopping season. This methodology eliminates the need to categorize the center as a neighborhood, community or regional center, or by different ITE land use codes other than Code 820.

The following indicates the equations for estimating average weekday vehicle trip ends or 24-hour two-way volume and the total A.M. and P.M. peak hour (two-way) trips (one hour between 7:00 and 9:00 A.M. and one hour between 4:00 and 6:00 P.M.) when the adjacent street system peaks.

Figures 1 through 10 graphically illustrate the regression equations and the actual measured trips as related to the gross leasable area. Table 1 provides an approximation of the trip rates as derived from the above equations for different size shopping centers for average weekday conditions.

IT IS SUGGESTED THAT THE EQUATIONS BE UTILIZED AS THE MOST ACCURATE METHOD FOR ESTIMATING THE DRIVEWAY VOLUMES FOR SHOPPING CENTERS OF ANY SIZE AND THAT THE FIGURES AND TABLE 1 BE USED AS AN APPROXIMATION. IF TABLE 1 IS USED, ONE MUST INTERPOLATE BETWEEN THE DIFFERENT SIZE SHOPPING CENTERS PROVIDED TO ESTIMATE THE TRIP RATES FOR A SIZE CENTER NOT SHOWN ON THE TABLE.

IN ADDITION TO THESE REGRESSION EQUATIONS, THE DATA PROVIDE INFORMATION ON HOURLY VARIATIONS IN SHOPPING CENTER TRAFFIC FOR AN AVERAGE WEEKDAY, DAILY VARIATION, AND MONTHLY VARIATIONS IN SHOPPING CENTER TRIPS. THESE ARE SHOWN ON TABLES 2, 3, 4, AND 5, RESPECTIVELY. IT SHOULD BE NOTED, HOWEVER, THAT THE NUMBER OF STUDIES PROVIDING THESE DATA IS LIMITED AND THEREFORE CAUTION IN USING THESE TABLES IS RECOMMENDED. SOME OF THE INFORMATION IN TABLES 2 THROUGH 5 MAY OVERLAP WITH

Table 1
Shopping Center Vehicle Trip Generation
Vehicle Trip Ends (Two-Way Volume)
Independent Variable—Trips per 1,000 Square Feet Gross Leasable Area

Gross Leasable Area (1,000 Square Feet)	Average Weekday Vehicle Trip Ends		A.M. Peak Hour (1 Hour Between 7–9 A.M.)		P.M. Peak Hour (1 Hour Between 4–6 P.M.)	
	Rate	Volume	Rate	Volume	Rate	Volume
10	166.35	1,664	4.39	44	18.82	188
50	94.71	4,735	2.31	115	8.69	435
100	74.31	7,431	1.75	175	6.23	623
200	58.93	11,785	1.32	265	4.49	897
300	48.31	14,492	1.13	338	3.85	1,155
400	43.00	17,199	1.00	401	3.53	1,413
500	39.81	19,906	0.92	459	3.34	1,671
600	37.69	22,613	0.85	512	3.22	1,929
800	35.03	28,027	0.76	608	3.06	2,445
1000	33.44	33,441	0.70	696	2.96	2,961
1200	32.38	38,855	0.65	776	2.90	3,477
1400	31.62	44,269	0.61	851	2.85	3,993
1600	31.05	49,683	0.58	922	2.82	4,509

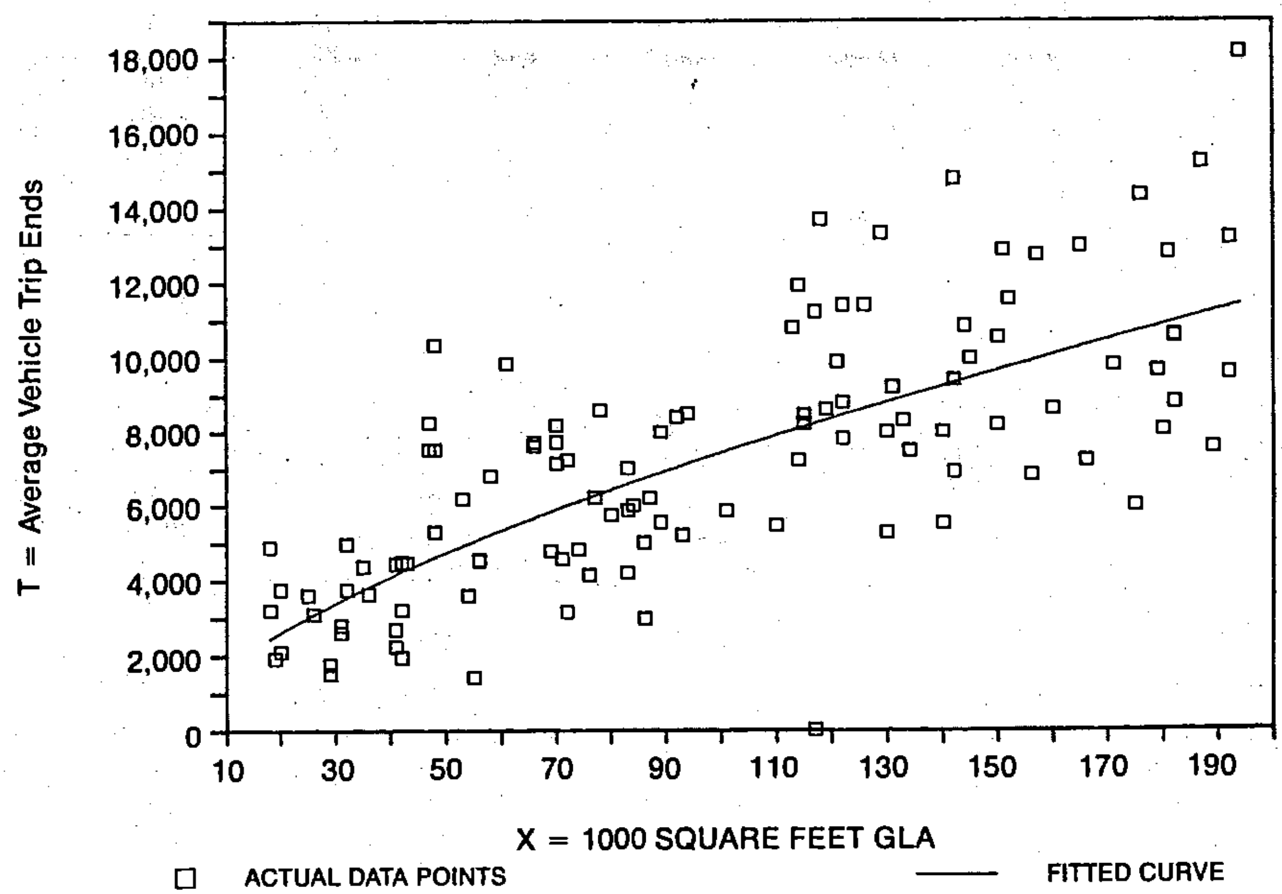
Source: Trip Generation Equations

Table 2
Hourly Variation in Shopping Center Traffic
Under 100,000 Square Feet Gross Leasable Area

Time	Average Weekday[a]		Saturday[b]	
	% of 24 Hour Entering	% of 24 Hour Exiting	% of 24 Hour Entering	% of 24 Hour Exiting
10–11 A.M.	7.6	6.5	6.8	5.8
11–12 Noon	7.6	8.4	8.8	8.9
12–1 P.M.	7.6	8.2	9.4	8.8
1–2 P.M.	6.9	7.5	10.0	10.1
2–3 P.M.	9.0	7.8	9.7	8.4
3–4 P.M.	9.6	9.5	10.3	9.6
4–5 P.M.	9.7	10.4	10.7	10.7
5–6 P.M.	10.3	11.0	9.4	8.7
6–7 P.M.	7.4	8.3	7.3	8.3
7–8 P.M.	5.4	5.3	5.0	5.7
8–9 P.M.	4.2	4.3	3.2	3.9
9–10 P.M.	1.9	1.8	2.0	3.3

[a] Source numbers: 95, 124; number of studies: 4
[b] Source numbers: 95, 124; number of studies: 4

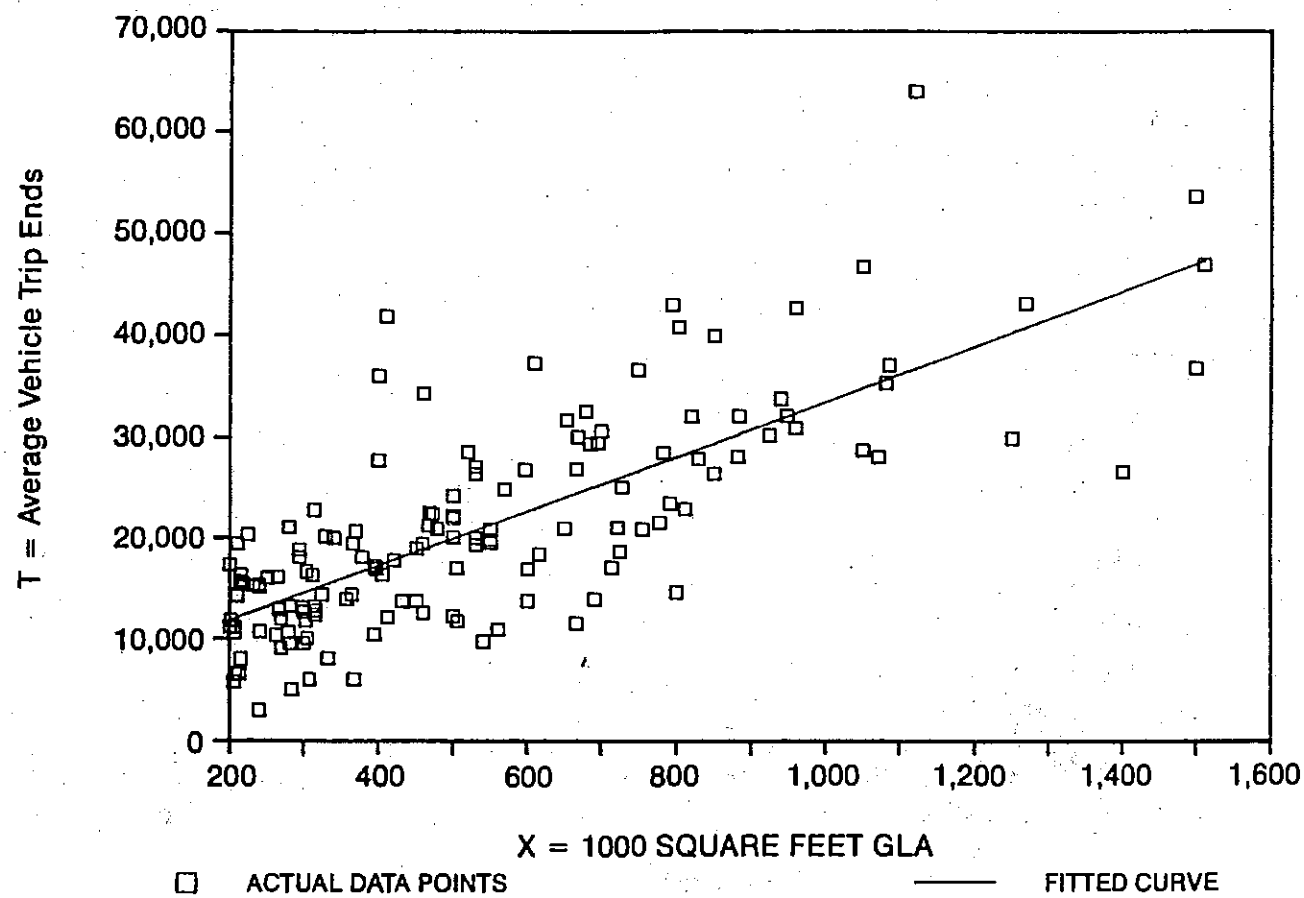
Figure 1
Shopping Center (820)
Less than 200,000 Square Feet Gross Leasable Area
Average Weekday Vehicle Trip Ends Versus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $Ln(T) = 0.65\ Ln(X) + 5.92$
$R^2 = 0.58$

DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 2
Shopping Center (820)
200,000 Square Feet Gross Leasable Area and Greater
Average Weekday Vehicle Trip EndsVersus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $T = 27.07(X) + 6371.0$
$R^2 = 0.59$

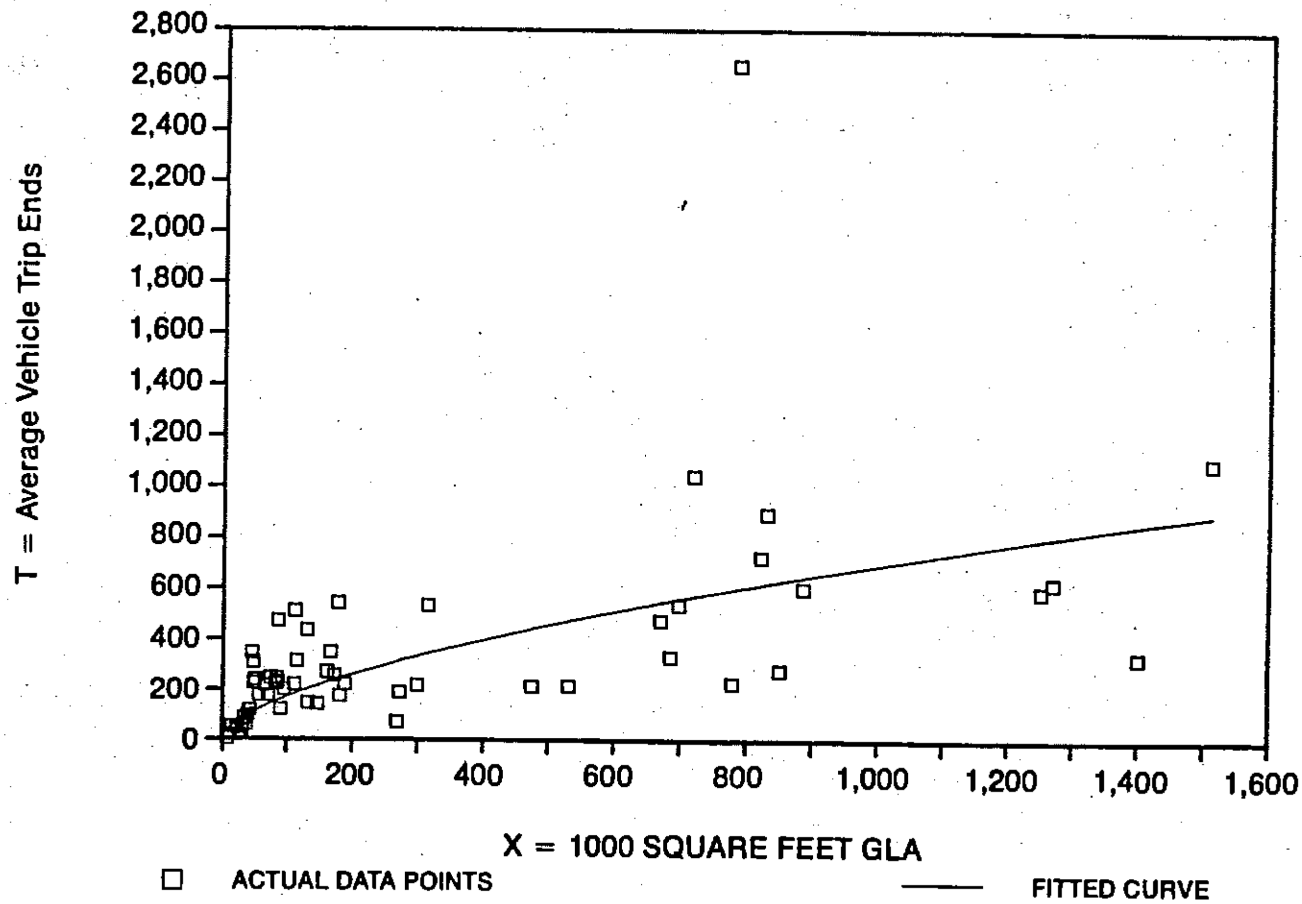
DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 3

Shopping Center (820)

A.M. Peak Hour Volume (Two-Way)

One Hour Between 7 and 9 A.M. Versus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $Ln(T) = 0.60\ Ln(X) + 2.40$

$R^2 = 0.56$

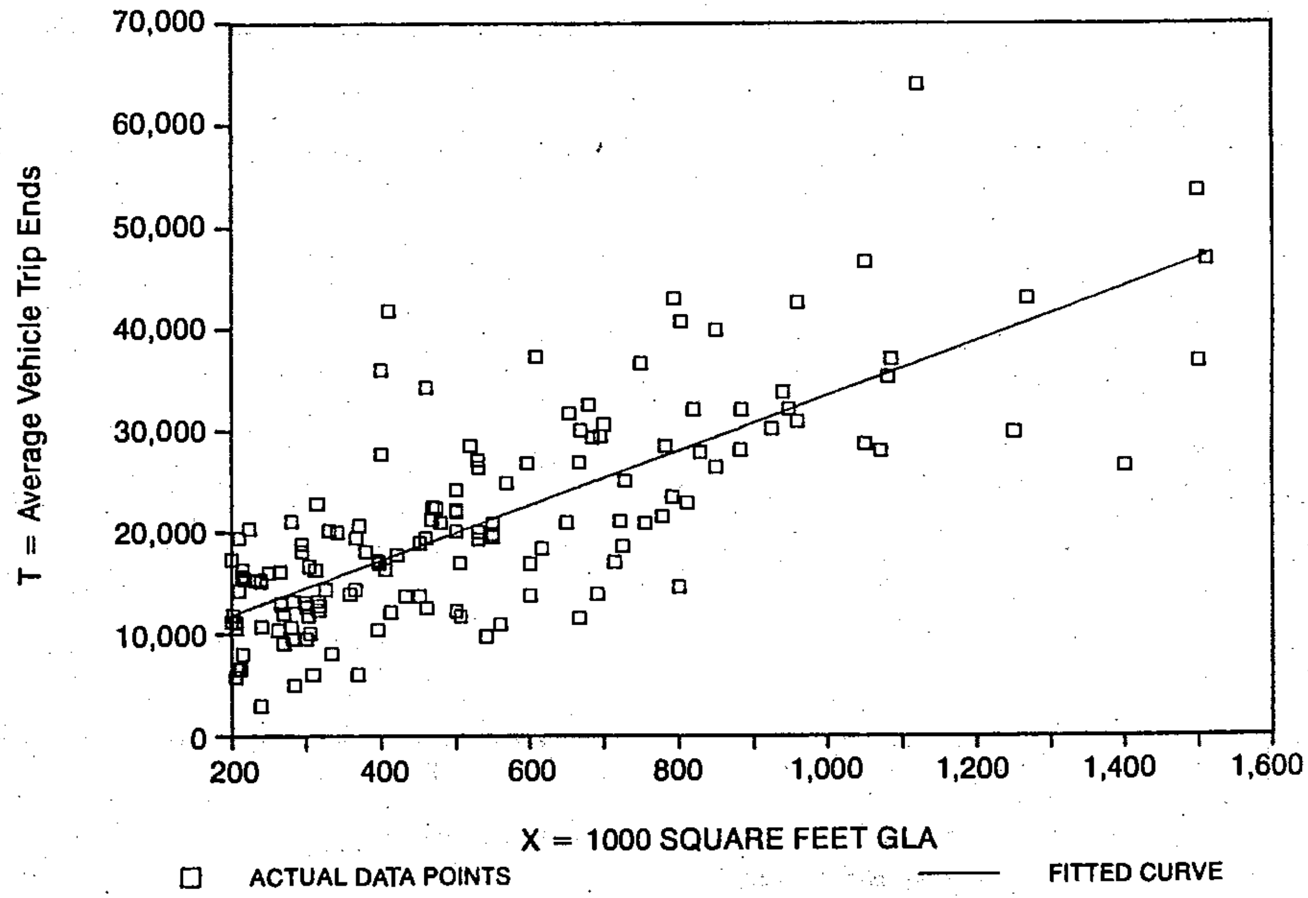
DIRECTIONAL DISTRIBUTION: 70% enter, 30% exit.

Figure 2

Shopping Center (820)

200,000 Square Feet Gross Leasable Area and Greater

Average Weekday Vehicle Trip EndsVersus 1,000 Square Feet Gross Leasable Area

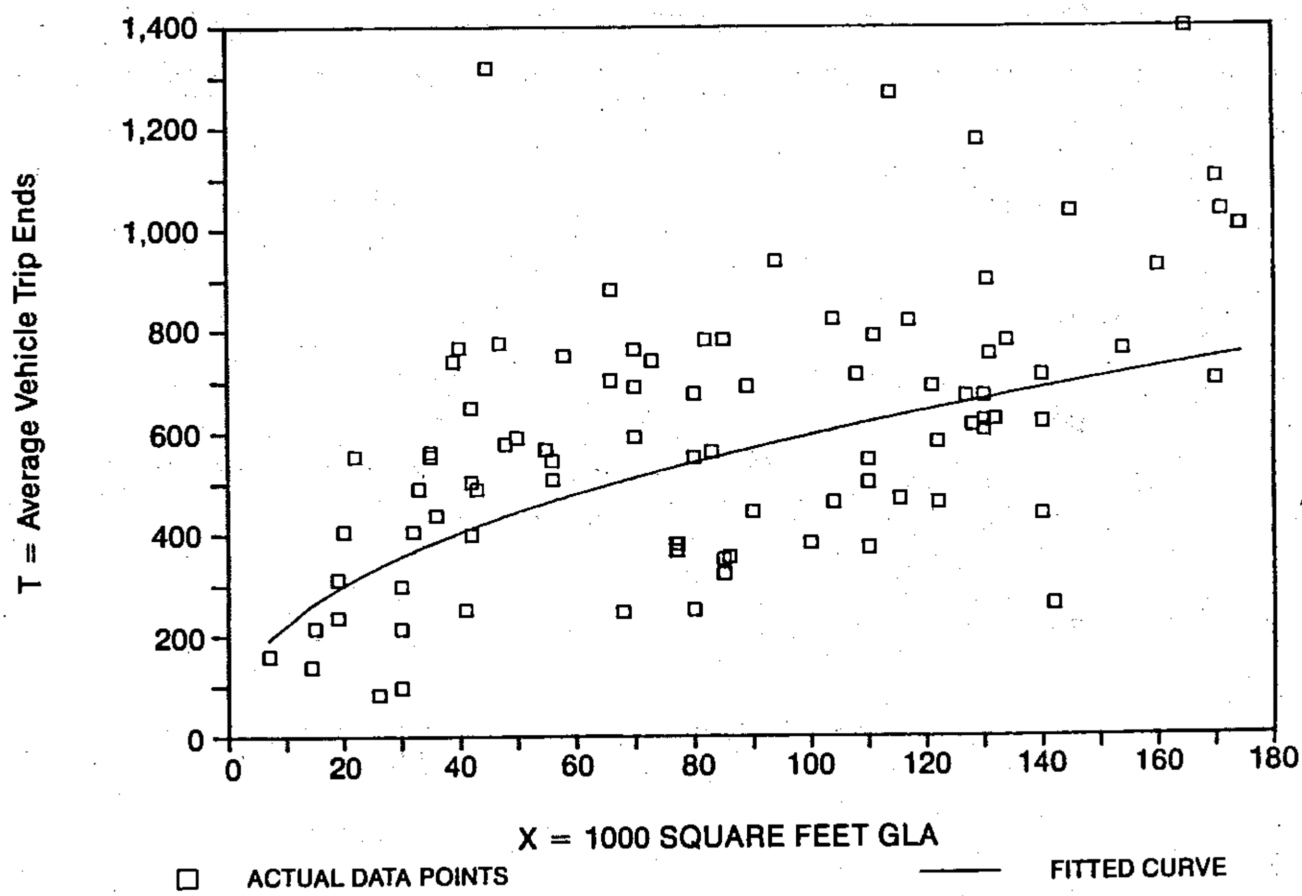


Fitted Curve Equation: $T = 27.07(X) + 6371.0$

$R^2 = 0.59$

DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 4
Shopping Center (820)
Less Than 175,000 Square Feet Gross Leasable Area P.M. Peak Hour Two-Way Volume One Hour Between 4 and 6 P.M. Versus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $\mathrm{Ln}(T) = 0.52\,\mathrm{Ln}(X) + 4.04$

$R^2 = 0.58$

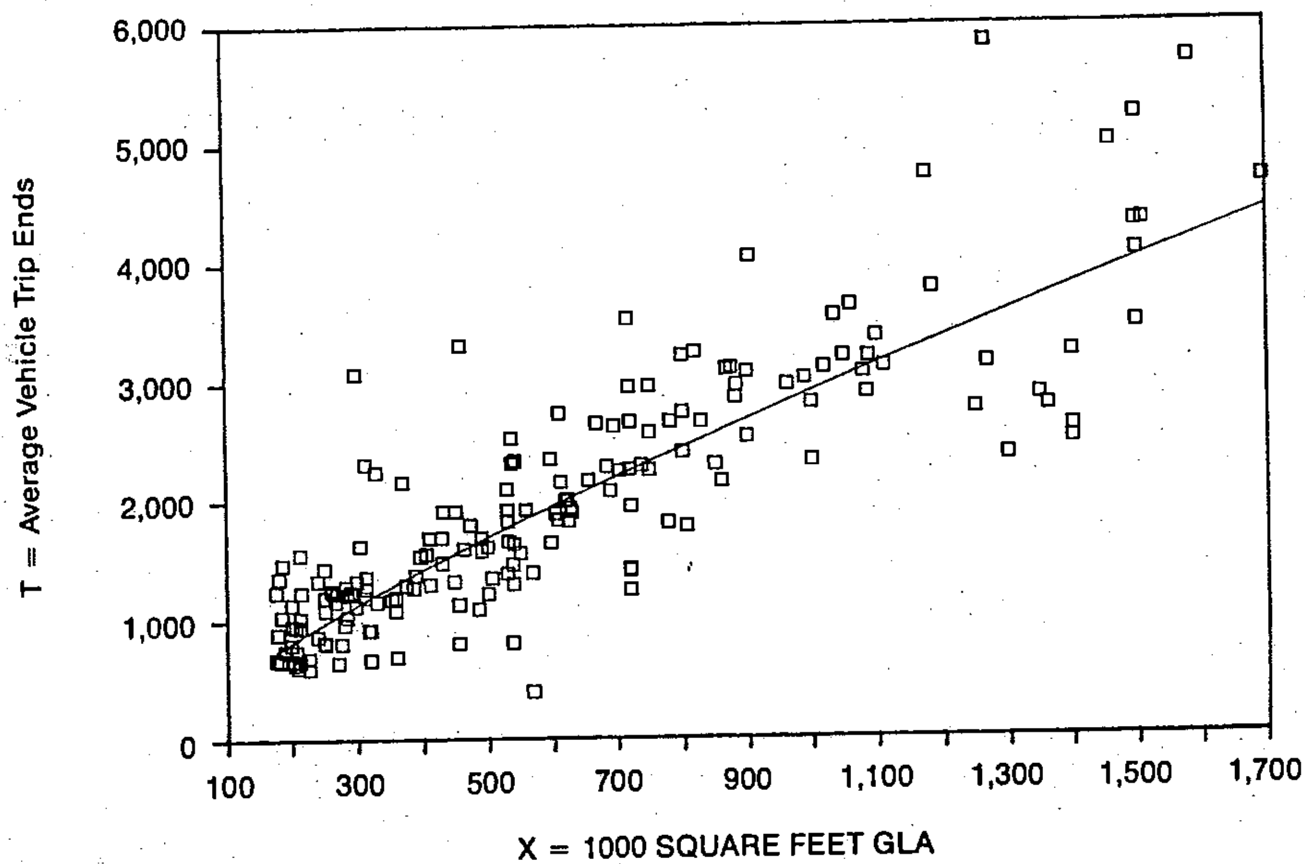
DIRECTIONAL DISTRIBUTION: 49% enter, 51% exit.

Figure 5

Shopping Center (820)

Greater Than 175,000 Square Feet Gross Leasable Area P.M. Peak Hour Two-Way Volume

One Hour Between 4 and 6 P.M. Versus 1,000 Square Feet Gross Leasable Area



□ ACTUAL DATA POINTS —— FITTED CURVE

Fitted Curve Equation: $T = 2.58(X) + 381$

$R^2 = 0.83$

DIRECTIONAL DISTRIBUTION: 47% enter, 53% exit.

APPENDIX C

GREEN VALLEY TRAFFIC IMPACT WORKSHEETS

Node #: 1 Intersection: CASE/GOETZ

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	235	583	818	71	244	315	38.5%
EL	0	0	0	0	0	0	ERR
ER	26	71	97	13	34	47	48.5%
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	587	464	1,051	210	184	394	37.5%
WL	81	120	201	16	40	56	27.9%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	100	8	108	39	27	66	61.1%
NR	81	117	198	21	38	59	29.8%
	1110	1363	2473	370	567	937	37.9%

Node #: 2 Intersection: CASE/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VL
ET	165	394	559	74	227	301	53.8%
EL	34	150	184	5	23	28	15.2%
ER	151	355	506	40	215	255	50.4%
ST	272	573	845	110	180	290	34.3%
SL	698	1,028	1,726	36	61	97	5.6%
SR	115	91	206	15	6	21	10.2%
WT	398	303	701	194	136	330	47.1%
WL	162	603	765	115	516	631	82.5%
WR	523	1,230	1,753	21	98	119	6.8%
NT	318	539	857	100	195	295	34.4%
NL	441	259	700	266	137	403	57.6%
NR	531	287	818	455	207	662	80.9%
	3808	5812	9620	1431	2001	3432	35.7%

Node #: 3 Intersection: CASE/MAPES

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	202	485	687	155	410	565	82.2%
EL	1,209	1,482	2,691	442	307	749	27.8%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	147	123	270	147	123	270	100.0%
SR	878	1,667	2,545	259	509	768	30.2%
WT	304	680	984	142	423	565	57.4%
WL	0	0	0	0	0	0	ERR
WR	10	10	20	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2750	4447	7197	1145	1772	2917	40.5%

Node #: 4 Intersection: NAPES/I-215 SB

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	0	0	0	0	0	0	ERR
EL	187	451	638	21	55	76	11.9%
ER	1,042	1,031	2,073	420	252	672	32.4%
ST	440	646	1,086	0	0	0	0.0%
SL	0	0	0	0	0	0	ERR
SR	413	1,021	1,434	271	543	814	56.8%
WT	0	0	0	0	0	0	ERR
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	67	75	142	0	0	0	0.0%
NL	611	769	1,380	135	88	223	16.2%
NR	0	0	0	0	0	0	ERR
	2760	3993	6753	847	938	1785	26.4%

Node #: 5 Intersection: RT 74/I-215 NB OFF-RAMP

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	1,476	1,648	3,124	420	252	672	21.5%
EL	0	0	0	0	0	0	ERR
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	114	88	202	0	0	0	0.0%
SR	204	258	462	55	28	83	18.0%
WT	541	629	1,170	80	59	139	11.9%
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2335	2623	4958	555	339	894	18.0%

Node #: 6 Intersection: RT 74/I-215 NB ON-RAMP

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	681	1,135	1,816	25	66	91	5.0%
EL	795	537	1,332	395	186	581	43.6%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	541	629	1,170	80	59	139	11.9%
WL	0	0	0	0	0	0	ERR
WR	599	502	1,101	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2616	2803	5419	500	311	811	15.0%

Node #: 7 Intersection: GREEN VLY/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	1	0	1	1	0	1	100.0%
EL	495	416	911	436	321	757	83.1%
ER	164	112	276	149	111	260	94.2%
ST	363	841	1,204	99	331	430	35.7%
SL	1	5	6	1	5	6	100.0%
SR	167	598	765	120	498	618	80.8%
WT	10	6	16	10	6	16	100.0%
WL	11	5	16	11	5	16	100.0%
WR	66	34	100	66	34	100	100.0%
NT	666	686	1,352	269	253	522	38.6%
NL	159	164	323	134	159	293	90.7%
NR	10	10	20	0	0	0	0.0%
	2113	2877	4990	1296	1723	3019	60.5%

Node #: 8 Intersection: GREEN VLY/MURRIETA RD

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	101	75	176	101	75	176	100.0%
EL	82	67	149	75	67	142	95.3%
ER	565	422	987	538	417	955	96.8%
ST	584	818	1,402	335	347	682	48.6%
SL	123	120	243	114	106	220	90.5%
SR	67	96	163	58	82	140	85.9%
WT	85	93	178	85	93	178	100.0%
WL	52	43	95	48	43	91	95.8%
WR	156	120	276	149	104	253	91.7%
NT	697	915	1,612	263	473	736	45.7%
NL	280	701	981	251	687	938	95.6%
NR	58	66	124	47	66	113	91.1%
	2850	3536	6386	2064	2560	4624	72.4%

Node #: 9 Intersection: ETHANAC/GOETZ

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	83	129	212	33	34	67	31.6%
EL	40	66	106	25	34	59	55.7%
ER	12	25	37	0	0	0	0.0%
ST	96	178	274	42	67	109	39.8%
SL	159	271	430	116	221	337	78.4%
SR	48	38	86	30	24	54	62.8%
WT	94	138	232	21	30	51	22.0%
WL	10	54	64	0	0	0	0.0%
WR	244	187	431	205	130	335	77.7%
NT	200	175	375	77	58	135	36.0%
NL	21	14	35	0	0	0	0.0%
NR	0	49	49	0	0	0	0.0%
	1007	1324	2331	549	598	1147	49.2%

Node #: 10 Intersection: ETHANAC/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	320	596	916	176	427	603	65.8%
EL	20	44	64	9	27	36	56.3%
ER	14	49	63	6	37	43	68.3%
ST	402	682	1,084	191	244	435	40.1%
SL	844	630	1,474	778	595	1,373	93.1%
SR	21	19	40	17	15	32	80.0%
WT	379	532	911	278	336	614	67.4%
WL	432	1,375	1,807	48	298	346	19.1%
WR	395	990	1,385	319	925	1,244	89.8%
NT	647	720	1,367	260	356	616	45.1%
NL	29	85	114	29	71	100	87.7%
NR	1,178	940	2,118	225	202	427	20.2%
	4681	6662	11343	2336	3533	5869	51.7%

Node #: 11 Intersection: ETHANAC/GREEN VLY

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	2,169	1,998	4,167	1,057	1,091	2,148	51.5%
EL	149	157	306	124	131	255	83.3%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	505	444	949	481	420	901	94.9%
SR	41	174	215	33	149	182	84.7%
WT	1,155	2,697	3,852	611	1,405	2,016	52.3%
WL	0	0	0	0	0	0	ERR
WR	436	483	919	386	463	849	92.4%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	4455	5953	10408	2692	3659	6351	61.0%

Node #: 12 Intersection: ETHANAC/W. FRONTAGE

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	2,396	2,084	4,480	1,285	1,192	2,477	55.3%
EL	281	360	641	256	319	575	89.7%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	232	1,172	1,404	208	1,061	1,269	90.4%
SR	81	457	538	69	408	477	88.7%
WT	1,507	2,728	4,235	928	1,464	2,392	56.5%
WL	0	0	0	0	0	0	ERR
WR	697	1,110	1,807	510	852	1,362	75.4%
	0						
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR		0	0	0	0	0	ERR
	5194	7911	13105	3256	5296	8552	65.3%

Node #: 13 Intersection: ETHANAC/I-215 SB

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY
ET	2,391	2,661	5,052	1,273	1,693	2,966	58.7%
EL	0	0	0	0	0	0	ERR
ER	222	590	812	204	572	776	95.6%
ST	0	0	0	0	0	0	ERR
SL	286	709	995	6	8	14	1.4%
SR	301	1,169	1,470	204	742	946	64.4%
WT	1,895	2,677	4,572	1,230	1,578	2,808	61.4%
WL	157	400	557	1	0	1	0.2%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	5252	8206	13458	2918	4593	7511	55.8%

Node #: 14 Intersection: ETHANAC/1-215 NB

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	1,351	2,467	3,818	434	975	1,409	36.9%
EL	1,313	902	2,215	838	724	1,562	70.5%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	1,591	2,565	4,156	763	1,066	1,829	44.0%
WL	0	0	0	0	0	0	ERR
WR	648	385	1,033	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	463	505	968	463	505	968	100.0%
NR	266	298	564	1	0	1	0.2%
	5632	7122	12754	ERR	3270	5769	45.2%

Node #: 15 Intersection: ETHANAC/E. FRONTAGE

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VL
ET	1,124	2,656	3,780	387	962	1,349	35.7%
EL	491	102	593	49	15	64	10.8%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	10	10	20	0	0	0	0.0%
SR	103	468	571	14	60	74	13.0%
WT	2,131	2,413	4,544	750	1,009	1,759	38.7%
WL	0	0	0	0	0	0	ERR
WR	10	10	20	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	3869	5659	9528	1200	2046	3246	34.1%

Node #: 16 Intersection: RT 74/ETHANAC

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	680	1,019	1,699	21	56	77	4.5%
EL	0	0	0	0	0	0	ERR
ER	94	123	217	22	31	53	24.4%
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	860	985	1,845	64	40	104	5.6%
WL	1,389	1,986	3,375	561	787	1,348	39.9%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	58	312	370	8	31	39	10.5%
NR	940	2,229	3,169	303	704	1,007	31.8%
	4021	6654	10675	979	1649	2628	24.6%

Node #: 17 Intersection: W. FRONTAGE/ACCESS RD.

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	0	0	0	0	0	0	ERR
EL	15	77	92	15	61	76	82.6%
ER	170	875	1,045	155	797	952	91.1%
ST	139	725	864	118	660	778	90.0%
SL	0	0	0	0	0	0	ERR
SR	27	96	123	18	2	20	16.3%
WT	0	0	0	0	0	0	ERR
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	660	610	1,270	466	394	860	67.7%
NL	343	851	1,194	314	775	1,089	91.2%
NR	0	0	0	0	0	0	ERR
	1354	3234	4588	1086	2689	3775	82.3%

APPENDIX F

NOISE TECHNCIAL REPORT

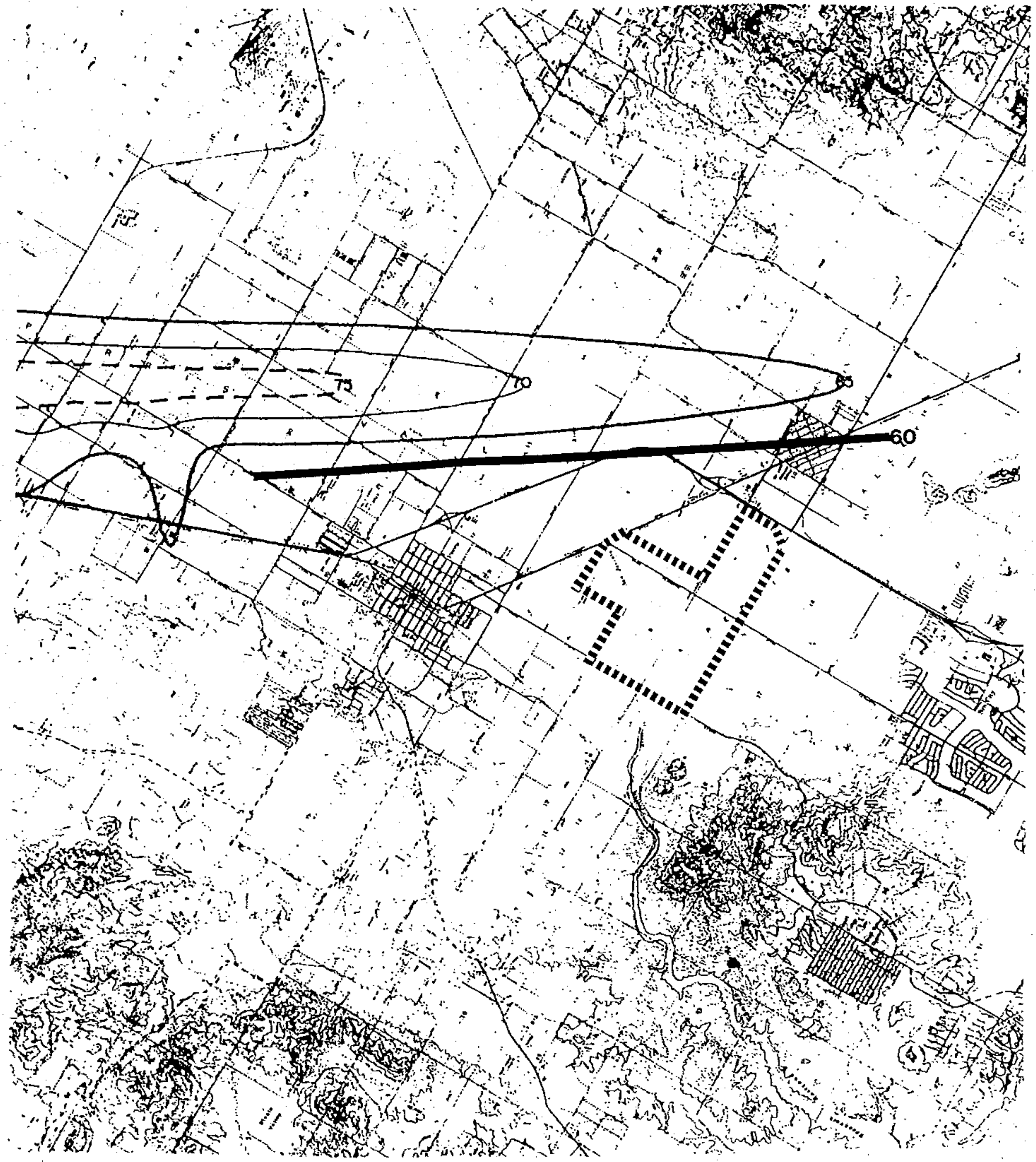


Figure 3. Location of Project Site Relative to the CNEL Noise Contours for March Air Force Base

Source: AICUZ

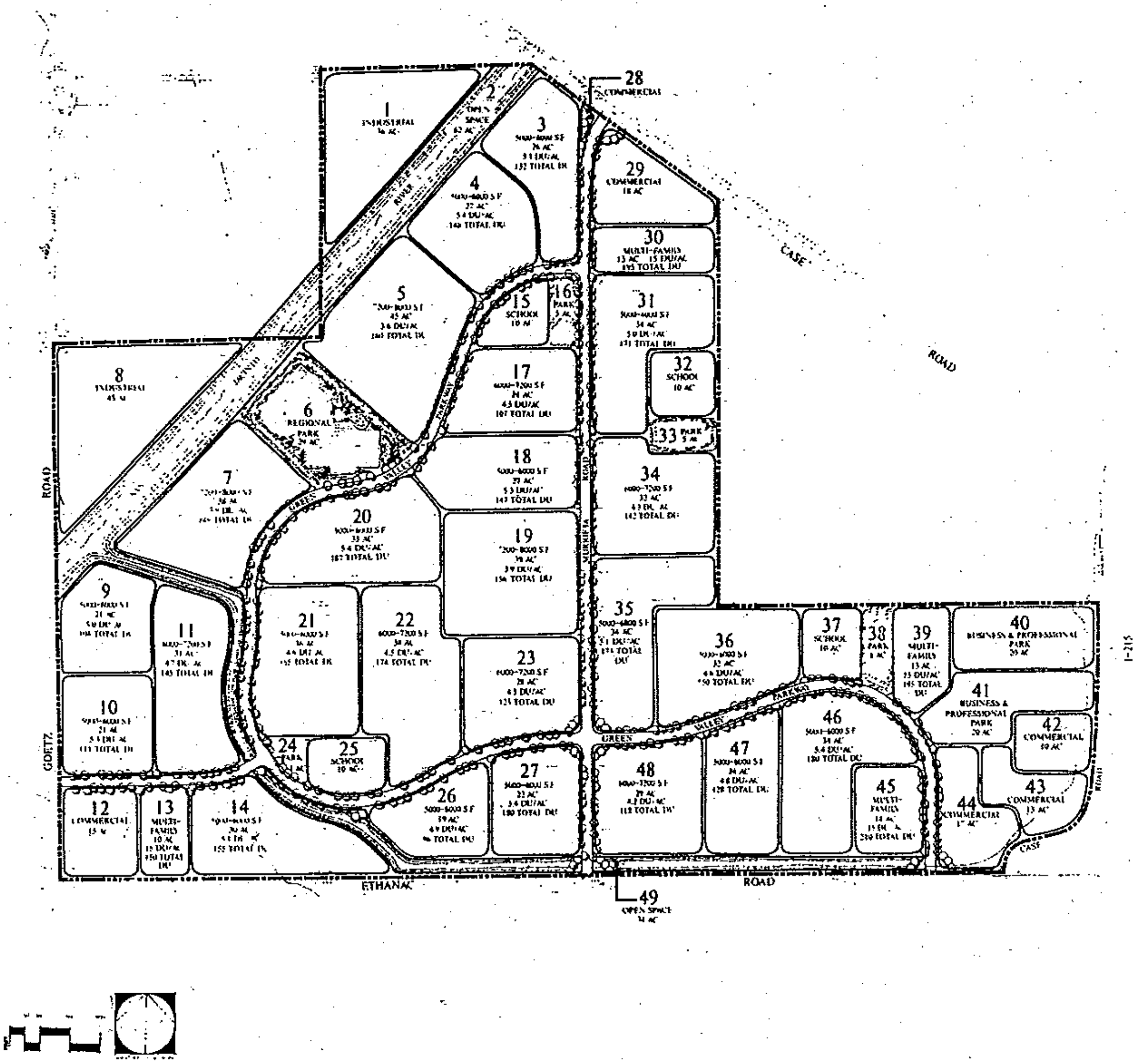


Figure 2. Conceptual Land Use Plan

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May 24, 1989
(Revised June 6, 1989)

Project File 2075-89

THOMAS C. RYAN
8852 Luss Drive
Huntington Beach, CA 92646

Subject: Noise Assessment and Noise Control Recommendations, Green Valley Specific Plan in the City of Perris

Reference: Fax Transmittal of Average Daily Traffic Volumes, Green Valley Project, Bazmaciyan-Darnell, Inc., April 25, 1989

Gentlemen:

Noise measurements have been obtained and an analysis has been performed to determine compliance of the project with the State of California's noise insulation standards and the City of Perris' noise control requirements. The following assessment and recommendations are provided as a result of this review:

PROJECT DESCRIPTION

The Green Valley Specific Plan is located in the southwestern portion of Perris, and is bounded by Ethanac Road to the south, Goetz Road to the west and Case Road to the north and east (refer to Figure 1). The site is a 1,194-acre parcel of land in the City of Perris, which includes residential, community, industrial and office development. Figure 2 provides a conceptual site plan for the project site.

NOISE EVALUATION CRITERIA AND STANDARDS

1. A-Weighted Sound Level

   The scale of measurement which is most useful in community noise measurement is the A-weighted sound pressure level, commonly called the A-level or dB(A). It is measured in decibels to provide a scale with the range and characteristics most consistent with that of people's hearing ability.

2. Community Noise Equivalent Level

   It is recognized that a given level of noise may be more or less tolerable, depending on the duration of exposure experienced by an individual. To reflect this, the State

Department of Aeronautics and the California Commission of Housing and Urban Development have adopted the community noise equivalent level (CNEL) as a standard measurement of community noise. This measure weights the average noise level for the evening hours, from 7:00 pm to 10:00 pm, by adding 5 dB and the late evening and early morning hour noise levels, from 10:00 pm to 7:00 am, by adding 10 dB.

3. Design Criteria for Residential Construction

The following residential noise standards are specified in the City's Noise Element of the General Plan:

a. If a specific project site is located within the CNEL contour of 60 dB or higher for noise generated by the freeways, major or secondary arterials or airport, an acoustical analysis will be required showing compliance with the City of Perris standards. This analysis should indicate the existing and projected CNELs on the site and the method(s) by which the noise is to be controlled or reduced to no more than 70 dB within the exterior living space of the project. Although residential projects within the 70 dB contour or higher should be strongly discouraged, under special circumstances their approval may be conditioned upon the feasibility of reducing exterior noise levels to no more than 75 dB.

b. The CNEL within any habitable room shall be 45 dB, or less.

4. Design Criteria for Non-Residential Criteria

The City of Perris has no noise standards for commercial/industrial projects. Therefore, the following generally recognized standards are recommended for the interior industrial/office/commercial spaces:

Typical Use	Equivalent Sound Level Leq(12), dB(A)*
Private Office, Board Room, Conference Room, etc.	45
General Office, Reception, Clerical, etc.	50
Bank Lobby, Retail Store, Restaurant, etc.	55
Manufacturing, Kitchen, Warehousing, etc.	65

* Leq(12) is the equivalent sound level during the 12-hour period from 7:00 am to 7:00 pm.

5. <u>State Noise Insulation Standards</u>

Compliance with the State's noise insulation standards (CCR Title 24, Part 2) is required for all new multifamily dwelling units constructed in California. The standards set minimum ratings for the transmission of sound through party walls and floor/ceiling assemblies. Also, a maximum community noise equivalent level (CNEL) of 45 dB is specified for intrusion from external noise sources.

6. <u>School Noise Control Standards</u>

The State of California's noise standard for school sites sets a maximum peak hour equivalent sound level, Leq of 52 dB(A) within any classroom, library, multipurpose room, or space used for pupil personnel services (California Streets and Highway Code: Section 216). Although this standard applies only to noise generated by freeway traffic, it is recommended that the standard also be applied to the noise generated by traffic on the surrounding streets, by airport operations and by railroad movements.

In addition to the above, it is recommended that the Federal Highway Administration (FHWA) noise abatement criteria for school sites be applied to the project (U.S.C. Title 23, Chapter I, Part 772). This criteria specifies that any active sports area, playground, or recreation area within a school site should not be exposed to a peak hour Leq in excess of 67 dB(A).

Refer to Appendix I for a description of the A-weighted measure of sound level and the CNEL measure of noise exposure.

EXTERIOR NOISE

Measurements were obtained at five positions in the vicinity of the Green Valley Specific Plan study area. (Refer to Figure 1 for the location of the project site and the measurement positions.) Table 1 provides a summary of the measurements taken, and Appendix II provides the complete listing of the measurement data and the equipment used during the study. The following sections discuss the projected noise exposures that will impact the residential, commercial/industrial and school portions of the site.

<u>Residential</u>

Table 2 provides an analysis of existing and cumulative noise exposures in the study area due to traffic on the adjacent arterials. It includes traffic volumes as well as distances from surrounding arterials to the 60, 65, 70, 75, and 80 dB CNEL contour lines. These distances are relative to the centerline of the nearest travel lane. As can be seen, the traffic volumes and noise exposures will increase significantly on all arterials within the vicinity of the study area. A CNEL of greater than 70 dB is projected at all proposed residences adjacent to Case Road, Ethanac Road (east of Murrieta) and Murrieta Road.

Flight operations at March Air Force Base are another source of noise within the vicinity of the project site. As can be seen in Figure 3, this activity generates a CNEL of about 55 at the north east side of the site; therefore it is not considered to be a major source of noise affecting the project site.

At the current level of aircraft activity (about 50 operations per week), the impact of Perris Valley Airport flight operations is considered insignificant at the proposed project site. Referring to Figure 4, the CNEL at the site due to this activity will be less than 60 dB. Measurements of the noise levels generated by aircraft at the airport were obtained on July 31, 1982 at positions north and south of the runway. At these positions the maximum noise level generated by an aircraft taking off to the north was 80 to 85 dB(A). Landings from the south produced lower levels of 52 to 74 dB(A). Future activity at the airport is not expected to differ significantly from the current activity both in terms of the number of operations and the types of aircraft using the facility. However, any future impact will be directly related to the number of operations occurring each day and the time of day at which they occur. If lighting is installed at the airport, nighttime operations will have a detrimental effect on the quality of life at residential locations within the project site.

Noise generated by train movements on the Santa Fe Railroad located north of the site parallel to Case Road will have an insignificant impact on the project site. Based on information obtained from Santa Fe Railroad in the County of Riverside, there are two movements per day on the line: one during the morning and one in the evening. Table 3 provides the distances to CNEL contour lines generated by train movements on the Santa Fe Railroad. Single event noise levels generated by train activity may be potentially annoying. However, annoyance may be minimized by keeping windows and doors closed.

Another source of noise affecting the project site is activity at the Perris Valley Waste Water Treatment Plant south of Case Road and west of I-215. There are four engine pumps at the site enclosed in buildings; two of the pumps operate 24 hours per day. These pumps are located about 300' north and 1,400' east of the nearest proposed residential areas. A measurement taken at the south property line of the facility (Position 5) indicates that two pumps running simultaneously generate an Leq of 52 dB(A) at a distance of 300'. This is equivalent to a CNEL of 59 dB. Projecting this to a distance of 1,400' yields a CNEL of about 46 dB at the nearest proposed residences to the west. Therefore, the impact of the existing facility is considered to be insignificant. Currently this facility is being expanded from a capacity of one million gallons/day to two million gallons/day. As a "worst case" analysis, this may increase noise levels at the nearest proposed residential locations by up to 3 dB. The impact of this upgraded facility will still be insignificant relative to the City's CNEL standard of 70 dB; however, the intrusive noise level of up to 55 dB(A) may be annoying to the adjacent residents, particularly during the late evening and early morning hours. Mitigation of this noise source is best accomplished at the treatment facility and may include mufflers on the engine exhausts, acoustic baffles for the vents, and sound rated doors. It is recommended that the design of the facility include noise control measures to ensure that the sound level does not exceed 45 dB(A) at the nearest residential property line. If the plant is expanded to a regional facility with a capacity of 50 million gallons/day, it will be particularly important that noise control be considered in the facility's design to ensure compliance with the recommended standard of 45 dB(A).

Potential annoyance may be generated at the residential portions of the project development by activity at the nearby school yards and the sports complex. Additional noise will be generated by activity at the commercial/industrial areas. Such activities might include trucks moving in and out of loading docks, air conditioning compressors, parking lot activity, and car maintenance operations at the service stations, if any.

<u>Commercial/Industrial</u>

Based on the traffic data provided in Table 2, the following noise levels are projected at the nearest commercial/industrial buildings to the various arterials in the study area:

<u>Location</u>	<u>Leq(12)</u>
Case Road	
West of Murrieta	69 dB(A)
East of Murrieta	72
North of Ethanac	71
Ethanac Road	
East of Goetz	64
Green Valley to Case	73
Goetz Road	
South of Case	61
North of Ethanac	65
Green Valley Parkway	
North of Ethanac	67

Location	Leq(12)
Murrieta Road Case to Green Valley	71
Route 215 Route 74 to Ethanac	75

As stated previously, noise generated by flight operations at March Air Force Base and Perris Valley Airport, and train activity on the Santa Fe Railroad are considered insignificant.

Schools

There are four schools within the vicinity of the project site. Three of the schools are adjacent to Green Valley Parkway. For schools designated #15 and #25 on the conceptual land use plan (Figure 2), a peak hour Leq of 69 dB(A) is estimated at the property line. The school designated as #37 is estimated to have a peak hour Leq of 66 dB(A) at the property line. At school site #32 the Leq will be less than 67 dB(A).

MITIGATION OF SIGNIFICANT IMPACTS - Exterior Noise

The following is recommended in order to comply with the previously cited exterior noise standards for residential areas and school sites:

Residential

The City of Perris' standards require that the overall noise exposure at any residential exterior living space not exceed a CNEL of 70 dB. The following design considerations are needed to comply with the City's requirements:

1. If possible, multifamily residences should be oriented in such a way that the patios and balconies are located on the side of the building away from the arterials and/or railroad. In this way, the buildings will present a solid barrier to the traffic noise. If this is not possible, noise barriers with a minimum height of 5' to 7' will be required around the perimeters of the patios and balconies directly facing Ethanac (east of Murrieta) and Murrieta. All common recreational areas should be located at the interior of the site buffered from the traffic noise by the multifamily buildings.

2. For single family residences, with rear yards abutting the arterials, noise barriers with a minimum height of 6' to 8' will be required around the property line adjacent to Case, Ethanac (east of Murrieta) and Murrieta.

3. All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise (e.g., concrete block, stucco-on-wood, 1/4" plate glass, earth berm, or any combination of these materials).

It should be noted that the actual heights of barriers, patio walls and balcony walls will depend on the precise location of the structures, the elevation of the site relative to the arterials, and the setback of the buildings from the arterials.

Schools

The noise abatement criteria for school sites specifies that any active sports area, playground, or recreation area within a school site should not be exposed to a peak hour Leq in excess of 67 dB(A). The following are recommended in order to ensure compliance with this criteria:

1. For schools sites #15 and #25, noise barriers with a minimum height of 6' to 8' may be required around the property line of any play areas adjacent to Green Valley Parkway.

2. All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise (e.g., concrete block, stucco-on-wood, 1/4" plate glass, earth berm, or any combination of these materials).

3. An alternative to the above noise barriers is to orient the play areas away from the arterials so that they are buffered from the traffic noise by either distance or by the proposed school buildings.

The actual heights of the barriers, if any, will depend on the precise location of the structure, the elevation of the site relative to the arterials, and the setback of the play areas from the arterials.

MITIGATION OF SIGNIFICANT IMPACTS - Interior Noise

The following are recommended in order to ensure compliance with the previously cited interior noise standards for residential, commercial/industrial, and school site areas within the proposed project:

Residential

The following design considerations are needed in order to minimize annoyance due to noise and to comply with an interior CNEL standard of 45 dB:

1. For windows and sliding glass doors, well fitted, well weatherstripped, and sound rated assemblies are recommended. Double window assemblies consisting of two panes of glass separated by 2" to 3" may be required for units adjacent to the major arterials. The actual sound transmission class (STC) needed should be determined as part of the final engineering design for each dwelling unit.

2. STC is per ASTM Designations E-413 and E336 or E90.

3. Bathrooms which have tightly fitted doors separating them from the adjacent living areas are not considered to be habitable spaces and, therefore, do not require sound rated windows.

4. Entry doors facing or having line-of-sight to the major arterials should be well weatherstripped solid core assemblies, 1-3/4" thick.

5. Exterior walls of units adjacent to the major arterials and directly exposed to traffic noise should be constructed with 2" x 4" wood studs, 1/2" gypsum wallboard interior and 7/8" thick stucco or siding-on-sheathing exterior, with R-11 insulation between the studs. All joints should be well fitted and/or caulked to form an air tight seal.

8. For those units adjacent to the major arterials, the roof system should have plywood sheathing which is well sealed. R-19 insulation should be placed in the attic space, if any.

9. Forced air ventilation may be required since the interior CNEL standard is to be met with windows closed. The uniform Building Code specifies that the forced air ventilation system shall be capable of providing two air changes per hour in all habitable rooms with one-fifth of the air supply taken from outside. This should be accomplished as follows:

   a. A forced air unit so that the fan may be operated independently of the heating or cooling functions, and

   b. A fresh air intake duct between the forced air unit and the exterior wall or roof. The fresh air intake duct should also incorporate at least six feet of flexible fiberglas ducting and at least one 90 degree bend.

   Wall mounted air conditioners, if used, should not be placed on an elevation directly facing major arterials.

10. There should be no openings (mail slots, vents, etc.) in the exterior walls of units adjacent to the major arterials.

11. For residential construction, large (12" x 14") attic vents should not be placed on an elevation facing an arterial. If this is not possible, then a baffle should be positioned behind the vent as indicated in Figure 5.

Commercial/Industrial

The following is recommended in order to ensure compliance with the recommended noise criteria for commercial/industrial facilities:

1. All windows in the proposed buildings should be well fitted, well sealed and sound rated assemblies. Sound transmission class (STC) ratings as high as 36 may be needed at some locations directly adjacent to the arterials. This is normally achieved with fixed 3/8" laminated glass in well fitted and well sealed stops. The actual STC needed should be determined as part of the final engineering design of the project.

2. STC is per ASTM Designations E413 and E336 or E90.

3. All entry doors from exterior spaces should be at least 1/4" thick plate glass or 1-1/2" solid core assemblies. The doors should be well sealed units with rigid frames and the frames should be weatherstripped on all edges with a deep, wide and compliant pile.

4. The exterior walls should be constructed with 6" thick tilt-up concrete walls; or with 7/8" stucco exterior, 2" x 4" studs, R-11 insulation, and 1/2" gypsum board interior.

5. The roof system should consist of built-up roofing over one layer of 1/2" plywood or equivalent, well fitted to provide a continuous barrier.

6. Offices, typing and reception areas directly adjacent to the arterials will require these additional items for interior sound absorption:

   a. Interior walls should consist of 1/2" or 5/8" gypsum board.

   b. Suspended acoustical tile ceiling, 1" Nubby or equivalent.

   c. Carpet and pad.

7. Mechanical ventilation and cooling is required to maintain a habitable environment within the interior spaces of the building.

Schools

The following design considerations are needed in order to comply with the previously discussed standards:

1. All windows in the proposed buildings should be well fitted, well sealed and sound rated assemblies. Sound transmission class (STC) ratings as high as 27 may be needed at some locations directly adjacent to the arterials. This is normally achieved with 1/4" plate glass. The actual STC ratings should be determined as part of the final engineering design of the project.

2. STC is per ASTM Designations E413 and E336 or E90.

3. All entry doors from exterior spaces should be at least 1/4" thick plate glass or 1-1/2" solid core assemblies. The doors should be well sealed units with rigid frames and the frames should be weatherstripped on all edges with a deep, wide and compliant pile.

4. The exterior walls should be constructed with concrete block, solid grouted; or 7/8" stucco exterior, 2" x 4" studs, R-11 insulation, and 1/2" gypsum board interior.

5. The roof system should consist of built-up roofing over one layer of 1/2" plywood or equivalent, well fitted to provide a continuous barrier.

6. Offices, reception and classroom areas directly adjacent to arterials will require these additional items for interior sound absorption:

   a. Interior walls should consist of 1/2" or 5/8" gypsum board.

   b. Suspended acoustical tile ceiling, 1" Nubby or equivalent.

   c. Carpet and pad (except in the classrooms).

7. Mechanical ventilation and cooling is required to maintain a habitable environment within the interior spaces of the building.

PARTY WALL AND FLOOR/CEILING SEPARATION SPECIFICATIONS

The State noise insulation standards specify minimum sound ratings for party wall and floor/ceiling assemblies in multi-family residential construction. The following are considered to be separation assemblies and, therefore, are required to comply with the State standards:

a. Party wall and floor/ceiling separation assemblies between living units.

b. Party wall and floor/ceiling separation assemblies between a living unit and the garage space of an adjacent unit, or a laundry room.

It is recommended that the sound control specifications of Enclosure 1 be included in the project design.

ENTRY DOORS

For multifamily residential construction, entrance doors from interior corridors together with their perimeter seals shall have sound transmission class (STC) ratings not less than 26. Such tested doors shall operate normally with commercially available seals. Solid core wood slab doors, 1-3/8" thick minimum or 18 gauge insulated steel slab doors with compression seals all around, including the threshold, may be considered adequate without other substantiating information.

ADDITIONAL SOURCES OF NOISE AND RELATED IMPACTS

Some additional sources of noise associated with the proposed commercial areas include:

1. Construction activity during development.

2. Mechanical equipment mounted on the roof of the facilities.

3. Trash pick-up and compacting.

4. Truck movements into and out of the service areas.

The level of noise, potential impact, and methods of mitigating each of these sources, if needed, is discussed in the following:

Construction Activity Noise

Annoyance due to construction noise during the development of the commercial areas will be minimal. However, equipment associated with grading and excavation produces potential annoyance.

The noise produced by the construction activity will not be substantially annoying to established residential and commercial areas in the near vicinity of the construction site. This will be the case for the activity occurring during daytime working hours (7:00 am to 7:00 pm). However, extended activity (after 7:00 pm on weekdays and during the day on Sundays) may cause considerable annoyance.

Mechanical Equipment Noise

A potential noise problem is produced by mechanical equipment such as air conditioning and refrigeration units and their associated inlet and exhaust systems. These units often produce noise levels which exceed recognized standards when experienced at near-by residential locations. Structural designs and acoustical baffling are easily implemented in new construction but are normally difficult and expensive to apply after the fact.

Equipment noise associated with the commercial operations should not exceed the nighttime ambient noise level when experienced at residential boundaries in proximity to the site. The late night and early morning ambient noise level is about 40 to 45 dB(A). Since traffic noise will increase up to 18 to 20 dB in the future, the ambient noise level will increase correspondingly. In any event, to establish a conservative criteria, noise produced by mechanical equipment should not be greater than 45 dB(A) when measured at the residential locations nearest to the site.

Mitigation of equipment noise to the above standard may be accomplished by including the following design details in the project planning and specifications:

a. Equipment should be placed within buildings or have a suitable noise barrier to provide reduction of equipment noise. The height of the barrier will depend on the location of the equipment relative to near-by homes and adjacent commercial areas.

b. All inlet and exhaust system ducting should contain fibrous lining for noise reduction.

c. All major items of noise producing equipment should be placed within an acoustically isolated room. The walls, floor, and ceiling system of the equipment rooms nearest to homes should be designed to have at least a sound transmission class (STC) of 50. Entry doors into the equipment rooms near homes and adjacent commercial areas should have an STC of at least 38.

Trash Pick-Up and Compacting

Trash pick-up and compacting vehicles are also a cause of complaints near commercial operations. These vehicles use hydraulic equipment to raise and lower the metal trash bins and to compact their contents. Typical noise levels range from 80 to 85 dB(A) at 50 feet during the raising, lowering and compacting operations. A typical trash pick-up takes approximately three minutes. The higher noise levels occur during about one-half of the operation. The control of refuse collection noise should be considered for those commercial areas nearest to residential locations.

Truck Movements Within the Commercial Areas

At full development of the project, the noise produced by trucks delivering supplies at the commercial sites could be a potential source of annoyance. Noise levels within 50 feet of the service areas may approach L10 values of about 75 to 80 dB(A) if these vehicles were unprotected. When experienced at residential locations nearest to the service areas, truck noise will be reduced depending on the distance and shielding between the homes and service areas. The potential annoyance of this activity may be minimized as follows:

a. Walls should be placed in the immediate vicinity of the service areas to eliminate the line-of-sight from the loading areas to near-by residential locations.

b. Truck drivers should be instructed to minimize acceleration when entering and leaving the commercial areas.

c. Each commercial tenant should initiate a policy of shutting down engines, air conditioning, and refrigeration equipment of the trucks which in the loading areas nearest to residential locations.

d. Deliveries between the hours of 10:00 pm to 7:00 am should be minimized or eliminated.

CONCLUSION

Measurements have been obtained and an analysis has been performed to determine compliance of the project with the State of California's noise insulation standards and the City of Perris' noise control requirements. It is determined that a significant impact exists at those portions of the site adjacent to the arterials in the area. However, it is concluded that the significant impacts may be mitigated through the use of noise barriers, proper building layout, and by including noise control design measures in the construction of the residential, commercial/industrial and school buildings.

It is further recommended that the final engineering design of the project be reviewed by a recognized acoustical engineer to ensure compliance with the recommended noise standards.

The acoustical design as recommended above for compliance with the interior noise standards is to be met for the average sound level in any habitable room within the project at a position towards the central portion of the room and at least 5' from windows or exterior doors. The field insertion loss test per ASTM Designation E-336-77, Appendix A-1 is considered appropriate.

Please contact the undersigned at 714/635-9520 if you require additional information or clarification of the assessment and recommendations contained herein.

Very truly yours,

J. J. VAN HOUTEN & ASSOCIATES, INC.

David L. Wieland
Principal Engineer

A. Allen Mashoof

Allen Mashoof
Associate Engineer

DLW/AM/rrp

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Table 1. Summary of Noise Measurements along the Green Valley Specific Plan Site.

Pos No.	Measurement Location	Date	Source	Start Time	Duration	A-Weighted Sound Level, dB(A)				
						L1	L10	L50	L99	Leq
1	110′ N. of Case Rd. 500′ W. of I-215 freeway.	4-4-89	Traffic on I-215 freeway.	10:45	15 min	60.0	54.0	50.0	44.0	51.8
2	30′ W. of Murrieta Rd. 100′ S. of Case Rd.	4-4-89	Traffic on Murrieta and Case.	11:10	15 min	77.0	67.5	59.5	48.0	64.6
3	102′ E. of Goetz Rd. About 1000′ S. of Perris Valley Airport.	4-4-89	Traffic on Goetz Rd.	11:40	15 min	62.0	57.5	51.0	39.5	54.0
4	Back yard of 1712 Sycamore St.	4-4-89	Traffic on A St.	14:00	24 hours	70.5	60.5	50.5	39.5	58.0
						Peak hour (7:00-8:00) noise levels in the 24 hour period.				
5	S. property line of Perris Valley Waste Water Treatment Plant, 280′ from pump house	6-7-89	Gas engine pumps at treatment plant	11:15	15 min	54.5	53.3	52.0	47.3	51.9

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
AS PART OF
THE TRAFFIC GROWTH MONITORING PROGRAM
MONITOR

INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1210	5400 3	40	2396	4440	54	1.0	2.1	A	4	1.21	76	74	0	1210	EBT	*
*	EBL	1211	1700 1	40	281	510	55	1.0	21.2	C	4	1.43	29	27	0	1211	EBL	*
*	SBL	1221	3300 2	45	232	440	53	1.0	28.7	D+	2	1.35	14	12	76	1221	SBL	*
	SBR	1222	1800 1	45	81	240	34	1.0	27.3	D+	2	1.37	14	12	76	1222	SBR	
	WBT	1230	7200 4	40	1507	3600	42	1.0	10.9	B	7	2.10	47	45	29	1230	WBT	
	WBR	1232	1800 1	45	697	1800	39	1.0	.1	A	0	.00	90	90	0	1232	WBR	

INTERSECTION SUMMARY : TOTAL FLOW = 5194   WEIGHTED AVERAGE DELAY = 7.0   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .54/A   WEIGHTED AVERAGE DELAY = 6.0   DELAY LOS = B

INTERSECTION # 16 - RT 74 @ ETHANAC RD   GREEN VALLEY   A.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400 3	45	680	1080	63	1.0	26.0	D+	5	1.44	20	18	63	1610	EBT	*
	EBR	1612	1800 1	45	94	360	26	1.0	23.2	C	2	1.31	20	18	63	1612	EBR	
	WBT	1630	3600 2	45	860	3240	27	1.0	.5	A	1	1.20	83	81	0	1630	WBT	
*	WBL	1631	3300 2	45	1389	2237	62	1.0	6.6	B	9	1.33	63	61	0	1631	WBL	*
*	NBL	1641	3300 2	45	58	183	32	1.0	31.4	D	0	1.37	7	5	83	1641	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 3081   WEIGHTED AVERAGE DELAY = 10.1   DELAY LOS = B   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .60/B   WEIGHTED AVERAGE DELAY = 13.4   DELAY LOS = B

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
AS PART OF
THE TRAFFIC GROWTH MONITORING PROGRAM
MONITOR

INTERSECTION # 12 - ETHANAC RD @ W FRONTAGE RD — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
	EBT	1210	5400	40	2084	3240	64	1.0	9.3	B	7	.62	56	54	0	1210	EBT	
*	EBL	1211	1700	40	360	359	100**	1.0	65.9	F	8	1.63	21	19	0	1211	EBL	*
*	SBL	1221	3300	45	1172	1173	100**	1.0	43.2	E+	14	1.49	34	32	56	1221	SBL	*
	SBR	1222	1800	45	457	640	71	1.0	21.8	C	10	1.31	34	32	56	1222	SBR	
*	WBT	1230	7200	40	2728	2640	103**	1.0	45.8	E	23	2.09	35	33	21	1230	WBT	*

INTERSECTION SUMMARY : TOTAL FLOW = 6801 WEIGHTED AVERAGE DELAY = 33.6 DELAY LOS = D CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.01/F WEIGHTED AVERAGE DELAY = 46.8 DELAY LOS = E
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

INTERSECTION # 16 - RT 74 @ ETHANAC RD — GREEN VALLEY — P.M.peak — RECOMMENDED IMPROVEMENTS 5/4/89 — 05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400	45	1019	1080	94**	1.0	39.2	D-	8	1.27	20	18	59	1610	EBT	*
	EBR	1612	1800	45	123	360	34	1.0	23.8	C	3	1.34	20	18	59	1612	EBR	
	WBT	1630	3600	45	985	3080	32	1.0	1.0	A	2	1.32	79	77	0	1630	WBT	
*	WBL	1631	3300	45	1986	2090	95**	1.0	19.8	C	23	1.13	59	57	0	1631	WBL	*
*	NBL	1641	3300	45	312	330	95**	1.0	57.4	E-	4	1.30	11	9	79	1641	NBL	*

INTERSECTION SUMMARY : TOTAL FLOW = 4425 WEIGHTED AVERAGE DELAY = 22.9 DELAY LOS = C CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .95/E WEIGHTED AVERAGE DELAY = 29.3 DELAY LOS = D+

APPENDIX B

ITE RETAIL TRIP GENERATION RATE DOCUMENTATION

LAND USE: 820.
SHOPPING CENTER

DESCRIPTION

A shopping center is an integrated group of commercial establishments which is planned, developed, owned and managed as a unit. It is related to its market area in terms of size, location, and type of store. It is provided with on-site parking facilities.[1]

Studies of over 500 different shopping centers were obtained for this analysis and included centers as small as 6,900 to as large as 1,600,000 gross square feet of leasable area. The centers studied are located throughout the United States and throughout urban areas, and therefore reflect average conditions anywhere within the United States.

Some of the centers included nonmerchandising uses: office buildings, theatres, post offices, banks, health clubs, and recreational facilities such as ice skating rinks.

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points. These buildings are generally drive-in banks, restaurants, or small offices. The data herein do not indicate which centers included peripheral buildings. Therefore, in general, it can be assumed that the data do reflect the effect of the peripheral buildings. However, it is suggested when estimating driveway volumes for a shopping center for the purpose of designing the access, a conservative approach be taken and calculate the trips generated by the peripheral buildings as part of a shopping center as a whole and as a multi-use development and then use the higher of the two estimates.

TRIP CHARACTERISTICS

The vehicle trips generated at a shopping center are based upon the gross leasable area (GLA) of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the gross leasable area could be the same as the gross area of the building.

The shopping center data indicate that the rate of trip making decreases as the size of the center increases. This change in rate is an exponential function rather than a linear function. The most accurate method to estimate the driveway volumes at a shopping center is to utilize regression equations to determine the average weekday vehicle trip ends (24-hour two-way volume) and the total A.M. and P.M. peak hour trips (two-way volume) and then to apply the directional distribution ratio to determine the peak hour entering and exiting volumes.

Equations have been developed for the entire size range of shopping centers for both the entire year excluding the Christmas shopping season, and for the Christmas shopping season. This methodology eliminates the need to categorize the center as a neighborhood, community or regional center, or by different ITE land use codes other than Code 820.

The following indicates the equations for estimating average weekday vehicle trip ends or 24-hour two-way volume and the total A.M. and P.M. peak hour (two-way) trips (one hour between 7:00 and 9:00 A.M. and one hour between 4:00 and 6:00 P.M.) when the adjacent street system peaks.

Figures 1 through 10 graphically illustrate the regression equations and the actual measured trips as related to the gross leasable area. Table 1 provides an approximation of the trip rates as derived from the above equations for different size shopping centers for average weekday conditions.

IT IS SUGGESTED THAT THE EQUATIONS BE UTILIZED AS THE MOST ACCURATE METHOD FOR ESTIMATING THE DRIVEWAY VOLUMES FOR SHOPPING CENTERS OF ANY SIZE AND THAT THE FIGURES AND TABLE 1 BE USED AS AN APPROXIMATION. IF TABLE 1 IS USED, ONE MUST INTERPOLATE BETWEEN THE DIFFERENT SIZE SHOPPING CENTERS PROVIDED TO ESTIMATE THE TRIP RATES FOR A SIZE CENTER NOT SHOWN ON THE TABLE.

IN ADDITION TO THESE REGRESSION EQUATIONS, THE DATA PROVIDE INFORMATION ON HOURLY VARIATIONS IN SHOPPING CENTER TRAFFIC FOR AN AVERAGE WEEKDAY, DAILY VARIATION, AND MONTHLY VARIATIONS IN SHOPPING CENTER TRIPS. THESE ARE SHOWN ON TABLES 2, 3, 4, AND 5, RESPECTIVELY. IT SHOULD BE NOTED, HOWEVER, THAT THE NUMBER OF STUDIES PROVIDING THESE DATA IS LIMITED AND THEREFORE CAUTION IN USING THESE TABLES IS RECOMMENDED. SOME OF THE INFORMATION IN TABLES 2 THROUGH 5 MAY OVERLAP WITH

Table 1
Shopping Center Vehicle Trip Generation
Vehicle Trip Ends (Two-Way Volume)
Independent Variable—Trips per 1,000 Square Feet Gross Leasable Area

Gross Leasable Area (1,000 Square Feet)	Average Weekday Vehicle Trip Ends		A.M. Peak Hour (1 Hour Between 7–9 A.M.)		P.M. Peak Hour (1 Hour Between 4–6 P.M.)	
	Rate	Volume	Rate	Volume	Rate	Volume
10	166.35	1,664	4.39	44	18.82	188
50	94.71	4,735	2.31	115	8.69	435
100	74.31	7,431	1.75	175	6.23	623
200	58.93	11,785	1.32	265	4.49	897
300	48.31	14,492	1.13	338	3.85	1,155
400	43.00	17,199	1.00	401	3.53	1,413
500	39.81	19,906	0.92	459	3.34	1,671
600	37.69	22,613	0.85	512	3.22	1,929
800	35.03	28,027	0.76	608	3.06	2,445
1000	33.44	33,441	0.70	696	2.96	2,961
1200	32.38	38,855	0.65	776	2.90	3,477
1400	31.62	44,269	0.61	851	2.85	3,993
1600	31.05	49,683	0.58	922	2.82	4,509

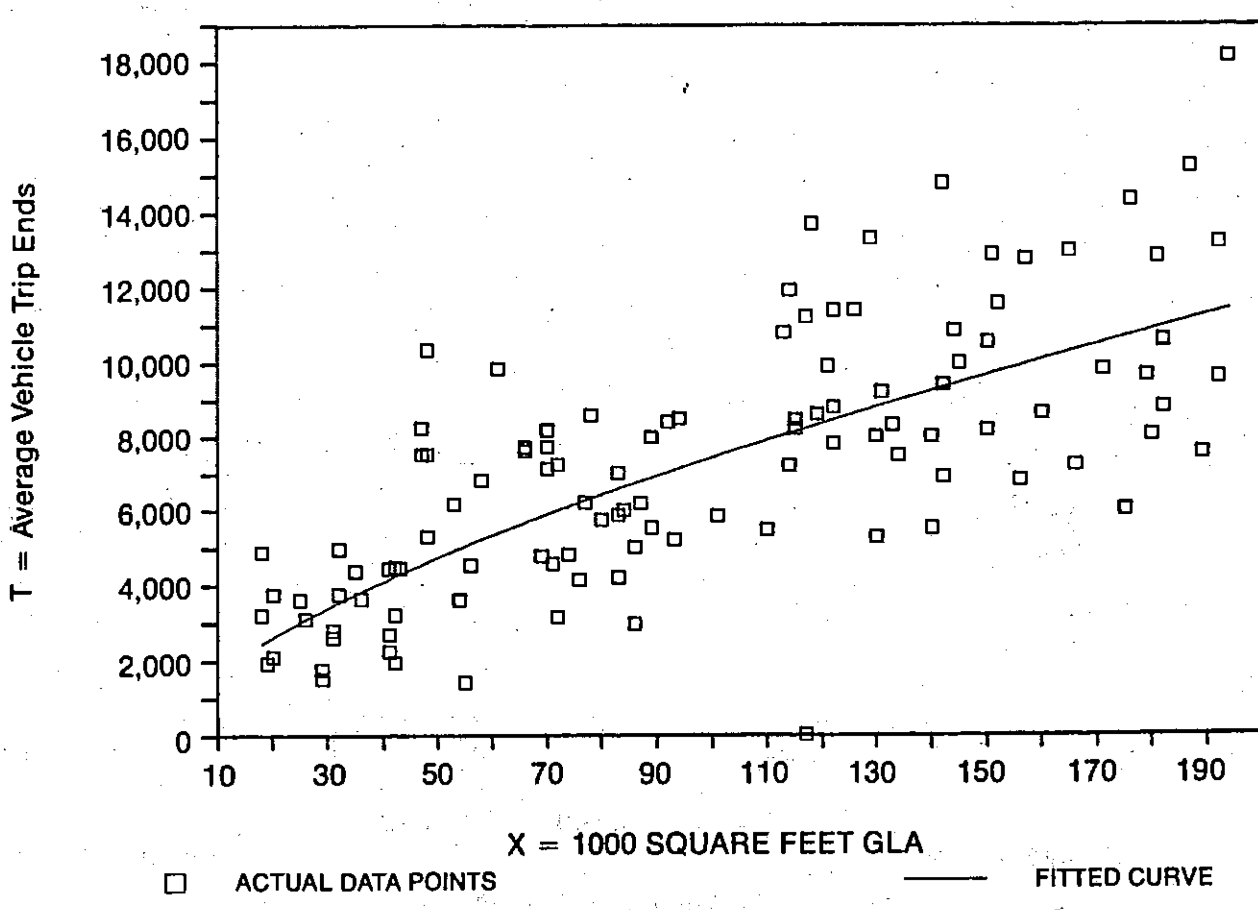
Source: Trip Generation Equations

Table 2
Hourly Variation in Shopping Center Traffic
Under 100,000 Square Feet Gross Leasable Area

Time	Average Weekday[a]		Saturday[b]	
	% of 24 Hour Entering	% of 24 Hour Exiting	% of 24 Hour Entering	% of 24 Hour Exiting
10–11 A.M.	7.6	6.5	6.8	5.8
11–12 Noon	7.6	8.4	8.8	8.9
12–1 P.M.	7.6	8.2	9.4	8.8
1–2 P.M.	6.9	7.5	10.0	10.1
2–3 P.M.	9.0	7.8	9.7	8.4
3–4 P.M.	9.6	9.5	10.3	9.6
4–5 P.M.	9.7	10.4	10.7	10.7
5–6 P.M.	10.3	11.0	9.4	8.7
6–7 P.M.	7.4	8.3	7.3	8.3
7–8 P.M.	5.4	5.3	5.0	5.7
8–9 P.M.	4.2	4.3	3.2	3.9
9–10 P.M.	1.9	1.8	2.0	3.3

[a] Source numbers: 95, 124; number of studies: 4
[b] Source numbers: 95, 124; number of studies: 4

Figure 1
Shopping Center (820)
Less than 200,000 Square Feet Gross Leasable Area
Average Weekday Vehicle Trip Ends Versus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $Ln(T) = 0.65\ Ln(X) + 5.92$
$R^2 = 0.58$

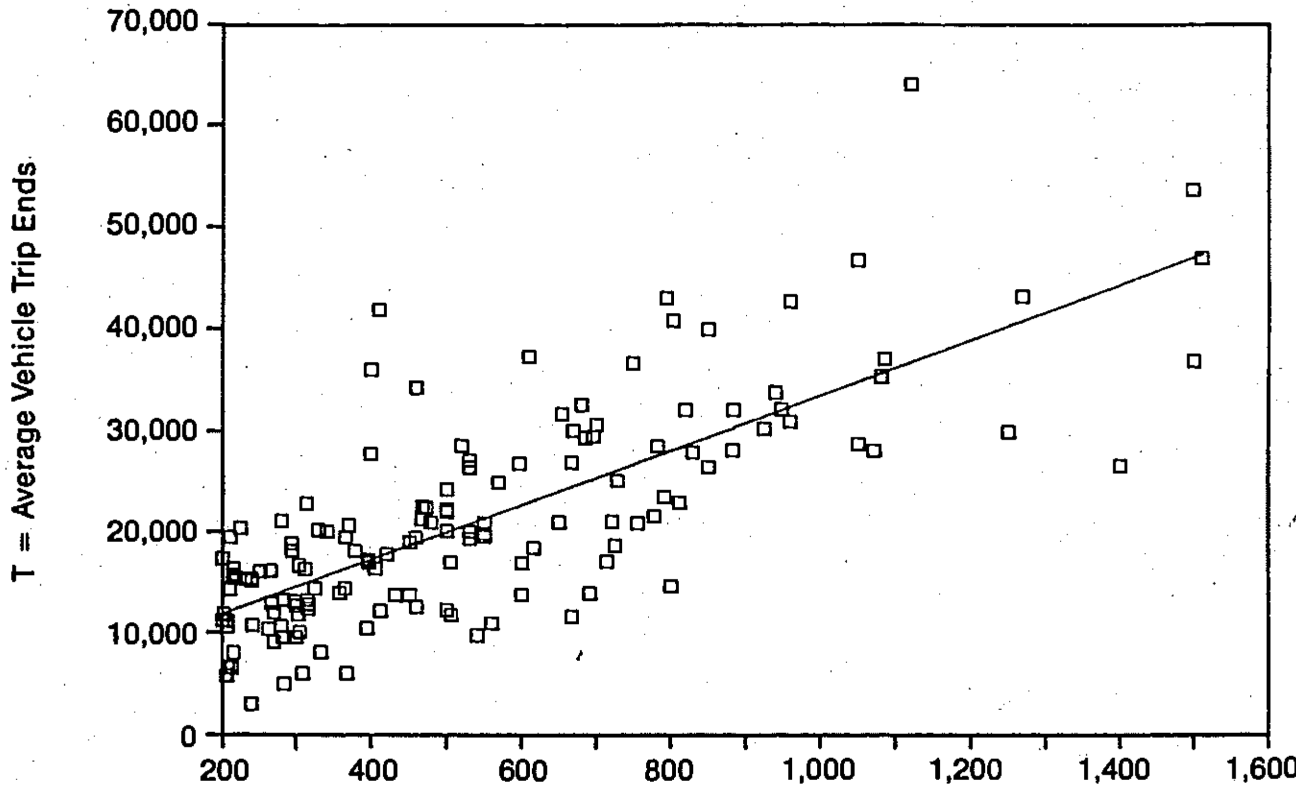
DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 2

Shopping Center (820)

200,000 Square Feet Gross Leasable Area and Greater

Average Weekday Vehicle Trip EndsVersus 1,000 Square Feet Gross Leasable Area



X = 1000 SQUARE FEET GLA

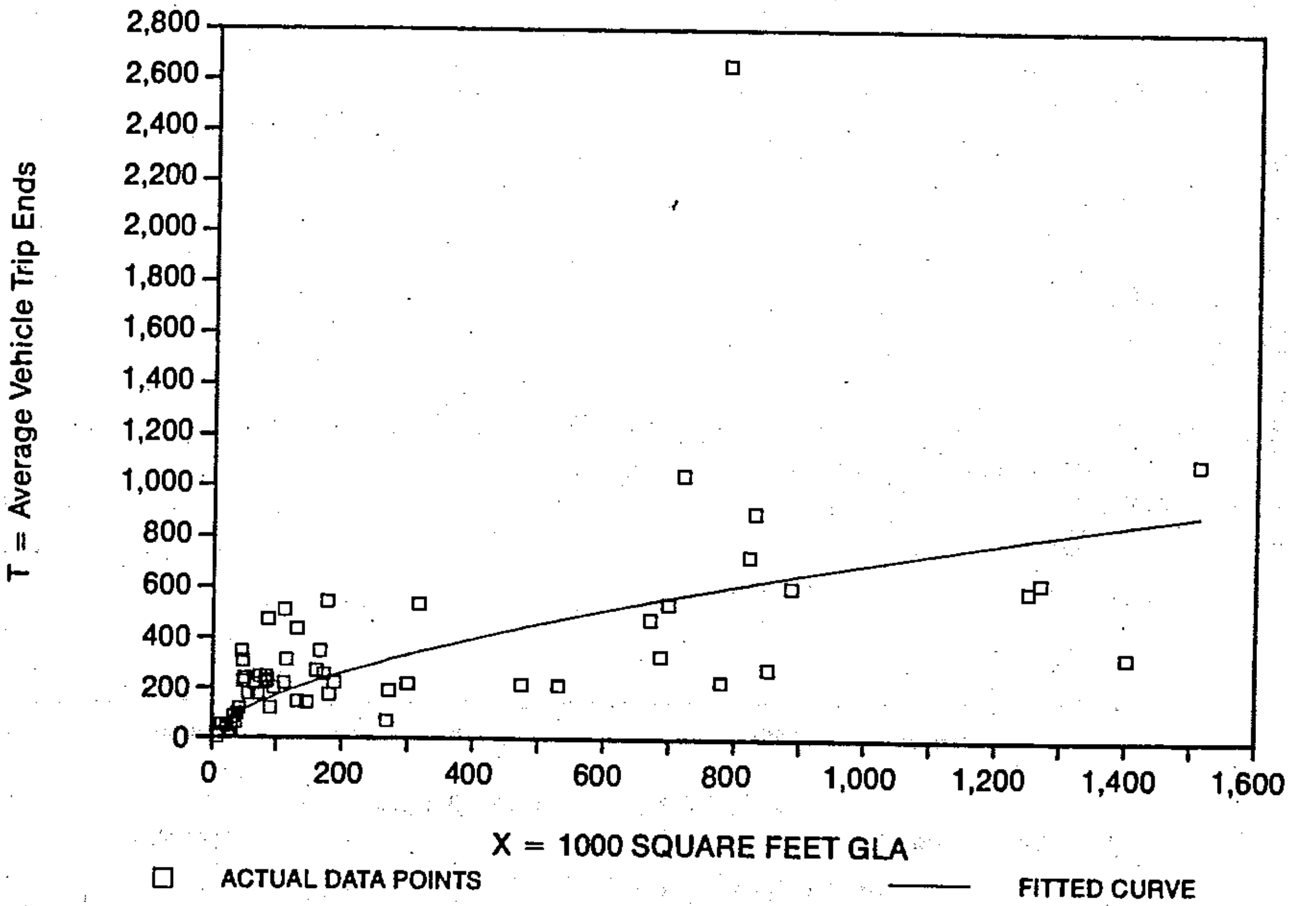
□ ACTUAL DATA POINTS ——— FITTED CURVE

Fitted Curve Equation: $T = 27.07(X) + 6371.0$

$R^2 = 0.59$

DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 3
Shopping Center (820)
A.M. Peak Hour Volume (Two-Way)
One Hour Between 7 and 9 A.M. Versus 1,000 Square Feet Gross Leasable Area



Fitted Curve Equation: $Ln(T) = 0.60\ Ln(X) + 2.40$
$R^2 = 0.56$

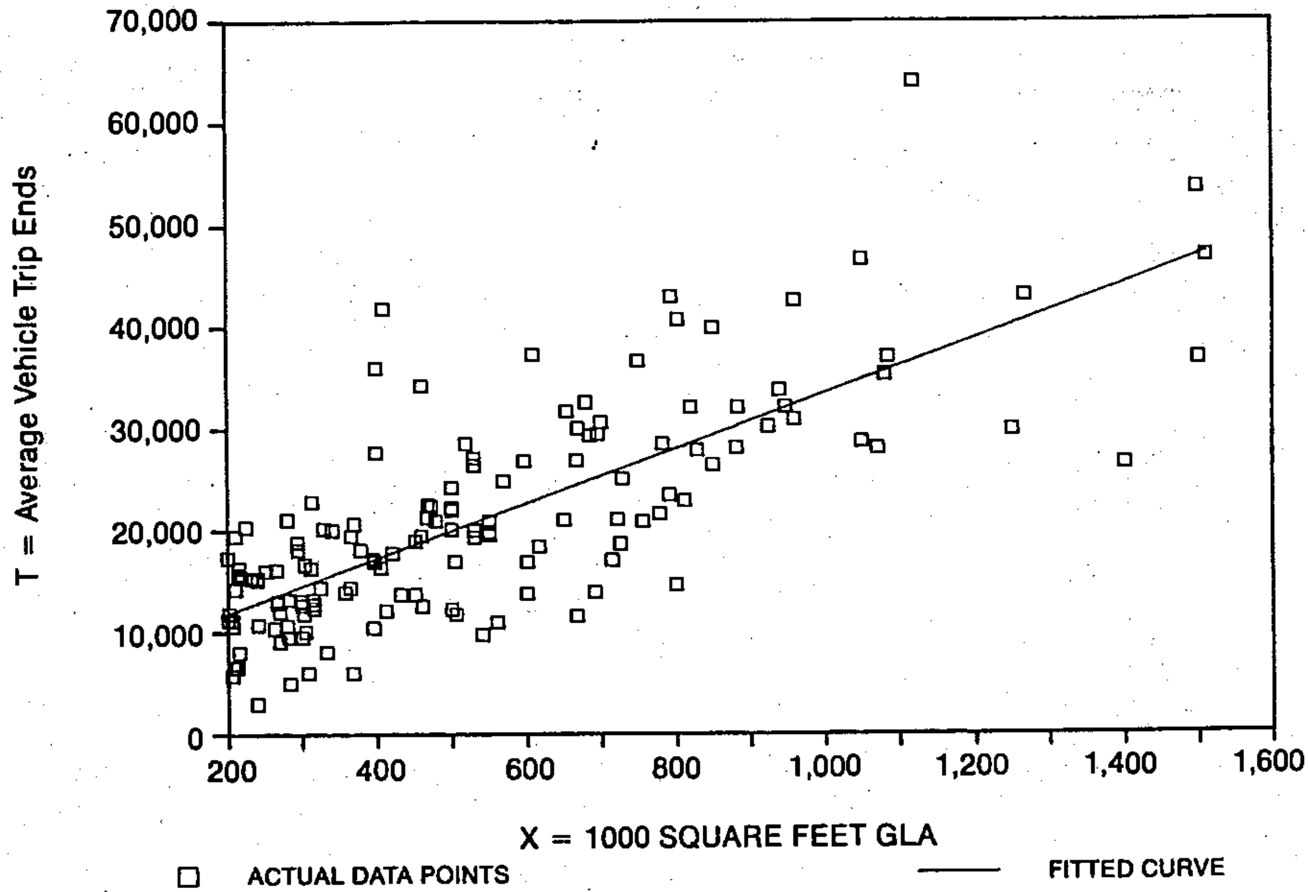
DIRECTIONAL DISTRIBUTION: 70% enter, 30% exit.

Figure 2

Shopping Center (820)

200,000 Square Feet Gross Leasable Area and Greater

Average Weekday Vehicle Trip EndsVersus 1,000 Square Feet Gross Leasable Area

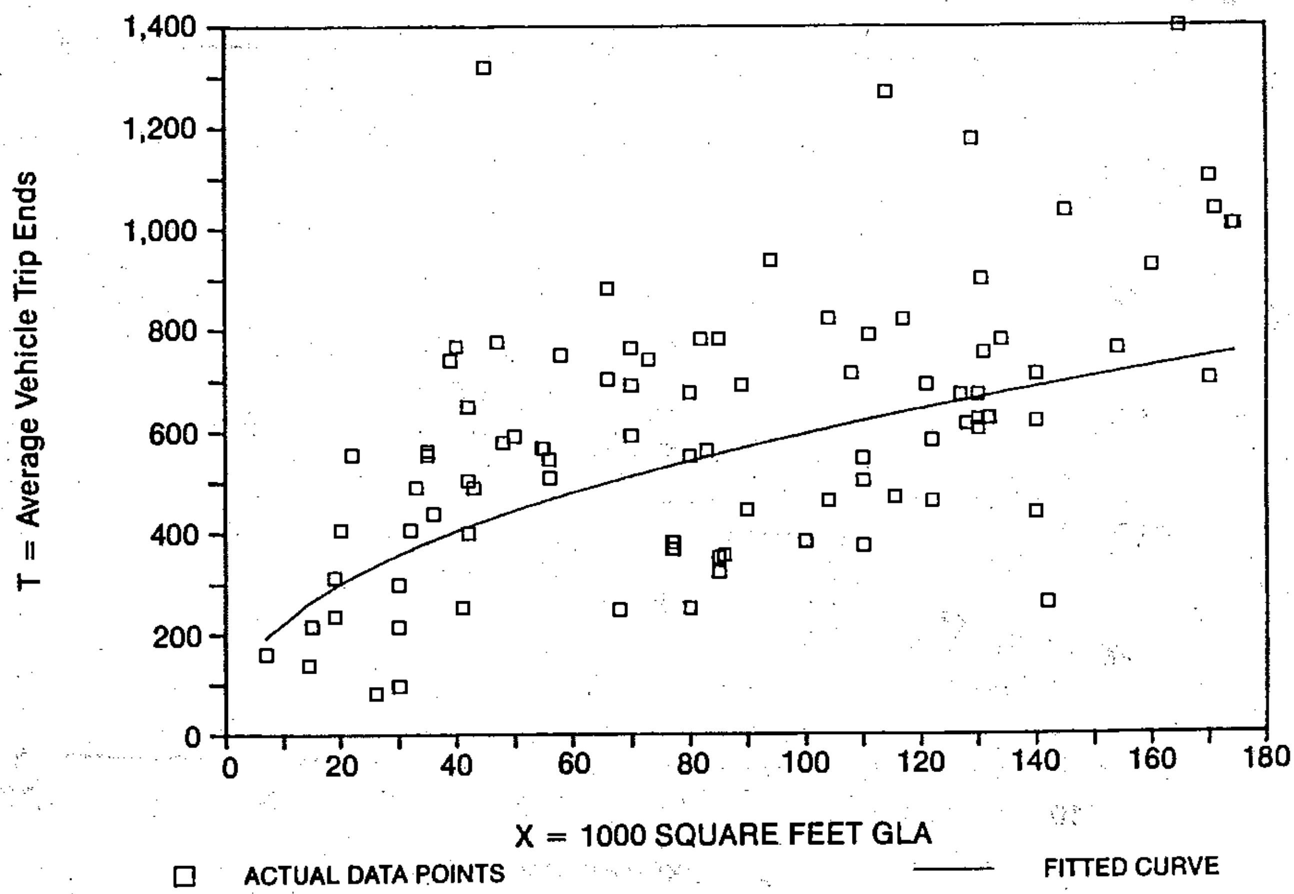


Fitted Curve Equation: $T = 27.07(X) + 6371.0$

$R^2 = 0.59$

DIRECTIONAL DISTRIBUTION: 50% enter, 50% exit.

Figure 4
Shopping Center (820)
Less Than 175,000 Square Feet Gross Leasable Area P.M. Peak Hour Two-Way Volume
One Hour Between 4 and 6 P.M. Versus 1,000 Square Feet Gross Leasable Area

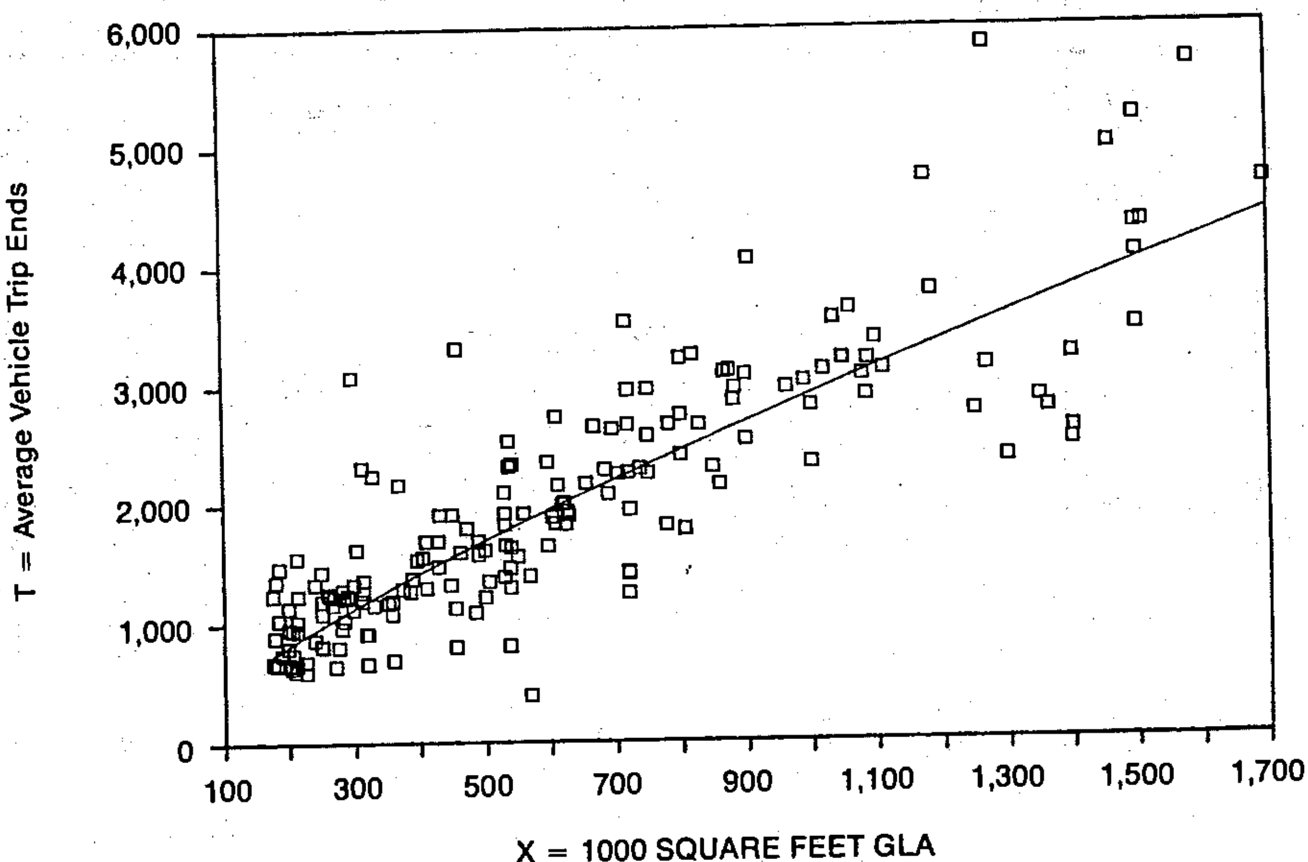


Fitted Curve Equation: $Ln(T) = 0.52\, Ln(X) + 4.04$

$R^2 = 0.58$

DIRECTIONAL DISTRIBUTION: 49% enter, 51% exit.

Figure 5
Shopping Center (820)
Greater Than 175,000 Square Feet Gross Leasable Area P.M. Peak Hour Two-Way Volume
One Hour Between 4 and 6 P.M. Versus 1,000 Square Feet Gross Leasable Area



□ ACTUAL DATA POINTS —— FITTED CURVE

Fitted Curve Equation: $T = 2.58(X) + 381$
$R^2 = 0.83$

DIRECTIONAL DISTRIBUTION: 47% enter, 53% exit.

APPENDIX C

GREEN VALLEY TRAFFIC IMPACT WORKSHEETS

Node #: 1 Intersection: CASE/GOETZ

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	235	583	818	71	244	315	38.5%
EL	0	0	0	0	0	0	ERR
ER	26	71	97	13	34	47	48.5%
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	587	464	1,051	210	184	394	37.5%
WL	81	120	201	16	40	56	27.9%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	100	8	108	39	27	66	61.1%
NR	81	117	198	21	38	59	29.8%
	1110	1363	2473	370	567	937	37.9%

Node #: 2 Intersection: CASE/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VL
ET	165	394	559	74	227	301	53.8%
EL	34	150	184	5	23	28	15.2%
ER	151	355	506	40	215	255	50.4%
ST	272	573	845	110	180	290	34.3%
SL	698	1,028	1,726	36	61	97	5.6%
SR	115	91	206	15	6	21	10.2%
WT	398	303	701	194	136	330	47.1%
WL	162	603	765	115	516	631	82.5%
WR	523	1,230	1,753	21	98	119	6.8%
NT	318	539	857	100	195	295	34.4%
NL	441	259	700	266	137	403	57.6%
NR	531	287	818	455	207	662	80.9%
	3808	5812	9620	1431	2001	3432	35.7%

Node #: 3 Intersection: CASE/MAPES

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	202	485	687	155	410	565	82.2%
EL	1,209	1,482	2,691	442	307	749	27.8%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	147	123	270	147	123	270	100.0%
SR	878	1,667	2,545	259	509	768	30.2%
WT	304	680	984	142	423	565	57.4%
WL	0	0	0	0	0	0	ERR
WR	10	10	20	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2750	4447	7197	1145	1772	2917	40.5%

Node #: 4 Intersection: NAPES/I-215 SB

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	0	0	0	0	0	0	ERR
EL	187	451	638	21	55	76	11.9%
ER	1,042	1,031	2,073	420	252	672	32.4%
ST	440	646	1,086	0	0	0	0.0%
SL	0	0	0	0	0	0	ERR
SR	413	1,021	1,434	271	543	814	56.8%
WT	0	0	0	0	0	0	ERR
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	67	75	142	0	0	0	0.0%
NL	611	769	1,380	135	88	223	16.2%
NR	0	0	0	0	0	0	ERR
	2760	3993	6753	847	938	1785	26.4%

Node #: 5 Intersection: RT 74/I-215 NB OFF-RAMP

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	1,476	1,648	3,124	420	252	672	21.5%
EL	0	0	0	0	0	0	ERR
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	114	88	202	0	0	0	0.0%
SR	204	258	462	55	28	83	18.0%
WT	541	629	1,170	80	59	139	11.9%
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2335	2623	4958	555	339	894	18.0%

Node #: 6 Intersection: RT 74/I-215 NB ON-RAMP

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	681	1,135	1,816	25	66	91	5.0%
EL	795	537	1,332	395	186	581	43.6%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	541	629	1,170	80	59	139	11.9%
WL	0	0	0	0	0	0	ERR
WR	599	502	1,101	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	2616	2803	5419	500	311	811	15.0%

Node #: 7 Intersection: GREEN VLY/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	1	0	1	1	0	1	100.0%
EL	495	416	911	436	321	757	83.1%
ER	164	112	276	149	111	260	94.2%
ST	363	841	1,204	99	331	430	35.7%
SL	1	5	6	1	5	6	100.0%
SR	167	598	765	120	498	618	80.8%
WT	10	6	16	10	6	16	100.0%
WL	11	5	16	11	5	16	100.0%
WR	66	34	100	66	34	100	100.0%
NT	666	686	1,352	269	253	522	38.6%
NL	159	164	323	134	159	293	90.7%
NR	10	10	20	0	0	0	0.0%
	2113	2877	4990	1296	1723	3019	60.5%

Node #: 8 Intersection: GREEN VLY/MURRIETA RD

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	101	75	176	101	75	176	100.0%
EL	82	67	149	75	67	142	95.3%
ER	565	422	987	538	417	955	96.8%
ST	584	818	1,402	335	347	682	48.6%
SL	123	120	243	114	106	220	90.5%
SR	67	96	163	58	82	140	85.9%
WT	85	93	178	85	93	178	100.0%
WL	52	43	95	48	43	91	95.8%
WR	156	120	276	149	104	253	91.7%
NT	697	915	1,612	263	473	736	45.7%
NL	280	701	981	251	687	938	95.6%
NR	58	66	124	47	66	113	91.1%
	2850	3536	6386	2064	2560	4624	72.4%

Node #: 9 Intersection: ETHANAC/GOETZ

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	83	129	212	33	34	67	31.6%
EL	40	66	106	25	34	59	55.7%
ER	12	25	37	0	0	0	0.0%
ST	96	178	274	42	67	109	39.8%
SL	159	271	430	116	221	337	78.4%
SR	48	38	86	30	24	54	62.8%
WT	94	138	232	21	30	51	22.0%
WL	10	54	64	0	0	0	0.0%
WR	244	187	431	205	130	335	77.7%
NT	200	175	375	77	58	135	36.0%
NL	21	14	35	0	0	0	0.0%
NR	0	49	49	0	0	0	0.0%
	1007	1324	2331	549	598	1147	49.2%

Node #: 10 Intersection: ETHANAC/MURRIETA

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	320	596	916	176	427	603	65.8%
EL	20	44	64	9	27	36	56.3%
ER	14	49	63	6	37	43	68.3%
ST	402	682	1,084	191	244	435	40.1%
SL	844	630	1,474	778	595	1,373	93.1%
SR	21	19	40	17	15	32	80.0%
WT	379	532	911	278	336	614	67.4%
WL	432	1,375	1,807	48	298	346	19.1%
WR	395	990	1,385	319	925	1,244	89.8%
NT	647	720	1,367	260	356	616	45.1%
NL	29	85	114	29	71	100	87.7%
NR	1,178	940	2,118	225	202	427	20.2%
	4681	6662	11343	2336	3533	5869	51.7%

Node #: 11 Intersection: ETHANAC/GREEN VLY

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	2,169	1,998	4,167	1,057	1,091	2,148	51.5%
EL	149	157	306	124	131	255	83.3%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	505	444	949	481	420	901	94.9%
SR	41	174	215	33	149	182	84.7%
WT	1,155	2,697	3,852	611	1,405	2,016	52.3%
WL	0	0	0	0	0	0	ERR
WR	436	483	919	386	463	849	92.4%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	4455	5953	10408	2692	3659	6351	61.0%

Node #: 12 Intersection: ETHANAC/W. FRONTAGE

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	2,396	2,084	4,480	1,285	1,192	2,477	55.3%
EL	281	360	641	256	319	575	89.7%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	232	1,172	1,404	208	1,061	1,269	90.4%
SR	81	457	538	69	408	477	88.7%
WT	1,507	2,728	4,235	928	1,464	2,392	56.5%
WL	0	0	0	0	0	0	ERR
WR	697	1,110	1,807	510	852	1,362	75.4%
	0						
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR		0	0	0	0	0	ERR
	5194	7911	13105	3256	5296	8552	65.3%

Node #: 13 Intersection: ETHANAC/I-215 SB

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY
ET	2,391	2,661	5,052	1,273	1,693	2,966	58.7%
EL	0	0	0	0	0	0	ERR
ER	222	590	812	204	572	776	95.6%
ST	0	0	0	0	0	0	ERR
SL	286	709	995	6	8	14	1.4%
SR	301	1,169	1,470	204	742	946	64.4%
WT	1,895	2,677	4,572	1,230	1,578	2,808	61.4%
WL	157	400	557	1	0	1	0.2%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	5252	8206	13458	2918	4593	7511	55.8%

Node #: 14 Intersection: ETHANAC/1-215 NB

	CUMULATIVE AM	CUMULATIVE PM	CUMULATIVE TOTAL	GREEN VALLEY AM	GREEN VALLEY PM	GREEN VALLEY TOTAL	GRN VLY %
ET	1,351	2,467	3,818	434	975	1,409	36.9%
EL	1,313	902	2,215	838	724	1,562	70.5%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	1,591	2,565	4,156	763	1,066	1,829	44.0%
WL	0	0	0	0	0	0	ERR
WR	648	385	1,033	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	463	505	968	463	505	968	100.0%
NR	266	298	564	1	0	1	0.2%
	5632	7122	12754	ERR	3270	5769	45.2%

Node #: 15 Intersection: ETHANAC/E. FRONTAGE

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VL
ET	1,124	2,656	3,780	387	962	1,349	35.7%
EL	491	102	593	49	15	64	10.8%
ER	0	0	0	0	0	0	ERR
ST	0	0	0	0	0	0	ERR
SL	10	10	20	0	0	0	0.0%
SR	103	468	571	14	60	74	13.0%
WT	2,131	2,413	4,544	750	1,009	1,759	38.7%
WL	0	0	0	0	0	0	ERR
WR	10	10	20	0	0	0	0.0%
NT	0	0	0	0	0	0	ERR
NL	0	0	0	0	0	0	ERR
NR	0	0	0	0	0	0	ERR
	3869	5659	9528	1200	2046	3246	34.1%

Node #: 16 Intersection: RT 74/ETHANAC

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	680	1,019	1,699	21	56	77	4.5%
EL	0	0	0	0	0	0	ERR
ER	94	123	217	22	31	53	24.4%
ST	0	0	0	0	0	0	ERR
SL	0	0	0	0	0	0	ERR
SR	0	0	0	0	0	0	ERR
WT	860	985	1,845	64	40	104	5.6%
WL	1,389	1,986	3,375	561	787	1,348	39.9%
WR	0	0	0	0	0	0	ERR
NT	0	0	0	0	0	0	ERR
NL	58	312	370	8	31	39	10.5%
NR	940	2,229	3,169	303	704	1,007	31.8%
	4021	6654	10675	979	1649	2628	24.6%

Node #: 17 Intersection: W. FRONTAGE/ACCESS RD.

	CUMULATIVE			GREEN VALLEY			
	AM	PM	TOTAL	AM	PM	TOTAL	GRN VLY %
ET	0	0	0	0	0	0	ERR
EL	15	77	92	15	61	76	82.6%
ER	170	875	1,045	155	797	952	91.1%
ST	139	725	864	118	660	778	90.0%
SL	0	0	0	0	0	0	ERR
SR	27	96	123	18	2	20	16.3%
WT	0	0	0	0	0	0	ERR
WL	0	0	0	0	0	0	ERR
WR	0	0	0	0	0	0	ERR
NT	660	610	1,270	466	394	860	67.7%
NL	343	851	1,194	314	775	1,089	91.2%
NR	0	0	0	0	0	0	ERR
	1354	3234	4588	1086	2689	3775	82.3%

APPENDIX F

NOISE TECHNCIAL REPORT

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May 24, 1989
(Revised June 6, 1989)

Project File 2075-89

THOMAS C. RYAN
8852 Luss Drive
Huntington Beach, CA 92646

Subject: Noise Assessment and Noise Control Recommendations, Green Valley Specific Plan in the City of Perris

Reference: Fax Transmittal of Average Daily Traffic Volumes, Green Valley Project, Bazmaciyan-Darnell, Inc., April 25, 1989

Gentlemen:

Noise measurements have been obtained and an analysis has been performed to determine compliance of the project with the State of California's noise insulation standards and the City of Perris' noise control requirements. The following assessment and recommendations are provided as a result of this review:

PROJECT DESCRIPTION

The Green Valley Specific Plan is located in the southwestern portion of Perris, and is bounded by Ethanac Road to the south, Goetz Road to the west and Case Road to the north and east (refer to Figure 1). The site is a 1,194-acre parcel of land in the City of Perris, which includes residential, community, industrial and office development. Figure 2 provides a conceptual site plan for the project site.

NOISE EVALUATION CRITERIA AND STANDARDS

1. A-Weighted Sound Level

   The scale of measurement which is most useful in community noise measurement is the A-weighted sound pressure level, commonly called the A-level or dB(A). It is measured in decibels to provide a scale with the range and characteristics most consistent with that of people's hearing ability.

2. Community Noise Equivalent Level

   It is recognized that a given level of noise may be more or less tolerable, depending on the duration of exposure experienced by an individual. To reflect this, the State

Department of Aeronautics and the California Commission of Housing and Urban Development have adopted the community noise equivalent level (CNEL) as a standard measurement of community noise. This measure weights the average noise level for the evening hours, from 7:00 pm to 10:00 pm, by adding 5 dB and the late evening and early morning hour noise levels, from 10:00 pm to 7:00 am, by adding 10 dB.

3. <u>Design Criteria for Residential Construction</u>

The following residential noise standards are specified in the City's Noise Element of the General Plan:

a. If a specific project site is located within the CNEL contour of 60 dB or higher for noise generated by the freeways, major or secondary arterials or airport, an acoustical analysis will be required showing compliance with the City of Perris standards. This analysis should indicate the existing and projected CNELs on the site and the method(s) by which the noise is to be controlled or reduced to no more than 70 dB within the exterior living space of the project. Although residential projects within the 70 dB contour or higher should be strongly discouraged, under special circumstances their approval may be conditioned upon the feasibility of reducing exterior noise levels to no more than 75 dB.

b. The CNEL within any habitable room shall be 45 dB, or less.

4. <u>Design Criteria for Non-Residential Criteria</u>

The City of Perris has no noise standards for commercial/industrial projects. Therefore, the following generally recognized standards are recommended for the interior industrial/office/commercial spaces:

Typical Use	Equivalent Sound Level Leq(12), dB(A)*
Private Office, Board Room, Conference Room, etc.	45
General Office, Reception, Clerical, etc.	50
Bank Lobby, Retail Store, Restaurant, etc.	55
Manufacturing, Kitchen, Warehousing, etc.	65

* Leq(12) is the equivalent sound level during the 12-hour period from 7:00 am to 7:00 pm.

5. State Noise Insulation Standards

Compliance with the State's noise insulation standards (CCR Title 24, Part 2) is required for all new multifamily dwelling units constructed in California. The standards set minimum ratings for the transmission of sound through party walls and floor/ceiling assemblies. Also, a maximum community noise equivalent level (CNEL) of 45 dB is specified for intrusion from external noise sources.

6. School Noise Control Standards

The State of California's noise standard for school sites sets a maximum peak hour equivalent sound level, Leq of 52 dB(A) within any classroom, library, multipurpose room, or space used for pupil personnel services (California Streets and Highway Code: Section 216). Although this standard applies only to noise generated by freeway traffic, it is recommended that the standard also be applied to the noise generated by traffic on the surrounding streets, by airport operations and by railroad movements.

In addition to the above, it is recommended that the Federal Highway Administration (FHWA) noise abatement criteria for school sites be applied to the project (U.S.C. Title 23, Chapter I, Part 772). This criteria specifies that any active sports area, playground, or recreation area within a school site should not be exposed to a peak hour Leq in excess of 67 dB(A).

Refer to Appendix I for a description of the A-weighted measure of sound level and the CNEL measure of noise exposure.

EXTERIOR NOISE

Measurements were obtained at five positions in the vicinity of the Green Valley Specific Plan study area. (Refer to Figure 1 for the location of the project site and the measurement positions.) Table 1 provides a summary of the measurements taken, and Appendix II provides the complete listing of the measurement data and the equipment used during the study. The following sections discuss the projected noise exposures that will impact the residential, commercial/industrial and school portions of the site.

Residential

Table 2 provides an analysis of existing and cumulative noise exposures in the study area due to traffic on the adjacent arterials. It includes traffic volumes as well as distances from surrounding arterials to the 60, 65, 70, 75, and 80 dB CNEL contour lines. These distances are relative to the centerline of the nearest travel lane. As can be seen, the traffic volumes and noise exposures will increase significantly on all arterials within the vicinity of the study area. A CNEL of greater than 70 dB is projected at all proposed residences adjacent to Case Road, Ethanac Road (east of Murrieta) and Murrieta Road.

Flight operations at March Air Force Base are another source of noise within the vicinity of the project site. As can be seen in Figure 3, this activity generates a CNEL of about 55 at the north east side of the site; therefore it is not considered to be a major source of noise affecting the project site.

At the current level of aircraft activity (about 50 operations per week), the impact of Perris Valley Airport flight operations is considered insignificant at the proposed project site. Referring to Figure 4, the CNEL at the site due to this activity will be less than 60 dB. Measurements of the noise levels generated by aircraft at the airport were obtained on July 31, 1982 at positions north and south of the runway. At these positions the maximum noise level generated by an aircraft taking off to the north was 80 to 85 dB(A). Landings from the south produced lower levels of 52 to 74 dB(A). Future activity at the airport is not expected to differ significantly from the current activity both in terms of the number of operations and the types of aircraft using the facility. However, any future impact will be directly related to the number of operations occurring each day and the time of day at which they occur. If lighting is installed at the airport, nighttime operations will have a detrimental effect on the quality of life at residential locations within the project site.

Noise generated by train movements on the Santa Fe Railroad located north of the site parallel to Case Road will have an insignificant impact on the project site. Based on information obtained from Santa Fe Railroad in the County of Riverside, there are two movements per day on the line: one during the morning and one in the evening. Table 3 provides the distances to CNEL contour lines generated by train movements on the Santa Fe Railroad. Single event noise levels generated by train activity may be potentially annoying. However, annoyance may be minimized by keeping windows and doors closed.

Another source of noise affecting the project site is activity at the Perris Valley Waste Water Treatment Plant south of Case Road and west of I-215. There are four engine pumps at the site enclosed in buildings; two of the pumps operate 24 hours per day. These pumps are located about 300′ north and 1,400′ east of the nearest proposed residential areas. A measurement taken at the south property line of the facility (Position 5) indicates that two pumps running simultaneously generate an Leq of 52 dB(A) at a distance of 300′. This is equivalent to a CNEL of 59 dB. Projecting this to a distance of 1,400′ yields a CNEL of about 46 dB at the nearest proposed residences to the west. Therefore, the impact of the existing facility is considered to be insignificant. Currently this facility is being expanded from a capacity of one million gallons/day to two million gallons/day. As a "worst case" analysis, this may increase noise levels at the nearest proposed residential locations by up to 3 dB. The impact of this upgraded facility will still be insignificant relative to the City's CNEL standard of 70 dB; however, the intrusive noise level of up to 55 dB(A) may be annoying to the adjacent residents, particularly during the late evening and early morning hours. Mitigation of this noise source is best accomplished at the treatment facility and may include mufflers on the engine exhausts, acoustic baffles for the vents, and sound rated doors. It is recommended that the design of the facility include noise control measures to ensure that the sound level does not exceed 45 dB(A) at the nearest residential property line. If the plant is expanded to a regional facility with a capacity of 50 million gallons/day, it will be particularly important that noise control be considered in the facility's design to ensure compliance with the recommended standard of 45 dB(A).

Potential annoyance may be generated at the residential portions of the project development by activity at the nearby school yards and the sports complex. Additional noise will be generated by activity at the commercial/industrial areas. Such activities might include trucks moving in and out of loading docks, air conditioning compressors, parking lot activity, and car maintenance operations at the service stations, if any.

Commercial/Industrial

Based on the traffic data provided in Table 2, the following noise levels are projected at the nearest commercial/industrial buildings to the various arterials in the study area:

Location	Leq(12)
Case Road	
West of Murrieta	69 dB(A)
East of Murrieta	72
North of Ethanac	71
Ethanac Road	
East of Goetz	64
Green Valley to Case	73
Goetz Road	
South of Case	61
North of Ethanac	65
Green Valley Parkway	
North of Ethanac	67

Location	Leq(12)
Murrieta Road	
Case to Green Valley	71
Route 215	
Route 74 to Ethanac	75

As stated previously, noise generated by flight operations at March Air Force Base and Perris Valley Airport, and train activity on the Santa Fe Railroad are considered insignificant.

Schools

There are four schools within the vicinity of the project site. Three of the schools are adjacent to Green Valley Parkway. For schools designated #15 and #25 on the conceptual land use plan (Figure 2), a peak hour Leq of 69 dB(A) is estimated at the property line. The school designated as #37 is estimated to have a peak hour Leq of 66 dB(A) at the property line. At school site #32 the Leq will be less than 67 dB(A).

MITIGATION OF SIGNIFICANT IMPACTS - Exterior Noise

The following is recommended in order to comply with the previously cited exterior noise standards for residential areas and school sites:

Residential

The City of Perris' standards require that the overall noise exposure at any residential exterior living space not exceed a CNEL of 70 dB. The following design considerations are needed to comply with the City's requirements:

1. If possible, multifamily residences should be oriented in such a way that the patios and balconies are located on the side of the building away from the arterials and/or railroad. In this way, the buildings will present a solid barrier to the traffic noise. If this is not possible, noise barriers with a minimum height of 5' to 7' will be required around the perimeters of the patios and balconies directly facing Ethanac (east of Murrieta) and Murrieta. All common recreational areas should be located at the interior of the site buffered from the traffic noise by the multifamily buildings.

2. For single family residences, with rear yards abutting the arterials, noise barriers with a minimum height of 6' to 8' will be required around the property line adjacent to Case, Ethanac (east of Murrieta) and Murrieta.

3. All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise (e.g., concrete block, stucco-on-wood, 1/4" plate glass, earth berm, or any combination of these materials).

It should be noted that the actual heights of barriers, patio walls and balcony walls will depend on the precise location of the structures, the elevation of the site relative to the arterials, and the setback of the buildings from the arterials.

Schools

The noise abatement criteria for school sites specifies that any active sports area, playground, or recreation area within a school site should not be exposed to a peak hour Leq in excess of 67 dB(A). The following are recommended in order to ensure compliance with this criteria:

1. For schools sites #15 and #25, noise barriers with a minimum height of 6' to 8' may be required around the property line of any play areas adjacent to Green Valley Parkway.

2. All barriers should be continuous structures (without gaps or gates) and should be constructed of a material that is impervious to noise (e.g., concrete block, stucco-on-wood, 1/4" plate glass, earth berm, or any combination of these materials).

3. An alternative to the above noise barriers is to orient the play areas away from the arterials so that they are buffered from the traffic noise by either distance or by the proposed school buildings.

The actual heights of the barriers, if any, will depend on the precise location of the structure, the elevation of the site relative to the arterials, and the setback of the play areas from the arterials.

MITIGATION OF SIGNIFICANT IMPACTS - Interior Noise

The following are recommended in order to ensure compliance with the previously cited interior noise standards for residential, commercial/industrial, and school site areas within the proposed project:

Residential

The following design considerations are needed in order to minimize annoyance due to noise and to comply with an interior CNEL standard of 45 dB:

1. For windows and sliding glass doors, well fitted, well weatherstripped, and sound rated assemblies are recommended. Double window assemblies consisting of two panes of glass separated by 2" to 3" may be required for units adjacent to the major arterials. The actual sound transmission class (STC) needed should be determined as part of the final engineering design for each dwelling unit.

2. STC is per ASTM Designations E-413 and E336 or E90.

3. Bathrooms which have tightly fitted doors separating them from the adjacent living areas are not considered to be habitable spaces and, therefore, do not require sound rated windows.

4. Entry doors facing or having line-of-sight to the major arterials should be well weatherstripped solid core assemblies, 1-3/4" thick.

5. Exterior walls of units adjacent to the major arterials and directly exposed to traffic noise should be constructed with 2" x 4" wood studs, 1/2" gypsum wallboard interior and 7/8" thick stucco or siding-on-sheathing exterior, with R-11 insulation between the studs. All joints should be well fitted and/or caulked to form an air tight seal.

8. For those units adjacent to the major arterials, the roof system should have plywood sheathing which is well sealed. R-19 insulation should be placed in the attic space, if any.

9. Forced air ventilation may be required since the interior CNEL standard is to be met with windows closed. The uniform Building Code specifies that the forced air ventilation system shall be capable of providing two air changes per hour in all habitable rooms with one-fifth of the air supply taken from outside. This should be accomplished as follows:

   a. A forced air unit so that the fan may be operated independently of the heating or cooling functions, and

   b. A fresh air intake duct between the forced air unit and the exterior wall or roof. The fresh air intake duct should also incorporate at least six feet of flexible fiberglas ducting and at least one 90 degree bend.

   Wall mounted air conditioners, if used, should not be placed on an elevation directly facing major arterials.

10. There should be no openings (mail slots, vents, etc.) in the exterior walls of units adjacent to the major arterials.

11. For residential construction, large (12" x 14") attic vents should not be placed on an elevation facing an arterial. If this is not possible, then a baffle should be positioned behind the vent as indicated in Figure 5.

Commercial/Industrial

The following is recommended in order to ensure compliance with the recommended noise criteria for commercial/industrial facilities:

1. All windows in the proposed buildings should be well fitted, well sealed and sound rated assemblies. Sound transmission class (STC) ratings as high as 36 may be needed at some locations directly adjacent to the arterials. This is normally achieved with fixed 3/8" laminated glass in well fitted and well sealed stops. The actual STC needed should be determined as part of the final engineering design of the project.

2. STC is per ASTM Designations E413 and E336 or E90.

3. All entry doors from exterior spaces should be at least 1/4" thick plate glass or 1-1/2" solid core assemblies. The doors should be well sealed units with rigid frames and the frames should be weatherstripped on all edges with a deep, wide and compliant pile.

4. The exterior walls should be constructed with 6" thick tilt-up concrete walls; or with 7/8" stucco exterior, 2" x 4" studs, R-11 insulation, and 1/2" gypsum board interior.

5. The roof system should consist of built-up roofing over one layer of 1/2" plywood or equivalent, well fitted to provide a continuous barrier.

6. Offices, typing and reception areas directly adjacent to the arterials will require these additional items for interior sound absorption:

    a. Interior walls should consist of 1/2" or 5/8" gypsum board.

    b. Suspended acoustical tile ceiling, 1" Nubby or equivalent.

    c. Carpet and pad.

7. Mechanical ventilation and cooling is required to maintain a habitable environment within the interior spaces of the building.

Schools

The following design considerations are needed in order to comply with the previously discussed standards:

1. All windows in the proposed buildings should be well fitted, well sealed and sound rated assemblies. Sound transmission class (STC) ratings as high as 27 may be needed at some locations directly adjacent to the arterials. This is normally achieved with 1/4" plate glass. The actual STC ratings should be determined as part of the final engineering design of the project.

2. STC is per ASTM Designations E413 and E336 or E90.

3. All entry doors from exterior spaces should be at least 1/4" thick plate glass or 1-1/2" solid core assemblies. The doors should be well sealed units with rigid frames and the frames should be weatherstripped on all edges with a deep, wide and compliant pile.

4. The exterior walls should be constructed with concrete block, solid grouted; or 7/8" stucco exterior, 2" x 4" studs, R-11 insulation, and 1/2" gypsum board interior.

5. The roof system should consist of built-up roofing over one layer of 1/2" plywood or equivalent, well fitted to provide a continuous barrier.

6. Offices, reception and classroom areas directly adjacent to arterials will require these additional items for interior sound absorption:

   a. Interior walls should consist of 1/2" or 5/8" gypsum board.

   b. Suspended acoustical tile ceiling, 1" Nubby or equivalent.

   c. Carpet and pad (except in the classrooms).

7. Mechanical ventilation and cooling is required to maintain a habitable environment within the interior spaces of the building.

PARTY WALL AND FLOOR/CEILING SEPARATION SPECIFICATIONS

The State noise insulation standards specify minimum sound ratings for party wall and floor/ceiling assemblies in multi-family residential construction. The following are considered to be separation assemblies and, therefore, are required to comply with the State standards:

a. Party wall and floor/ceiling separation assemblies between living units.

b. Party wall and floor/ceiling separation assemblies between a living unit and the garage space of an adjacent unit, or a laundry room.

It is recommended that the sound control specifications of Enclosure 1 be included in the project design.

ENTRY DOORS

For multifamily residential construction, entrance doors from interior corridors together with their perimeter seals shall have sound transmission class (STC) ratings not less than 26. Such tested doors shall operate normally with commercially available seals. Solid core wood slab doors, 1-3/8" thick minimum or 18 gauge insulated steel slab doors with compression seals all around, including the threshold, may be considered adequate without other substantiating information.

ADDITIONAL SOURCES OF NOISE AND RELATED IMPACTS

Some additional sources of noise associated with the proposed commercial areas include:

1. Construction activity during development.

2. Mechanical equipment mounted on the roof of the facilities.

3. Trash pick-up and compacting.

4. Truck movements into and out of the service areas.

The level of noise, potential impact, and methods of mitigating each of these sources, if needed, is discussed in the following:

Construction Activity Noise

Annoyance due to construction noise during the development of the commercial areas will be minimal. However, equipment associated with grading and excavation produces potential annoyance.

The noise produced by the construction activity will not be substantially annoying to established residential and commercial areas in the near vicinity of the construction site. This will be the case for the activity occurring during daytime working hours (7:00 am to 7:00 pm). However, extended activity (after 7:00 pm on weekdays and during the day on Sundays) may cause considerable annoyance.

Mechanical Equipment Noise

A potential noise problem is produced by mechanical equipment such as air conditioning and refrigeration units and their associated inlet and exhaust systems. These units often produce noise levels which exceed recognized standards when experienced at near-by residential locations. Structural designs and acoustical baffling are easily implemented in new construction but are normally difficult and expensive to apply after the fact.

Equipment noise associated with the commercial operations should not exceed the nighttime ambient noise level when experienced at residential boundaries in proximity to the site. The late night and early morning ambient noise level is about 40 to 45 dB(A). Since traffic noise will increase up to 18 to 20 dB in the future, the ambient noise level will increase correspondingly. In any event, to establish a conservative criteria, noise produced by mechanical equipment should not be greater than 45 dB(A) when measured at the residential locations nearest to the site.

Mitigation of equipment noise to the above standard may be accomplished by including the following design details in the project planning and specifications:

a. Equipment should be placed within buildings or have a suitable noise barrier to provide reduction of equipment noise. The height of the barrier will depend on the location of the equipment relative to near-by homes and adjacent commercial areas.

b. All inlet and exhaust system ducting should contain fibrous lining for noise reduction.

c. All major items of noise producing equipment should be placed within an acoustically isolated room. The walls, floor, and ceiling system of the equipment rooms nearest to homes should be designed to have at least a sound transmission class (STC) of 50. Entry doors into the equipment rooms near homes and adjacent commercial areas should have an STC of at least 38.

Trash Pick-Up and Compacting

Trash pick-up and compacting vehicles are also a cause of complaints near commercial operations. These vehicles use hydraulic equipment to raise and lower the metal trash bins and to compact their contents. Typical noise levels range from 80 to 85 dB(A) at 50 feet during the raising, lowering and compacting operations. A typical trash pick-up takes approximately three minutes. The higher noise levels occur during about one-half of the operation. The control of refuse collection noise should be considered for those commercial areas nearest to residential locations.

Truck Movements Within the Commercial Areas

At full development of the project, the noise produced by trucks delivering supplies at the commercial sites could be a potential source of annoyance. Noise levels within 50 feet of the service areas may approach L10 values of about 75 to 80 dB(A) if these vehicles were unprotected. When experienced at residential locations nearest to the service areas, truck noise will be reduced depending on the distance and shielding between the homes and service areas. The potential annoyance of this activity may be minimized as follows:

a. Walls should be placed in the immediate vicinity of the service areas to eliminate the line-of-sight from the loading areas to near-by residential locations.

b. Truck drivers should be instructed to minimize acceleration when entering and leaving the commercial areas.

c. Each commercial tenant should initiate a policy of shutting down engines, air conditioning, and refrigeration equipment of the trucks which in the loading areas nearest to residential locations.

d. Deliveries between the hours of 10:00 pm to 7:00 am should be minimized or eliminated.

CONCLUSION

Measurements have been obtained and an analysis has been performed to determine compliance of the project with the State of California's noise insulation standards and the City of Perris' noise control requirements. It is determined that a significant impact exists at those portions of the site adjacent to the arterials in the area. However, it is concluded that the significant impacts may be mitigated through the use of noise barriers, proper building layout, and by including noise control design measures in the construction of the residential, commercial/industrial and school buildings.

It is further recommended that the final engineering design of the project be reviewed by a recognized acoustical engineer to ensure compliance with the recommended noise standards.

The acoustical design as recommended above for compliance with the interior noise standards is to be met for the average sound level in any habitable room within the project at a position towards the central portion of the room and at least 5' from windows or exterior doors. The field insertion loss test per ASTM Designation E-336-77, Appendix A-1 is considered appropriate.

Please contact the undersigned at 714/635-9520 if you require additional information or clarification of the assessment and recommendations contained herein.

Very truly yours,

J. J. VAN HOUTEN & ASSOCIATES, INC.

A. Allen Mashoof

David L. Wieland
Principal Engineer

Allen Mashoof
Associate Engineer

DLW/AM/rrp

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Table 1. Summary of Noise Measurements along the Green Valley Specific Plan Site.

Pos No.	Measurement Location	Date	Source	Start Time	Duration	A-Weighted Sound Level, dB(A)				
						L1	L10	L50	L99	Leq
1	110' N. of Case Rd. 500' W. of I-215 freeway.	4-4-89	Traffic on I-215 freeway.	10:45	15 min	60.0	54.0	50.0	44.0	51.8
2	30' W. of Murrieta Rd. 100' S. of Case Rd.	4-4-89	Traffic on Murrieta and Case.	11:10	15 min	77.0	67.5	59.5	48.0	64.6
3	102' E. of Goetz Rd. About 1000' S. of Perris Valley Airport.	4-4-89	Traffic on Goetz Rd.	11:40	15 min	62.0	57.5	51.0	39.5	54.0
4	Back yard of 1712 Sycamore St.	4-4-89	Traffic on A St.	14:00	24 hours	70.5	60.5	50.5	39.5	58.0
						Peak hour (7:00-8:00) noise levels in the 24 hour period.				
5	S. property line of Perris Valley Waste Water Treatment Plant, 280' from pump house	6-7-89	Gas engine pumps at treatment plant	11:15	15 min	54.5	53.3	52.0	47.3	51.9

TRAFFIC SIGNAL SYSTEM CAPACITY / LEVEL OF SERVICE ANALYSIS SUMMARY
BASED ON
METHODOLOGY DEVELOPED BY MOHLE, GROVER & ASSOCIATES
AS PART OF
THE TRAFFIC GROWTH MONITORING PROGRAM
MONITOR

INTERSECTION # 15 - ETHANAC RD @ E FRONTAGE RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1510	5400	40	2656	3026	88	1.0	14.0	B	16	1.23	56	54	5	1510	EBT	*
*	EBL	1511	3300	40	102	110	93**	1.0	79.2	F	1	1.40	5	3	0	1511	EBL	*
	EBR	1512	-	-	188	214	88	1.0	14.0	B	-	-	56	54	5	1512	EBR	
*	SBT	1520	1800	45	10	11	89	1.0	34.7	D	11	1.21	29	27	61	1520	SBT	*
	SBL	1521	1400	45	10	420	2	1.0	16.9	C	0	1.34	29	27	61	1521	SBL	
	SBR	1522	-	-	468	529	89	1.0	34.7	D	-	-	29	27	61	1522	SBR	
	WBT	1530	5400	45	2413	3227	75	1.0	10.7	B	14	1.26	56	54	5	1530	WBT	
	WBL	1531	1700	45	52	57	92**	1.0	97.8	F	1	1.44	5	3	0	1531	WBL	
	WBR	1532	-	-	10	13	75	1.0	10.7	B	-	-	56	54	5	1532	WBR	
	NBT	1540	1800	45	10	117	9	1.0	17.2	C	1	1.33	29	27	61	1540	NBT	
	NBL	1541	1400	45	108	420	26	1.0	18.3	C	2	1.35	29	27	61	1541	NBL	
	NBR	1542	-	-	36	423	9	1.0	17.2	C	-	-	29	27	61	1542	NBR	

INTERSECTION SUMMARY : TOTAL FLOW = 6063   WEIGHTED AVERAGE DELAY = 16.2   DELAY LOS = C   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = .88/D   WEIGHTED AVERAGE DELAY = 18.8   DELAY LOS = C

INTERSECTION # 16 - RT 74 @ ETHANAC RD   GREEN VALLEY   P.M.peak   RECOMMENDED IMPROVEMENTS 5/4/89   05/04/89

	APPROACH (DIR)	LINK (#)	SAT FLOW (VPH)	SPEED (MPH)	VOL(V) (VPH)	CAP(C) (VPH)	V/C (X-%)	PAF	STOP DELAY (SEC/VEH)	LOS	QUEUE (VEH/LN)	DELAY RATIO (APP/ST)	MOVE TIME (SEC)	EFF GRN (SEC)	OFFSET (SEC)	APPROACH (#)	LINK (DIR)	
*	EBT	1610	5400	45	1019	360	283**	1.0	5191.3	F	17	.24	8	6	41	1610	EBT	*
	EBR	1612	1800	45	123	120	103**	1.0	105.9	F	4	1.65	8	6	41	1612	EBR	
	WBT	1630	3600	45	985	1880	52	1.0	11.0	B	8	1.30	49	47	0	1630	WBT	
*	WBL	1631	3300	45	1986	1430	139**	1.0	299.0	F	38	1.84	41	39	0	1631	WBL	*
	NBL	1641	3300	45	312	1430	22	1.0	12.2	B	2	1.33	41	39	49	1641	NBL	
*	NBR	1642	1800	45	2229	1800	124**	1.0	136.0	F	111	2.75	90	90	0	1642	NBR	*

INTERSECTION SUMMARY : TOTAL FLOW = 6654   WEIGHTED AVERAGE DELAY = 934.0   DELAY LOS = F   CYCLE = 90
* CRITICAL MOVEMENT SUMMARY : ICU = 1.35/F   WEIGHTED AVERAGE DELAY = 1182.1   DELAY LOS = F
<<<< INTERSECTION OVERSATURATED - DELAY VALUES MAY BE UNREALISTIC - MITIGATIONS RECOMMENDED >>>>

See New Sheet

Table 2. Dis to CNEL Contour Lines, Green Valley Specific Plan

	ARTERIAL TYPE*	GRADE	TRUCK MIX	AVE. DAILY TRAFFIC		CNEL @ 50'		DISTANCE TO CONTOURS, EXST					DISTANCE TO CONTOURS, CUM				
				EXST	CUM	EXST	CUM	60dB	65dB	70dB	75dB	80dB	60dB	65dB	70dB	75dB	80dB
BONNIE DRIVE																	
Mapes to Rt. 74	5	AT	4.0%	2,970	29,320	61.5	71.0	69	---	---	---	---	340	155	62	---	---
CASE ROAD																	
W. of Goetz	6	AT	4.0%	2,290	17,180	61.0	69.5	62	---	---	---	---	278	120	---	---	---
E. Goetz	6	AT	4.0%	2,780	19,130	62.0	70.0	75	---	---	---	---	300	130	50	---	---
W. of Murrieta	6	AT	4.0%	1,900	19,130	60.5	70.0	56	---	---	---	---	300	130	50	---	---
E. of Murrieta	6	AT	4.0%	3,080	39,520	62.5	73.0	83	---	---	---	---	460	215	90	---	---
W. of Mapes	6	AT	4.0%	1,350	45,840	59.0	73.5	---	---	---	---	---	490	235	100	---	---
E. of Mapes	6	AT	4.0%	140	20,580	51.5	70.0	---	---	---	---	---	300	130	50	---	---
N. of Ethanac	6	AT	4.0%	140	31,800	51.5	72.0	---	---	---	---	---	395	185	75	---	---
ETHANAC ROAD																	
W. of Goetz	6	AT	4.0%	720	2,370	57.0	61.5	---	---	---	---	---	69	---	---	---	---
E. of Goetz	6	AT	4.0%	2,180	5,930	61.0	65.0	62	---	---	---	---	130	50	---	---	---
W. of Murrieta	6	AT	4.0%	1,700	12,890	60.0	68.0	50	---	---	---	---	215	90	---	---	---
Murrieta to Green Valley	6	AT	4.0%	3,080	43,650	62.5	73.5	83	---	---	---	---	490	235	100	---	---
Green Valley to Case	6	AT	4.0%	2,500	47,810	61.5	74.0	69	---	---	---	---	520	255	110	---	---
E. of Case	6	AT	4.0%	2,490	61,790	61.5	75.0	69	---	---	---	---	600	300	130	50	---
W. of Rt. 215	6	AT	4.0%	2,710	58,540	62.0	75.0	75	---	---	---	---	600	300	130	50	---
E. of Rt. 215	6	AT	4.0%	2,710	58,600	62.0	75.0	75	---	---	---	---	600	300	130	50	---
W. of Encanto	6	AT	4.0%	3,890	60,930	63.0	75.0	90	---	---	---	---	600	300	130	50	---
Encanto to Antelope	6	AT	4.0%	3,450	45,080	62.5	73.5	83	---	---	---	---	490	235	100	---	---
Antelope to Rt. 74	6	AT	4.0%	4,490	32,180	64.0	72.0	110	---	---	---	---	395	185	75	---	---
GOETZ ROAD																	
S. of Case	6	AT	4.0%	2,690	3,040	62.0	62.0	75	---	---	---	---	75	---	---	---	---
N. of Ethanac	6	AT	4.0%	2,690	7,500	62.0	66.0	75	---	---	---	---	155	62	---	---	---
S. of Ethanac	6	AT	4.0%	2,390	3,830	61.5	63.0	69	---	---	---	---	90	---	---	---	---
GREEN VALLEY PARKWAY																	
W. of Murrieta	6	AT	4.0%	N/A	16,010	N/A	69.0	---	---	---	---	---	255	110	---	---	---
E. of Murrieta	6	AT	4.0%	200	7,930	52.5	66.0	---	---	---	---	---	155	62	---	---	---
N. of Ethanac	6	AT	4.0%	200	12,620	52.5	68.0	---	---	---	---	---	215	90	---	---	---
MAPES ROAD																	
Case to Bonnie	5	AT	4.0%	2,970	29,320	61.5	71.0	69	---	---	---	---	340	155	62	---	---
MURRIETA ROAD																	
Case to Green Valley	6	AT	4.0%	3,300	32,300	62.5	72.0	83	---	---	---	---	395	185	75	---	---
Between Green Valley Loop	6	AT	4.0%	3,300	25,880	62.5	71.0	83	---	---	---	---	340	155	62	---	---
Green Valley to Ethanac	6	AT	4.0%	3,300	31,620	62.5	72.0	83	---	---	---	---	395	185	75	---	---
S. of Ethanac	6	AT	4.0%	3,530	34,970	63.0	72.5	90	---	---	---	---	428	200	83	---	---

Table 2, continued

	ARTERIAL TYPE*	GRADE	TRUCK MIX	AVE. DAILY TRAFFIC		CNEL @ 50'		DISTANCE TO CONTOURS, EXST					DISTANCE TO CONTOURS, CUM				
				EXST	CUM	EXST	CUM	60dB	65dB	70dB	75dB	80dB	60dB	65dB	70dB	75dB	80dB
ROUTE 74																	
W. of Rt. 215	7	AT	9.9%	10,060	26,430	68.5	73.0	235	100	---	---	---	460	215	90	---	---
Rt. 215 to On ramp	7	AT	10.0%	10,220	26,600	68.5	73.0	235	100	---	---	---	460	215	90	---	---
On ramp to Off ramp	7	AT	10.0%	11,020	24,960	69.0	72.5	255	110	---	---	---	428	200	83	---	---
Off ramp to Antelope	7	AT	10.0%	15,960	24,710	70.5	72.5	320	143	56	---	---	428	200	83	---	---
E. of Antelope	7	AT	10.0%	17,280	50,870	71.0	76.0	340	155	62	---	---	680	340	155	62	---
ROUTE 215																	
N. of Rt. 74	7	AT	11.7%	32,500	55,160	74.5	77.0	560	278	120	---	---	760	395	185	75	---
Rt. 74 to Ethanac	7	AT	14.9%	24,100	46,200	73.5	76.5	490	235	100	---	---	720	368	170	69	---
S. of Ethanac	7	AT	14.9%	23,100	36,530	73.0	75.5	460	215	90	---	---	640	320	143	56	---

*ARTERIAL TYPES:
1. Two Lane Highway, 35 mph
2. Two Lane Highway, 40 mph
3. Two Lane Highway, 45 mph
4. Four Lane Highway, 35 mph
5. Four Lane Highway, 40 mph
6. Four Lane Highway, 45 mph
7. Six Lane Highway, 50-65 mph
8. Eight Lane Freeway, 50-65 mph

NOTE: 'AT', 'ABOVE', and 'BELOW' refer to the grade of the arterial relative to the surrounding area.

Table 3. Distance to CNEL Contour Lines Generated by Train Activity on the Santa Fe Railroad

CNEL Contour, dB(A)	Distance from Track, ft.
65	35
60	100
55	260

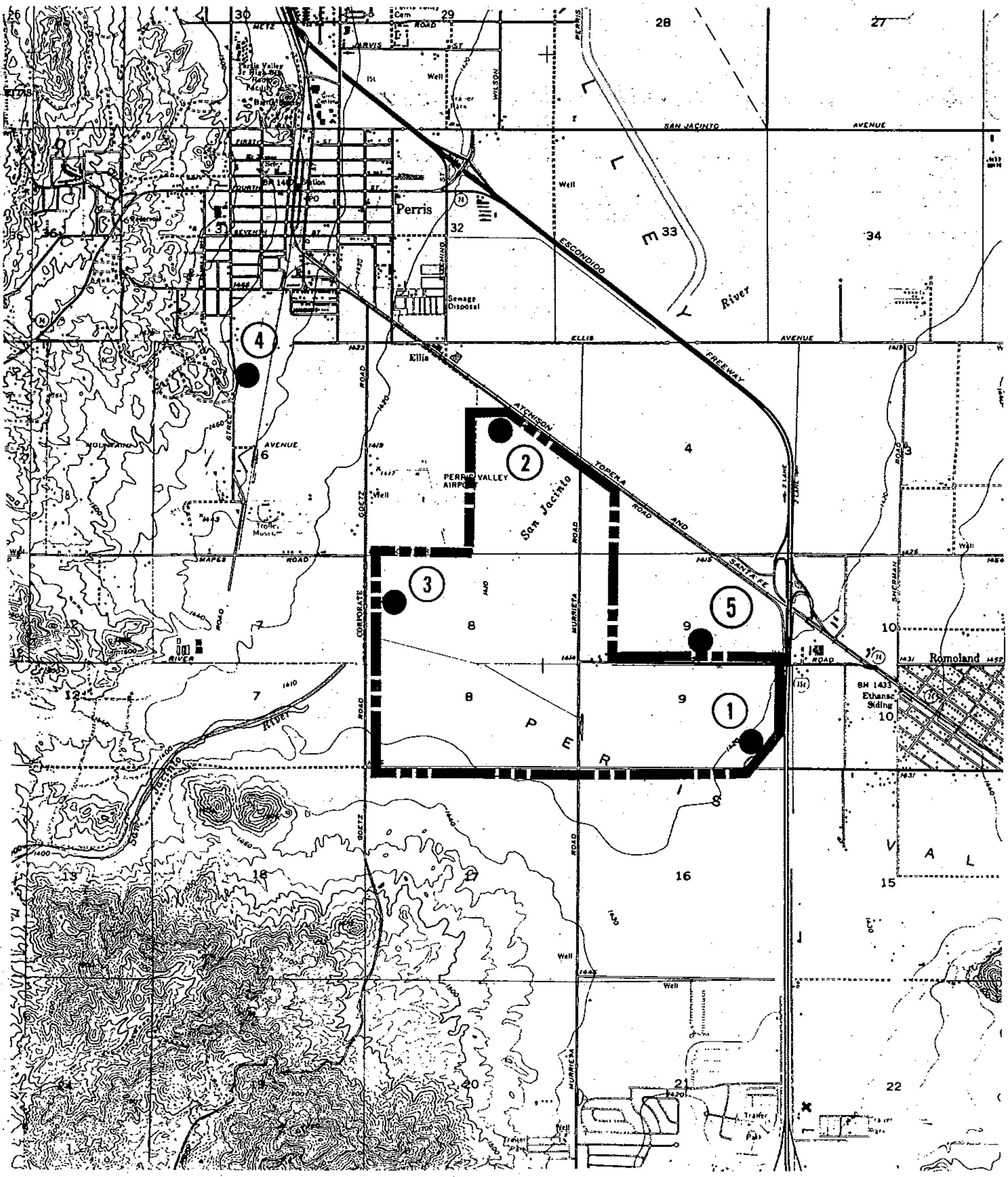


Figure 1. Location of Project Site and Noise Measurement Positions

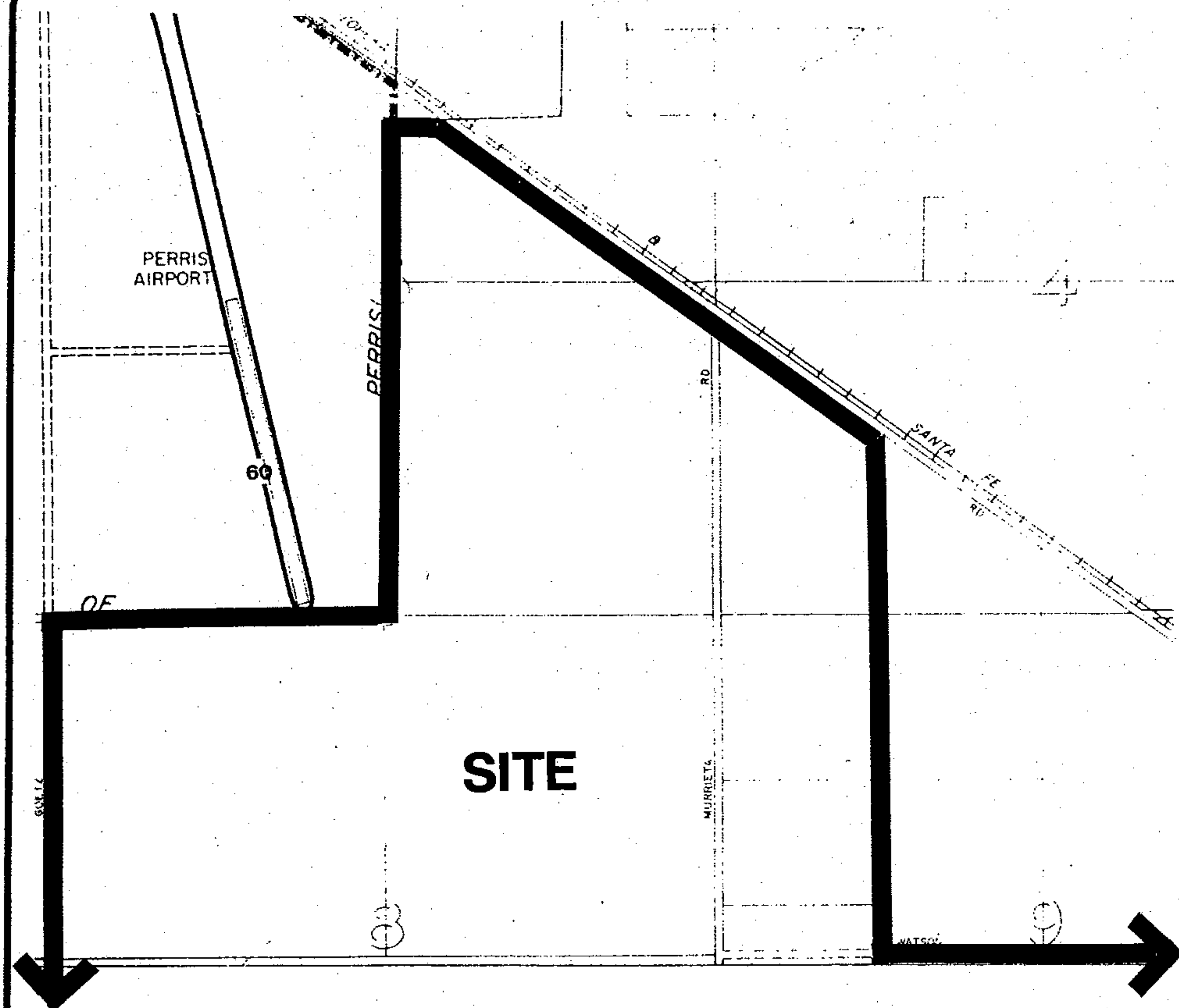


Figure 4. Location of Project Site Relative to CNEL Contours from Perris Valley Airport

Source: Noise Element of the General Plan

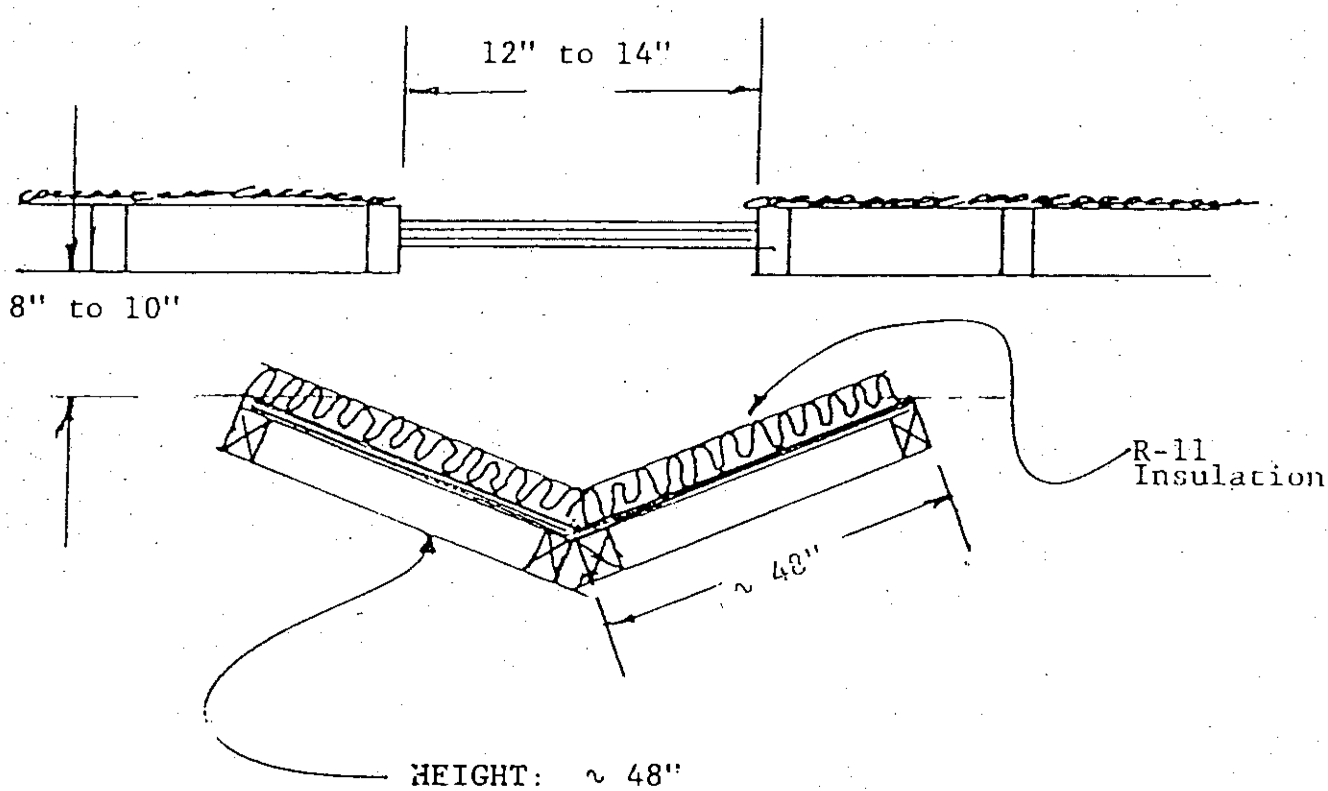


Figure 5. Attic Vent Installation with Acoustic Baffle for Noise Control

Enclosure 1

Sound Control Specifications

1.0 PARTY WALL AND DIVISION WALL SEPARATION ASSEMBLIES

1.1 Wall Assembly Construction

1. Double row of 2" x 4" studs 16" o.c. on separate plates spaced 1" apart.

2. 1/2" type X gypsum board screwed 12" o.c. each side.

3. 3-1/2" thick attenuation blankets in both stud cavities.

Sound Transmission Class (STC): 59
Test Authority: Owens/Corning Fiberglas, OCF W-28-69

1.2 Framing

1. All studs in party walls shall be staggered (one wall from the other).

2. Studs shall not override plates of party or division walls. Knot holes, warped lumber, splintered wood, splices, chips, and sawcuts shall not be permitted at vertical or horizontal party wall connections.

3. Framing at built-up corners and joists to wall connections along party walls shall fit tightly without air gaps. Special care shall be taken that dry wall nailer blocking meets this condition between joists.

4. Double blocking between ceiling joists shall be positioned to eliminate flanking of sound over party or division walls at the joists.

5. Ribbon caulking (e.g., Lowry's #10) shall be used between slab and sole plate and between double sole plates (at second floor) at all party walls.

6. Concrete pour material shall not flow onto party wall sole plates. Concrete shall not be poured onto or into party wall separation cavities between plates.

7. All wall insulation shall be snugly fitted and/or stapled between studs.

8. Wallboard shall be well fitted or apply caulking to the intersections of all floors, ceilings and walls with plywood and/or wallboard where the wallboard is not snugly fitted.

Enclosure 1, continued.

9. Gypsum wallboard shall continue to the roof line on one side of the wall to avoid flanking of sound through the attic space.

10. Caulking for all party or division walls shall be used in strict conformance with manufacturer's specifications.

11. Resilient channels, where used, shall be U.S. Gypsum Corporation Type RC-1.

2.0 FLOOR/CEILING SEPARATION ASSEMBLIES

2.1 Floor/Ceiling Assembly Construction

1a. 44 oz. carpet over 40 oz. hair pad.
 b. Cushioned vinyl flooring.

2. 2" x 10" joists, 16" o.c.

3. 5/8" plywood subfloor nailed to joists.

4. 1-1/2" lightweight concrete, 15 psf.

5. R-11 insulation batts.

6. Resilient channels, 24" o.c.

7. 5/8" type X gypsum board screwed 12" o.c. to channels.

Sound Transmission Class (STC): 58
Test Authority: Geiger and Hamme, USDA-2ST, 1970.

Impact Insulation Class (IIC): a. 67
b. 51
Test Authority: a. Geiger and Hamme, USDA-2ST, 1970.
b. Cedar Knolls Labs, 7711.12, 1977.

2.2 Framing

1. All insulation shall be snugly fitted and/or stapled between the joists.

2. Gypsum board shall be well fitted or apply caulking to the intersections of plywood and/or gypsum wallboard where the gypsum wallboard is not snugly fitted.

3. Caulking for all floor/ceiling assemblies shall be used in strict conformance with manufacturer's specifications.

4. Resilient channels, where used, shall be U.S. Gypsum Corporation Type RC-1.

Enclosure 1, continued.

3.0 Plumbing

1. Waste and water supply piping shall be isolated from building construction at points of contact with not less than 1/4" of felt padding. (Refer to Details 1, 2 and 4.)

2. Piping and/or ducting within floor/ceiling assemblies shall be supported from the joists and completely isolated from the ceiling.

3. The stud bay or joist cavity surrounding the supply and waste piping shall be filled with open-faced fiberglas or equivalent sound absorptive material.

4. Common feed lines directly across party walls shall not be permitted. (Refer to Detail 5.)

5. The elbow below the stool waste outlet shall be isolated from the position blocks with carpet padding or a felt material. The entire space around the elbow shall be filled with open-faced fiberglas or equivalent sound absorptive material. (Refer to Detail 3.)

4.0 Ducting

1. Intake or exhaust duct runs shall not be positioned within the partition walls of common units.

2. Sheet metal ducts in floor/ceiling assemblies of the upper floor units shall not be secured to the ceiling joists of the units below.

3. Bathroom exhaust fan housings shall be surrounded with fiberglas or equivalent sound absorptive material

4. Bathroom exhaust fan duct runs shall include at least a 6 foot length of fiberglas lined ducting in the duct run.

5.0 Electrical

1. Television and telephone outlets shall not be placed in party or division walls.

2. Electrical boxes (switches, outlets, wall fixtures, etc.) in opposite faces of party or division walls shall be separated horizontally by not less than 24 inches.

3. Plastic sealer shall be wrapped around back, sides, top and bottom of all electrical boxes in the party walls. Boxes shall be backed by R-11 insulation batts.

Enclosure 1, continued.

4. Knockout plates on electrical boxes in all party or division walls shall not be bent or removed where conduits are not connected to the box.

6.0 **Kitchens and Bathrooms**

1. The party wall behind a tub and/or shower assembly shall be constructed consistent with the party wall specifications. Wallboard shall be installed behind all tubs and/or showers which are adjacent to party walls.

2. Voids between the wall and tub/shower units shall be completely filled with fiberglas insulation or equivalent sound absorptive material.

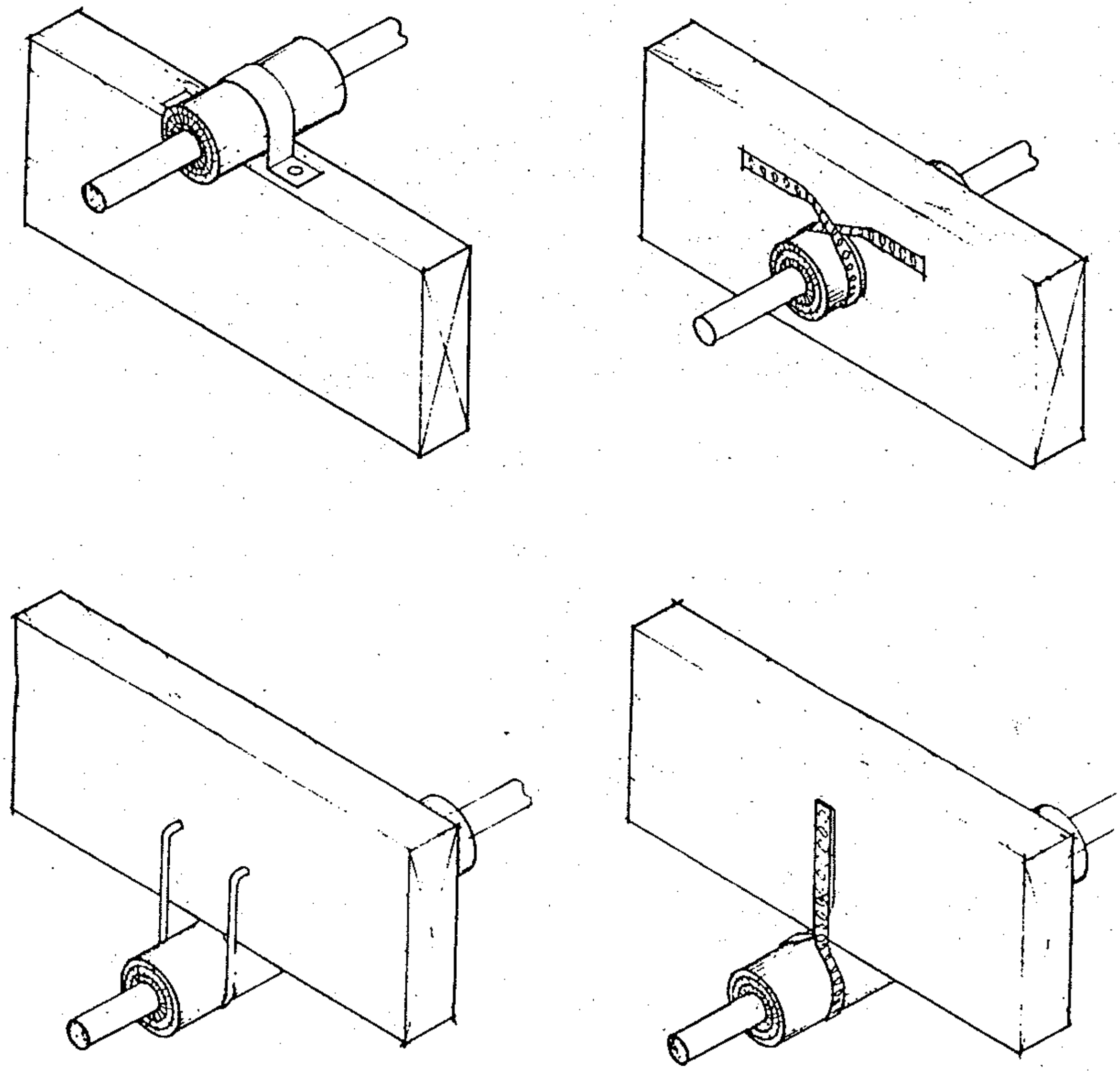
3. Kitchen dishwashers and disposals shall be isolated from the frame by resilient mounts. Flexible hose couplings for inlet and outlet water connections on the dishwasher shall be used so that no rigid connection exists.

7.0 **Fireplaces**

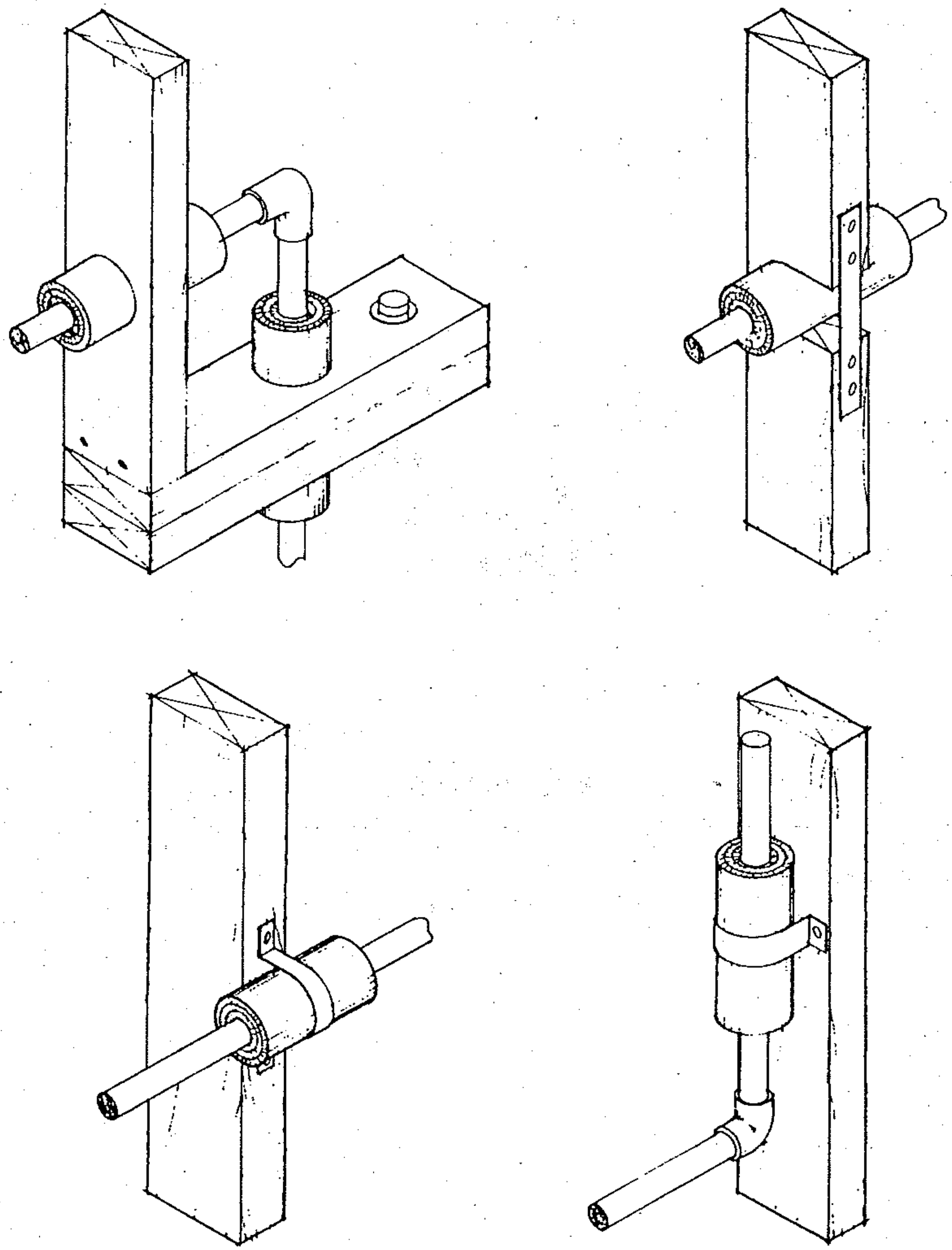
1. All fireplaces shall have a tight fitting manually operated flue damper.

2. R-11 batts shall be installed in all walls of fireplace chimney chases to the extent permitted by the Uniform Building Code and local requirements.

3. Floor-fill shall be poured around the fireplace flue where it penetrates the second floor.

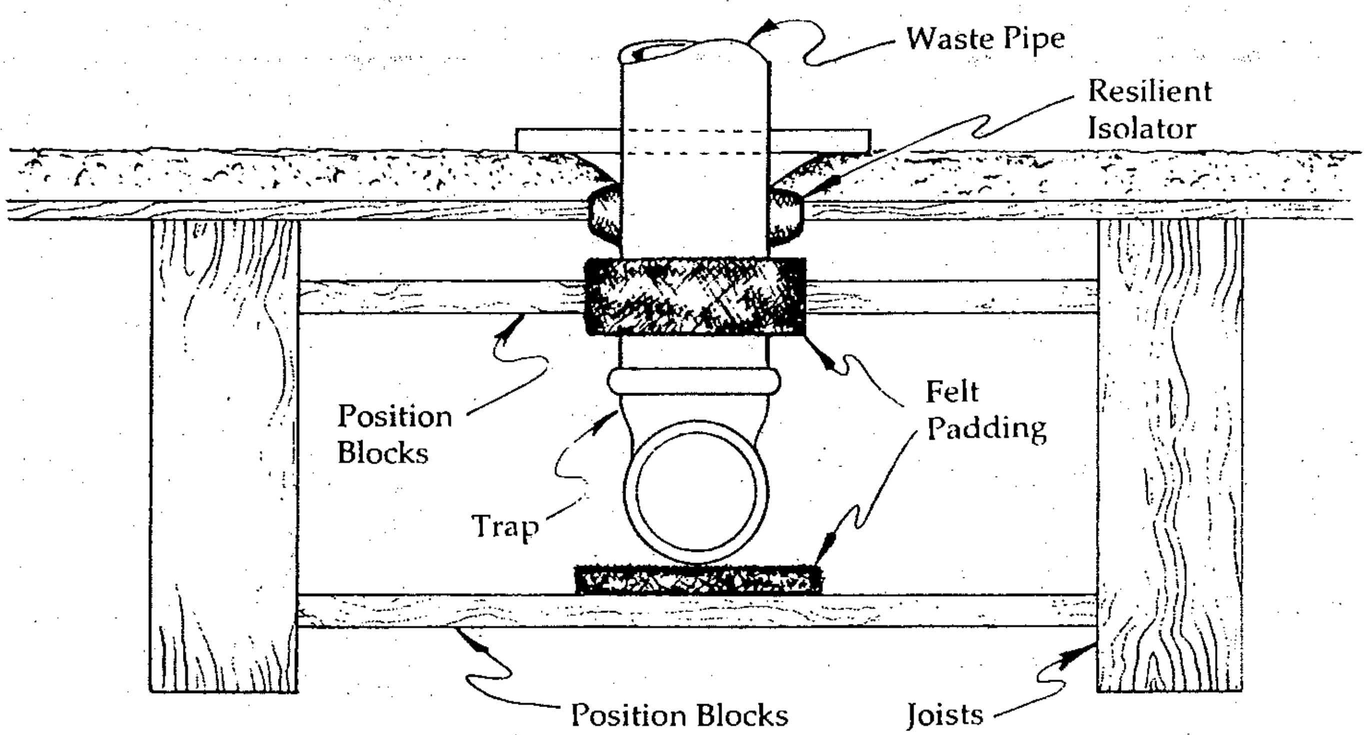


Pipe Isolation at
Floor / Ceiling Joists
Detail 1



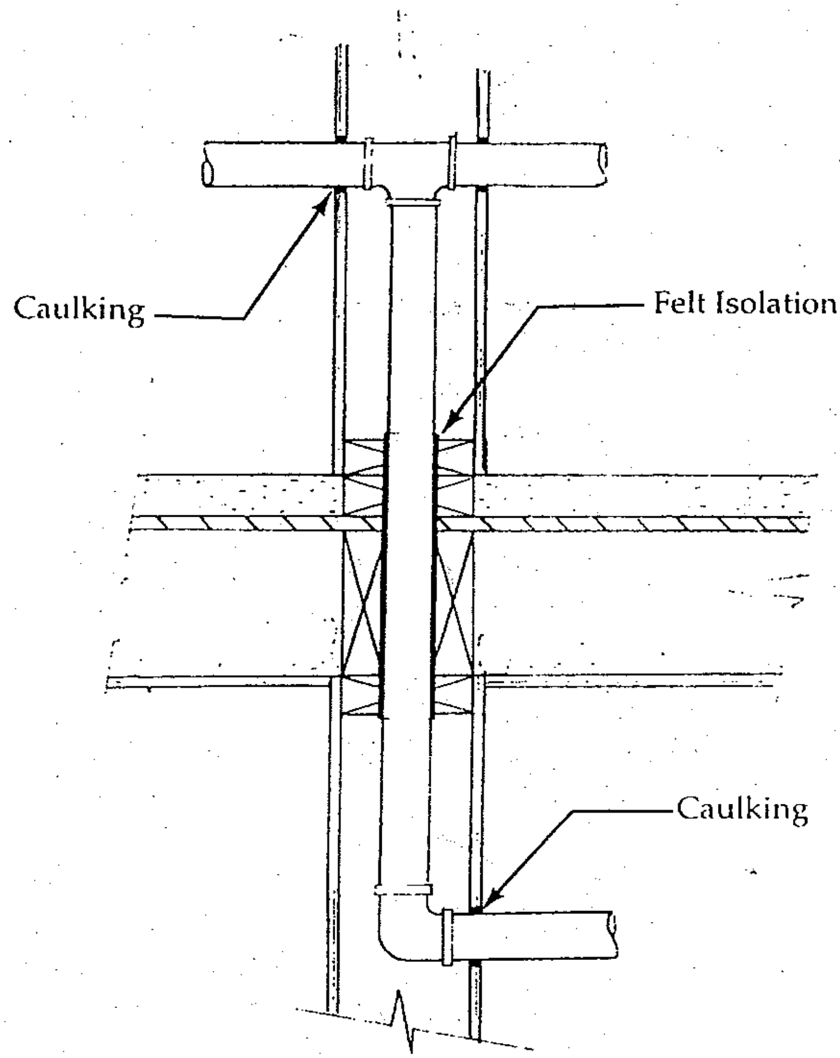
Pipe Isolation at Stud Walls

Detail 2



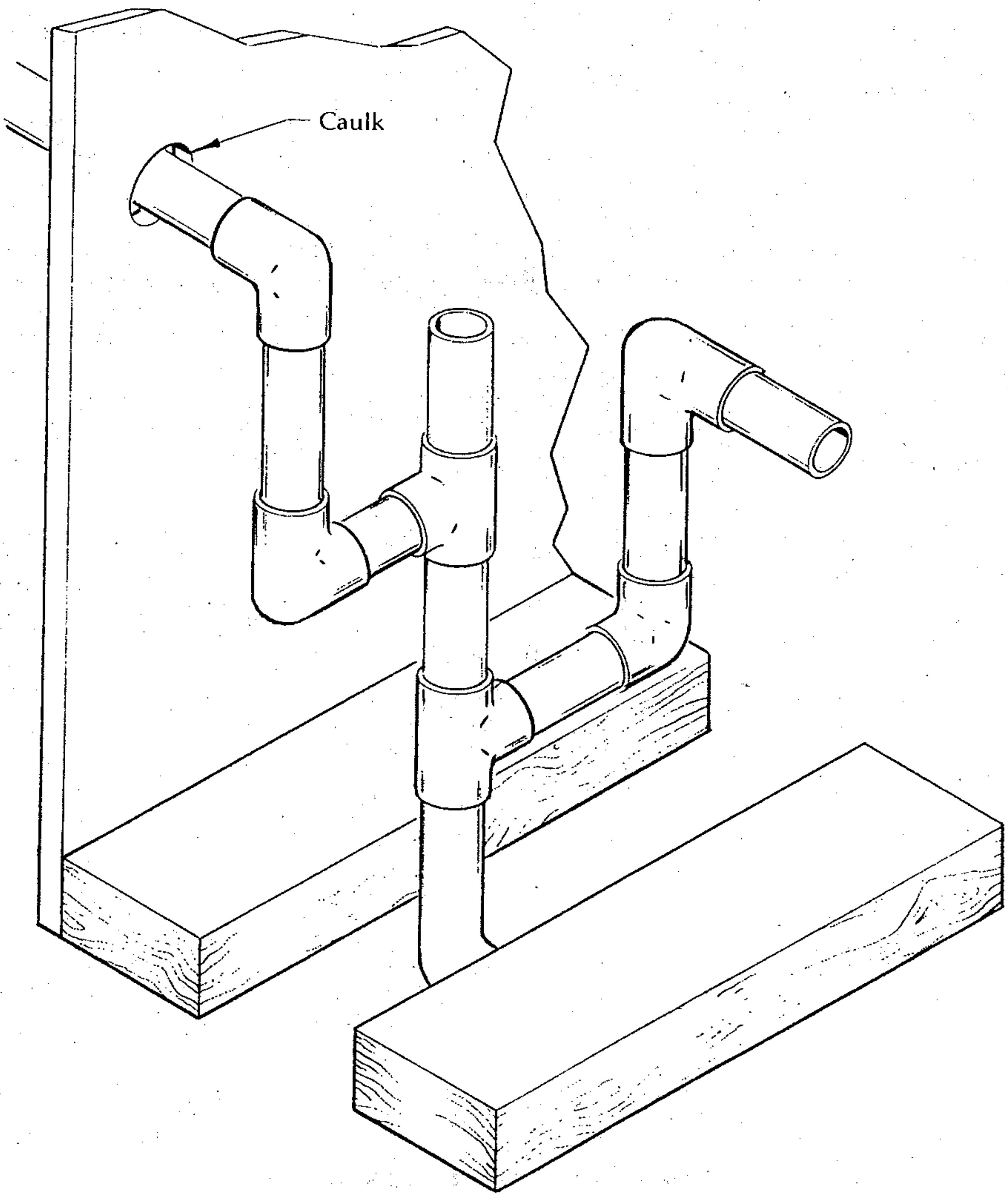
**Waste Pipe Isolation at
Floor / Ceiling Separation**

Detail 3



Isolation of Waste and Supply Piping at Floor / Ceiling Separation

Detail 4



Supply Line Isolation Branch Between Units

Detail 5

APPENDIX I

NOISE EVALUATION CRITERIA AND STANDARDS

A description of the character of a particular noise requires the following:

1. amplitude and amplitude variation of the acoustics wave,
2. frequency (pitch) content of the wave motion, and
3. duration of the noise.

The scale of measurement which is most useful in community noise measurement is the A-weighted sound pressure level, commonly called the A-level or dB(A). It is measured in decibels to provide a scale with the range and characteristics most consistent with that of people's hearing ability.

A-Weighted Sound Level

To establish the A-weighted sound level, the acoustics signal is detected by the microphone and then filtered (heavily weighting those portions of the noise which are most annoying to individuals). This weighting of sound energy corresponds approximately to the relative annoyance to human senses of noise experienced at various frequencies. The A-weighted sound pressure levels of a few typical sources of noise experienced by people within the general vicinity of the subject project are indicated in Figure I-1.

The A-weighted sound level of traffic noise and other long-term noise producing activities within and around the community varies considerably with time. Measurements of this varying level are accomplished by recording the values of the noise for a specified period of time. An analysis of these recordings yields the A-level values for noise which are useful in assessing the potential annoyance of the disturbance. For purposes of this study, the following values have been used:

L_{90} - The near minimum A-level. 90% of the time, the A-level is greater than this value.

L_{50} - The central tendency of A-level. This value is exceeded 50% of the time during the measurement period.

L_{10} - The near maximum A-level. This value is a measure of the long-term annoyance of the noise. 10% of the time, the A-level is greater than this value.

L_{eq} - The energy equivalent level is representative of the long-term annoyance potential of the noise.

Readings of these measures are recorded to provide representative samples of the noise during the time period being examined (i.e., peak traffic period, morning, afternoon, night, etc.).

Community Noise Equivalent Level (CNEL)

It is recognized that a given level of noise may be more or less tolerable depending on the duration of exposure experienced by an individual. There are numerous measures of noise exposure which consider not only the A-level variation of noise but also the duration of the disturbance. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the community noise equivalent level (CNEL). This measure considers the weighted average noise levels for the evening hours (7:00 p.m. to 10:00 p.m.) and increases the levels by 5 dB, and increases the late evening and morning hours' noise levels (10:00 p.m. to 7:00 a.m.) by 10 dB. The daytime noise levels are combined with these weighted levels and are averaged to obtain a CNEL value. Figure I-2 indicates the outdoor CNEL at typical locations.

Acceptable Exterior Noise Exposures - CNEL

Figure I-3 indicates the CNEL considered acceptable for various land use categories. In general, exterior noise exposures at residential locations should not exceed a CNEL of 65 dB.

The U. S. Environmental Protection Agency has promulgated a recommended policy for exterior noise exposures which, in effect, suggest that a CNEL which is no greater than 55 dB should be permitted within exterior living spaces. However, they emphasize that this level of exposure may not be economically feasible or, in many cases, may not be a practical level to achieve.

Acceptable Interior Noise Exposures - CNEL

California's Noise Insulation Standards were officially adopted by the California Commission on Housing and Community Development in 1974. The regulations became effective on August 22, 1974. The ruling states that "interior community noise equivalent level (CNEL) attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room". Additionally, the Commission specified that residential buildings or structures to be located within exterior community noise equivalent level contours of 60 dB or greater of an existing or adopted freeway, expressway, parkway, major street, thoroughfare, railroad, rapid transit line, or industrial noise source shall require an acoustical analysis showing that the building has been designed to limit intruding noise to the level prescribed (interior CNEL of 45 dB).

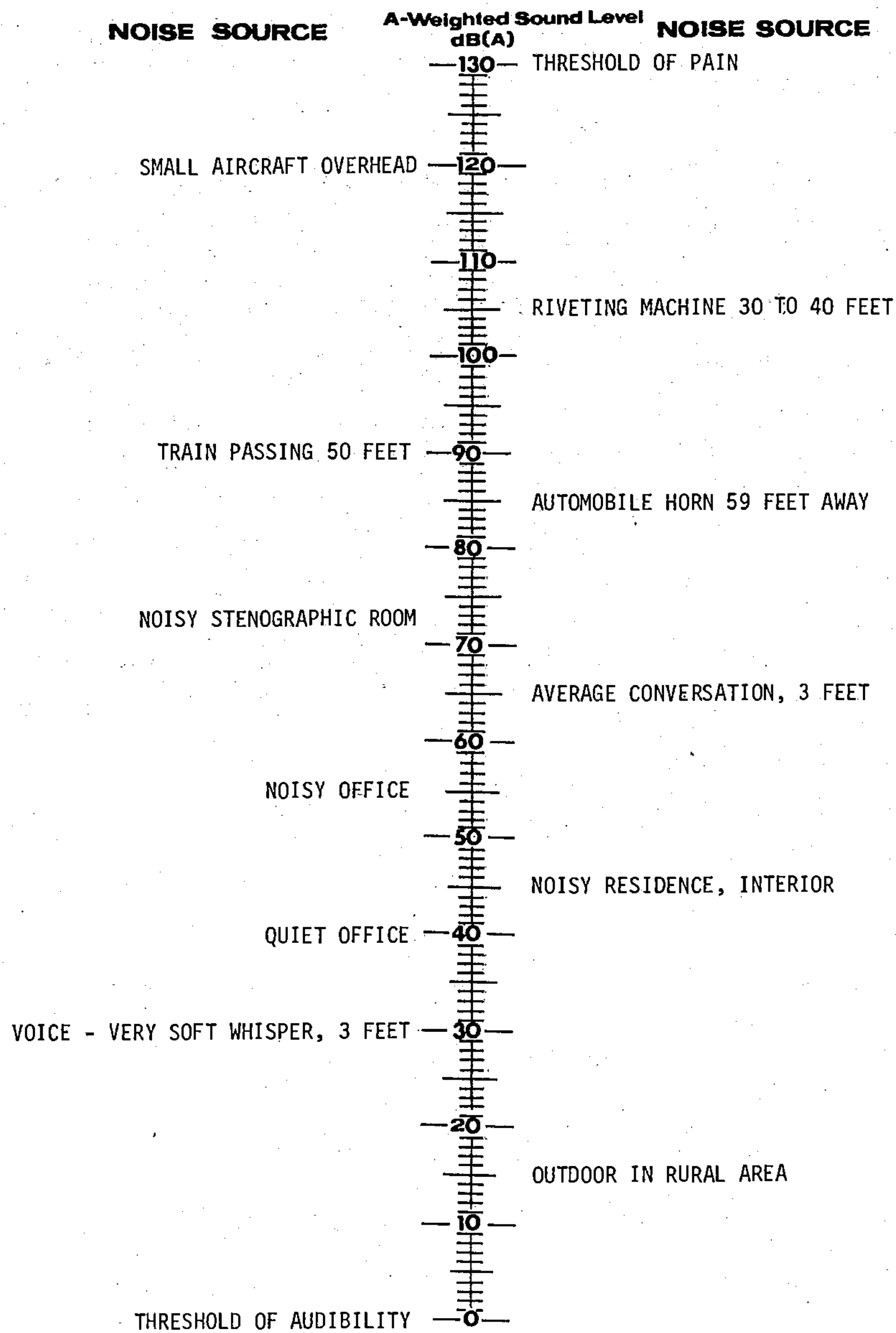
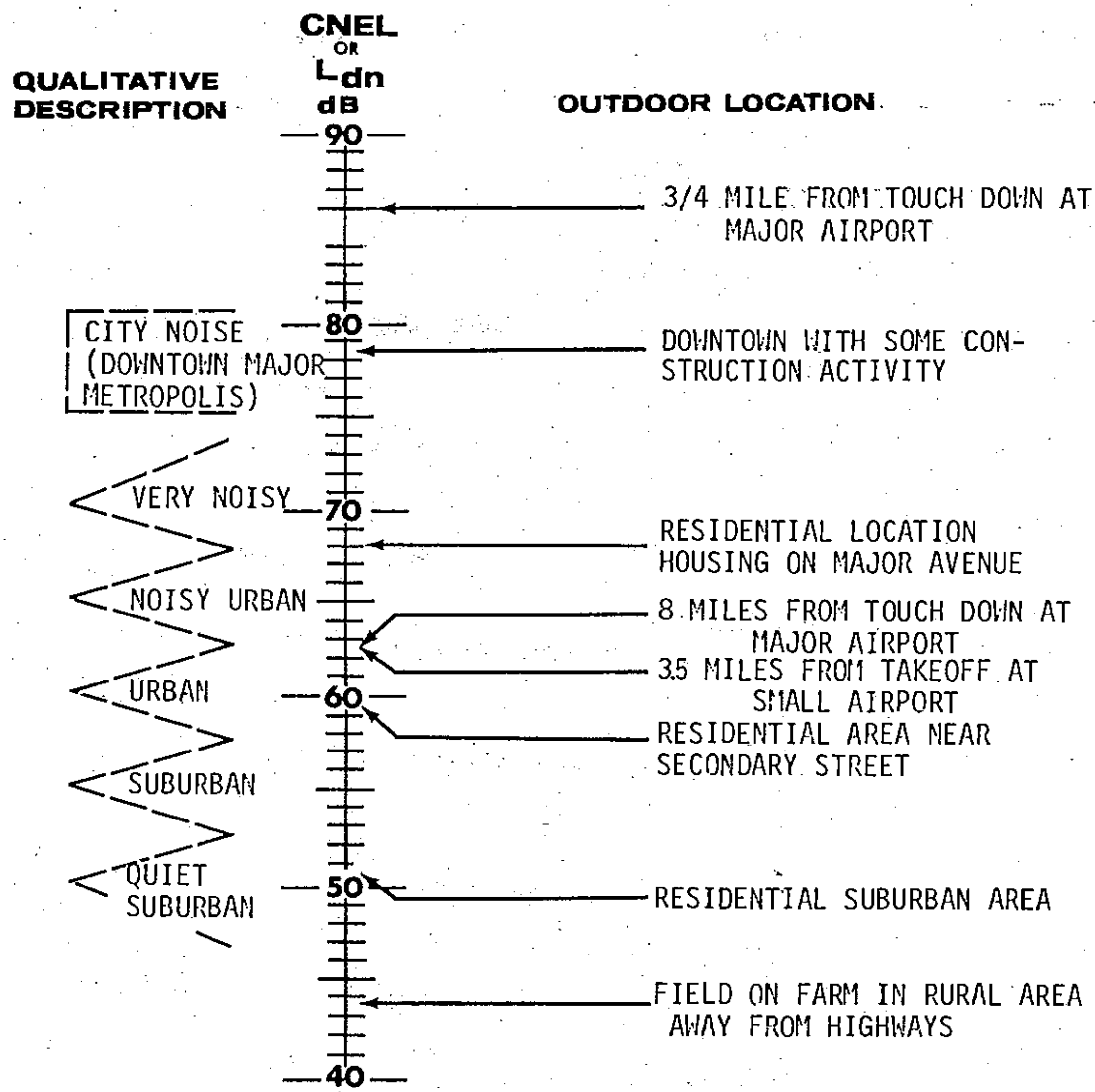
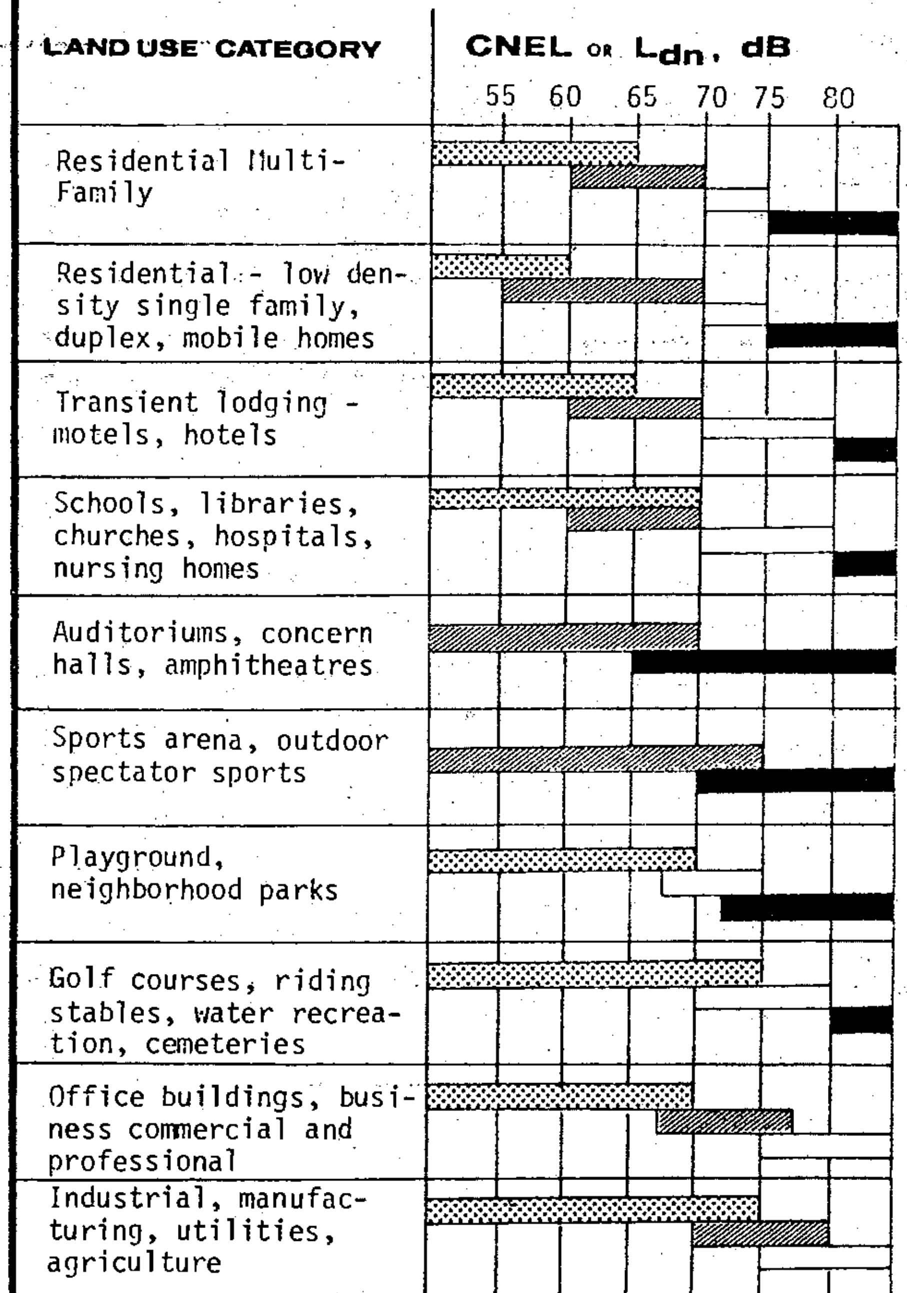


Figure I-1. Representative Noise Sources and Sound Levels



SOURCE: In part taken from, "Information on Levels of Environmental Noise...", U.S. Environmental Protection Agency, 550/9-74-004, March 1974.

Figure I-2. Outdoor Noise Exposures at Various Locations



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

SOURCE: In part taken from "Aircraft Noise Impact Planning Guidelines for Local Agencies", U.S. Dept. of Housing and Urban Development, TE/NA-472, November 1972.

Figure I-3. Land Use Compatibility for Community Noise Environments

APPENDIX II

Noise Measurement Equipment and Listing of the Noise Measurements

Noise measurements were obtained by use of precision sound level meters (noise monitors, per American National Standard ANSI SI.4-1971). It is hereby certified that the information contained in the data listing is the result of completely and carefully conducted measurements and is, to the best of the undersigned's knowledge, true and correct in all respects.

John J. Van Houten, P.E.
Consulting Engineer in Acoustics

Table II -1

NOISE MEASUREMENT EQUIPMENT

The following items of equipment were used to obtain the noise measurements:

1. <u>Sound Level Meter</u>

   Larson-Davis Laboratories, LDL Type 700, S/N 700B0624
   Larson-Davis Laboratories, LDL Type 700, S/N 700B0625

2. <u>Acoustical Calibration</u>

   Acoustical Calibrator, B & K Type 4230 (94 dB @ 1000 Hz), S/N 584622

A·WEIGHTED SOUND LEVEL

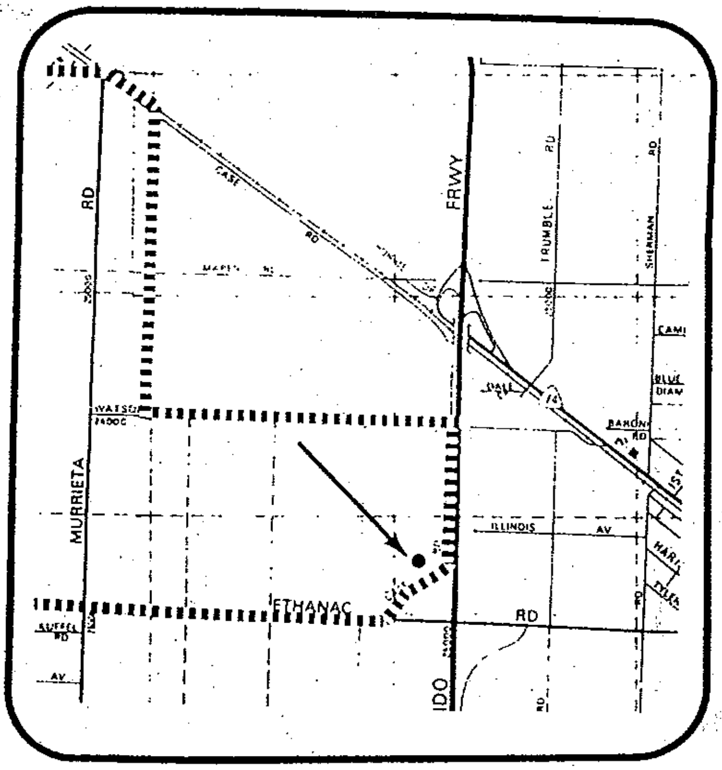
POSITION NO.: 1

PROJECT GREEN VALLEY SPECIFIC PLAN

MEASUREMENT POSITION 110' N. of Case Road, 500' W. of I-215

DATE 4-4-89 TIME 10:45 ☒ A.M. ☐ P.M.

SOURCE Traffic on I-215 Freeway



N	L_N
1	60.0
10	54.0
50	50.0
90	46.0
99	44.0
L_{eq}	51.8

REMARKS:

J. J. VAN HOUTEN & ASSOCIATES, Inc.

SHEET 1 OF 4

A·WEIGHTED SOUND LEVEL

POSITION NO.: 2

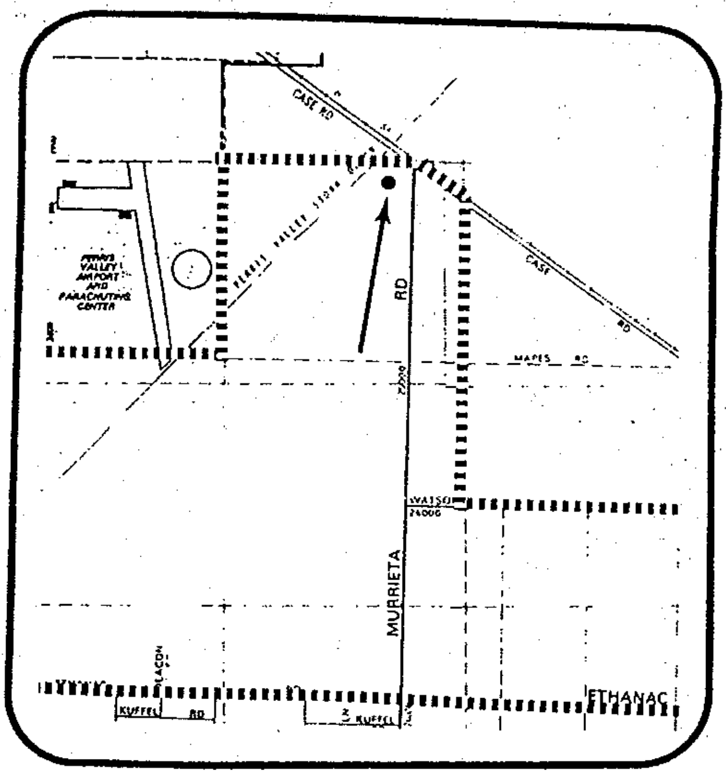
PROJECT GREEN VALLEY SPECIFIC PLAN

MEASUREMENT POSITION 30' W. of Murrieta Road, 100' S. of Case

☒ A.M.
☐ P.M.

DATE 4-4-89 TIME 11:10

SOURCE Traffic on Murrieta and Case Road



N	L_N
1	77.0
10	67.5
50	59.5
90	50.0
99	48.0
Leq	64.6

REMARKS:

J. J. VAN HOUTEN & ASSOCIATES, Inc.

SHEET 2 OF 4

A-WEIGHTED SOUND LEVEL

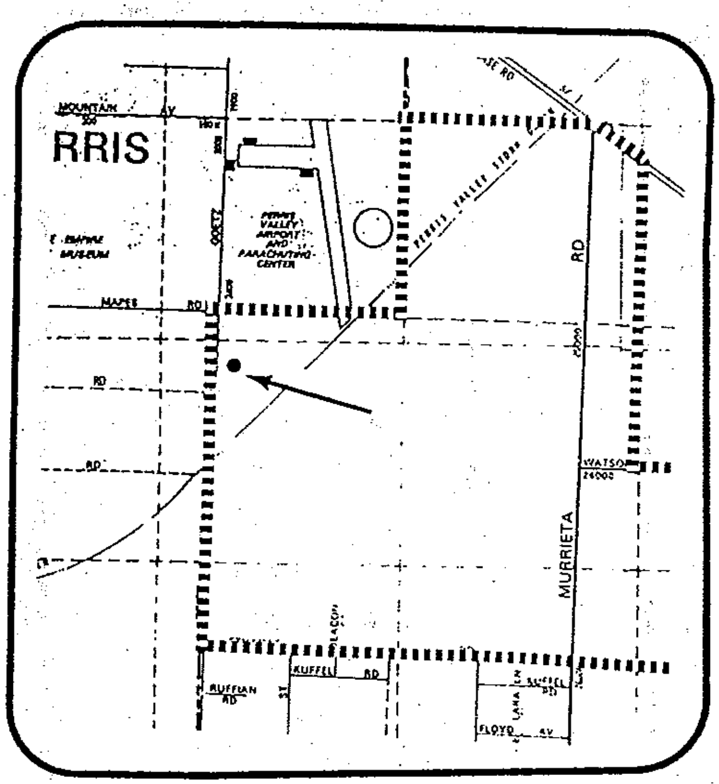
POSITION NO.: 3

PROJECT GREEN VALLEY SPECIFIC PLAN

MEASUREMENT POSITION 102' E. of Goetz Road ☒ A.M.

DATE 4-4-89 TIME 11:40 ☐ P.M.

SOURCE Traffic on Goetz Road



N	L_N
1	62.0
10	57.5
50	51.0
90	41.0
99	39.5
Leq	54.0

REMARKS:

Measurement taken at approximately 1000' S. of Perris Valley Airport.

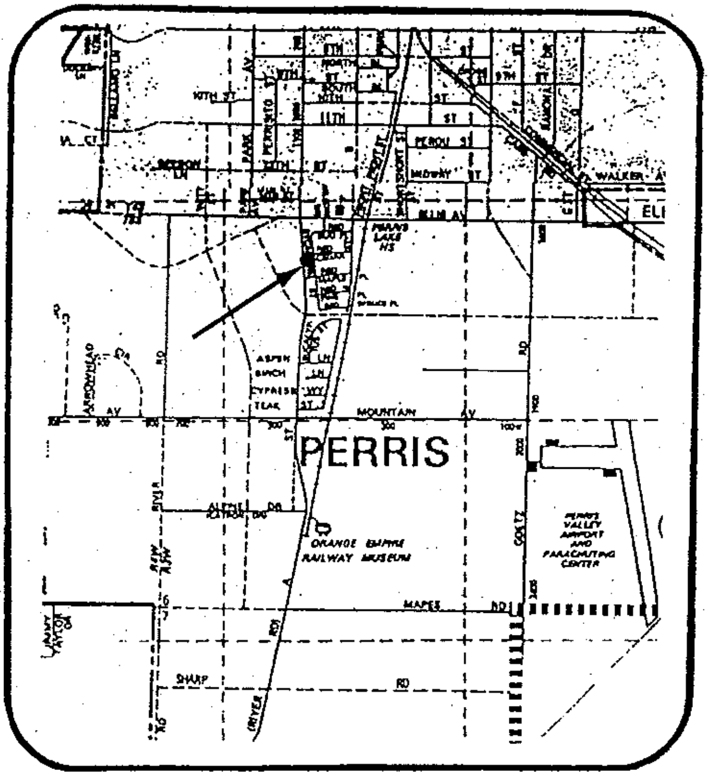
J. J. VAN HOUTEN & ASSOCIATES, Inc.

SHEET 3 OF 4

A·WEIGHTED SOUND LEVEL

POSITION NO. 4

PROJECT: GREEN VALLEY SPECIFIC PLAN
POSITION: BACK YARD OF 1712 SYCAMORE STREET
SOURCE: TRAFFIC ON A STREET
DATE: APR. 4, 1989 PEAK HOUR: 7:00-8:00
SOUND LEVELS: L90= 41.0 L50= 50.5 L10= 60.5 Leq= 58.0 dB(A)



Time From	To	Sound Level, dB(A)
07:00	08:00	58.0
08:00	09:00	57.5
09:00	10:00	55.5
10:00	11:00	53.5
11:00	12:00	54.0
12:00	13:00	54.5
13:00	14:00	57.0
14:00	15:00	55.0
15:00	16:00	54.0
16:00	17:00	53.5
17:00	18:00	52.5
18:00	19:00	51.5
19:00	20:00	49.0
20:00	21:00	48.0
21:00	22:00	47.5
22:00	23:00	47.0
23:00	00:00	47.5
00:00	01:00	42.0
01:00	02:00	39.0
02:00	03:00	40.0
03:00	04:00	45.0
04:00	05:00	51.0
05:00	06:00	53.0
06:00	07:00	55.0

DAY-NIGHT SOUND LEVEL: 57.1 dB

APPENDIX III

Train Noise Analysis

TABLE 1. VARIATION IN CNEL LEVEL WITH DISTANCE FROM SOURCE

GREEN VALLEY SPECIFIC PLAN — PROJECT NO. 2075-89
SANTA FE RAIL ROAD — May 12, 1989

Average SENEL this location=107.8 CNEL= 67.4 Dist. Adj. Exp.= 0.0
Train Length = 500 Grade = 0
Train speed = 10 No. of trains - Day= 1 Eve= 1 Night= 0
Time deltas: Engine = 10.29 Car = 15.31

Distance from Source to Receiver: 20
Left Side of Segment: -999999 Right Side: 999999

DISTANCE SOURCE TO RECEIVER	AVERAGE SENEL	CNEL
20 Ft.	107.8 dB(A)	67.4 dB(A)
40	104.7	64.3
60	102.8	62.5
80	101.5	61.1
100	100.4	60.1
120	99.5	59.2
140	98.8	58.4
160	98.1	57.7
180	97.5	57.1
200	96.9	56.6
220	96.4	56.1
240	95.9	55.6
260	95.5	55.1
280	95.1	54.7
300	94.7	54.3
320	94.3	54.0
340	94.0	53.6
360	93.6	53.3
380	93.3	53.0
400	93.0	52.7
420	92.7	52.4
440	92.5	52.1
460	92.2	51.9
480	92.0	51.6
500	91.7	51.4

APPENDIX IV

Traffic Noise Analysis

Methodology

Commercial

Calculations for the Leq(12)s due to traffic on Case Road, Ethanac Road and Goetz Road were performed using a 24-hour measurement adjacent to Allen Boulevard in the City of Pasadena. The measurement indicated a CNEL of 65.9 dB and an Leq(12) of 64.6 dB(A). (Refer to Sheet 2.) The projected CNEL at the nearest commercial building face to Case Road (east of Murrieta) is about 73.0 dB. Therefore, the Leq(12) is obtained as follows:

Case Road: Leq(12) = 64.6 + (73.0 - 65.9)
= 71.7 dB(A)

Leq(12)s for Ethanac Road and Goetz Road are calculated based on the same methodology.

A limited measurement adjacent to the Route 5 freeway indicates an Leq(12) of 66.3 dB(A) and and Leq of 67.5 dB(A) between the hours of 3:00 and 4:00 pm. (Refer to Sheet 1.)

The projected Leq at the nearest commercial building face to the Route 215 freeway is 76.5 dB(A) due to traffic on the arterial.

Assuming the same traffic distribution exists on the Route 215 freeway as exists on Route 5, the Leq(12) on this arterial may be calculated as follows:

Leq(12) = 76.5 + (66.3 - 67.5)
= 75.3 dB(A) due to traffic on the Route 215 freeway.

A·WEIGHTED SOUND LEVEL

POSITION NO.___

PROJECT: SAN JOAQUIN HILLS CORRIDOR
POSITION: REAR YARD FACING THE ROUTE 5 FREEWAY, 29520 SPOTTED BULL
SOURCE: TRAFFIC ON ROUTE 5 FREEWAY
DATE: MAY 6-7, 1986 PEAK HOUR: 16:00-17:00
SOUND LEVELS: L_{90}= 65.0 L_{50}= 67.0 L_{10}= 69.0 L_{eq}= 67.5 dB(A)

Time From	Time To	Sound Level, dB(A)
07:00	08:00	64.6
08:00	09:00	64.6
09:00	10:00	64.8
10:00	11:00	64.8
11:00	12:00	65.8
12:00	13:00	65.4
13:00	14:00	66.7
14:00	15:00	67.5
15:00	16:00	67.5
16:00	17:00	67.5
17:00	18:00	67.5
18:00	19:00	66.9
19:00	20:00	64.3
20:00	21:00	63.3
21:00	22:00	62.6
22:00	23:00	62.0
23:00	00:00	58.6
00:00	01:00	57.9
01:00	02:00	56.8
02:00	03:00	57.9
03:00	04:00	58.3
04:00	05:00	59.8
05:00	06:00	63.9
06:00	07:00	65.8

CNEL = 69.0 dB LEQ(12) = 66.3 dB(A)

Sheet ___ of ___

A·WEIGHTED SOUND LEVEL

POSITION NO.______

PROJECT: CITY OF PASADENA
POSITION: 1224 ALLAN BLVD.
SOURCE: TRAFFIC ON ALLAN BLVD.
DATE: JULY 17, 1984 PEAK HOUR: 08:00-09:00
SOUND LEVELS: L_{90}= 55.0 L_{50}= 63.0 L_{10}= 68.0 L_{eq}= 65.4 dB(A)

Time From	To	Sound Level, dB(A)
07:00	08:00	65.0
08:00	09:00	65.4
09:00	10:00	63.9
10:00	11:00	65.4
11:00	12:00	63.9
12:00	13:00	64.6
13:00	14:00	64.1
14:00	15:00	63.7
15:00	16:00	64.5
16:00	17:00	64.5
17:00	18:00	65.2
18:00	19:00	64.1
19:00	20:00	63.0
20:00	21:00	61.8
21:00	22:00	61.6
22:00	23:00	60.1
23:00	00:00	57.1
00:00	01:00	55.5
01:00	02:00	52.5
02:00	03:00	48.0
03:00	04:00	48.7
04:00	05:00	48.9
05:00	06:00	57.9
06:00	07:00	61.3

CNEL = 65.9 dB LEQ(12) = 64.6 dB(A)

REMARKS:

SITE 58' FROM ALLAN BLVD.

APPENDIX G

CULTURAL RESOURCES TECHNICAL REPORT

AN ARCHAEOLOGICAL ASSSESSMENT OF APPROXIMATELY 160 ACRES OF LAND, PROPOSED BY THE GARY COOK CORPORATION LOCATED SOUTH OF THE CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

Florian Martinez Associates
15641 Red Hill Avenue, Suite 205
Tustin, California 92680-7383

Prepared by:

Hatheway & McKenna
23301-A La Glorieta
Mission Viejo, California 92691

Principal Investigator: Jeanette A. McKenna
Author and Field Director: Melinda C. Romano

February 16, 1989
Job No. 1-89-2-63

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EXECUTIVE SUMMARY

The purpose of this study is to determine if and to what extent cultural resources (prehistoric/historic) will be affected by the proposed development of approximately 160 acres of land located south of the City of Perris, California, by the Gary Cook Corporation. Three phases of investigation were employed to accomplish this goal: 1) a check of the California Archaeological Inventory (CAI) records; 2) a review of the pertinent archaeological, historical and ethnographic literature for the general study region; and, 3) an on-site, 100% field inspection to locate, record and/or update any archaeological materials.

The records search revealed that the 160 acre study area had not been previously investigated for cultural resources. Several studies have been conducted within a one-mile radius of the current project area, none of which revealed the presence of either prehistoric or historic cultural resources. Approximately 100 acres of this parcel is currently being used by NPI Nursery. In these areas, the ground surface has been graded flat and covered with gravel and potted shrubs and trees. Thus, disturbance has been extensive in the area of the nursery and whatever cultural resources may have been present on that portion of the project area have long since been removed. The remaining 60 acres is currently unused and is covered with wild thistle, mustard, grasses and several large stands of trees. Visibility in these areas ranged from 20 to 50 %.

During the course of the pedestrian survey of the remaining 60 acres not currently used for nursery grounds, long rows of gravel, plastic pots and dead plants were observed, suggesting that at one time the area had been graded. Thus, it appears that this portion of the project site had been used as part of the NPI Nursery. Upon completion of the pedestrian survey, no prehistoric or historic cultural sites were identified on the 160 acre parcel which is part of the larger 1200 acre Planned Community proposed by the Gary Cook Corporation.

An extremely early "Settlers house" was, however, mapped on an 1865 historic GLO Map (Government Land Office) within what is now the NPI nursery area. It is suggested that if subsurface cultural deposits are encountered at the former "house" location during grading, earth moving activities be halted (in the immediate area only) and these deposits are evaluated by a qualified historic archaeologist.

INTRODUCTION

Of the total 1200 acres included in the Planned Community proposed by the Gary Cook Corporation, 1040 acres had been previously investigated for cultural resources. No prehistoric or historic sites were identified during the course of these investigations. In January, 1989, at the request of Florian Martinez Associates, Tustin, California, Hatheway & McKenna was contracted to conduct an archaeological assessment of the remaining 160 acre parcel to document the presence/absence of prehistoric or historic sites (predating 1950) on this portion of the project site.

In general, the 160 acre parcel is located one and a half miles south and within the sphere of influence of the City of Perris, Riverside County, California (Figure 1). Specifically, the study area is located in the southwest quarter of Section 8, Township 5 South, Range 3 West, SBB&M on the USGS 7.5' Romoland (1979) USGS Topographic Quadrangle (Figure 2). It is bounded on the north by an unnamed dirt road, on the west by Goetz Road, and on the south by Ethanac Road. The eastern boundary of the parcel is located one-half mile east of Goetz Road and parallels this street.

Preparatory work consisted of a check of the Riverside County CAI records, on file at the Archaeological Research Unit (ARU), University of California, Riverside, and a review of the archaeological, historic and ethnographic literature pertinent to the study area. This search revealed that 160 acre parcel proposed by the Gary Cook Corporation had not been previously investigated for either prehistoric or historic cultural resources. Several cultural resource investigations have been conducted within a one mile radius of the project area, however, no resources were identified as a result of these investigations.

Upon completion of the records check and literature review, an on-foot survey was performed by Melinda Romano/Field Director (MA), and by Field Assistants Glenn Brown (BA), Diane Reeves (BA), and Charles Reeves (BA) on February 3, 1989. The purpose for this assessment was to document the presence or absence of cultural resources on the subject property, and to satisfy the requirements of the Riverside County Planning Commission with regard to identification and protection of cultural resources on lands under their jurisdiction. This document also provides California Environmental Quality Act (CEQA) compliance with regards to cultural resources.

Figure 1. General Location of the 160 Acre Project Area Proposed by the Gary Cook Corporation. From Thomas Bros. Maps, California Road Atlas & Drivers Guide, 1985, pp. 99.

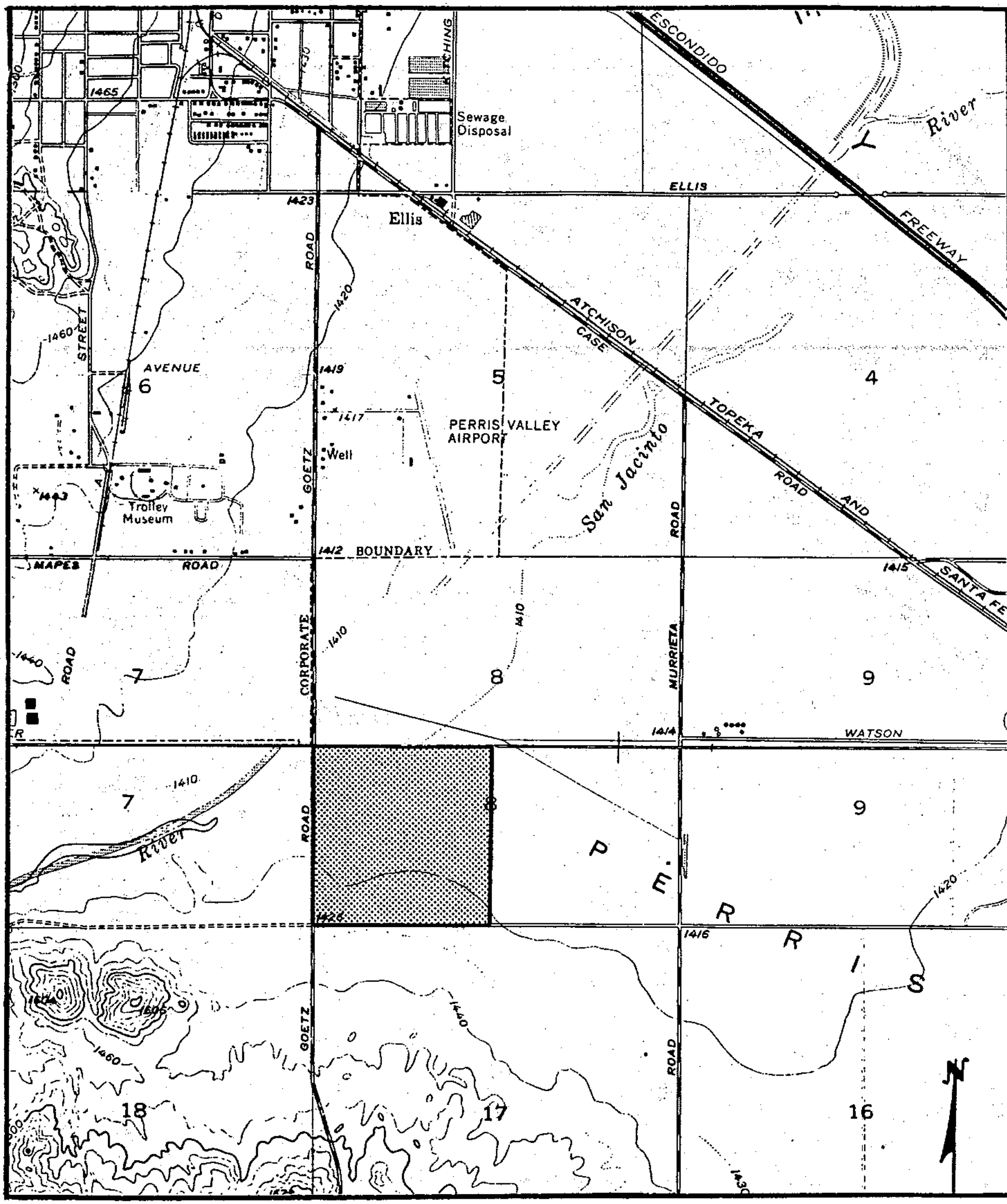

Figure 2. Specific Location of the 160 Acre Project Area.. Proposed by the Gary Cook Corporation. From USGS 7.5' series Perris and Romoland (1979) Topographic Maps. Scale 1:24,000.

ENVIRONMENTAL SETTING

The 160 acre study area, proposed by Park West Associates, is situated on the relatively flat alluvial plain of the Perris Valley at an elevation of approximately 1420 feet (430 meters) above mean sea level (AMSL). Overall drainage on the almost imperceptible gradient of the project area is to the northwest . No natural drainages or springs are present on the current study area; however, the ephemeral San Jacinto River is located within 500-1000 feet (150-300 meters) to the west and northwest. Although historic changes in the water table may have eliminated springs, such water sources would likely have been located in the granitic hills surrounding the current study area. If different climatic regimes during the Holocene (10,000 B.P. to present) had resulted in increased precipitation, they would not have produced a reliable water source within the project area due to its lack of drainages and collection basins.

The portion of valley floor on which the study area is situated consists of Quaternary (2 million years to present) alluvial fan deposits. These deposits are composed of coarse to fine sands intermixed with granules of silt and clay. These deposits represent the products of the weathering of plutonic granitic granitic rocks which form the hills to the north and east of the project area. On the whole, the geology of the study area limited its utility to the prehistoric inhabitants of the region for two reasons: 1) it lacked the boulder outcrops used as milling surfaces; and 2) it lacked pebbles and cobbles which form the source material for the manufacture of stone tools. In contrast, these factors has increased the attractiveness of the area for agricultural pursuits during historic times.

At present 63 percent of the 160 acre study area (approximately 100 acres) is currently being used as a nursery for potted shrubs and trees. The unused portion of the project site (approximately 60 acres) is presently covered with a dense growth of introduced plant species such as wild mustard and thistle. Prehistorically, a Valley Grassland (Munz 1974; Bettinger 1974) plant community would have covered the project site. Native plants in this community probably consisted of rye grass, blue grass, bent grass, filaree and needlegrass. The seeds from these grasses apparently formed a resource for the Native American inhabitants of the area who would collect the seeds during the late spring or early summer (Bettinger 1974:19). However, historic use of the land for grazing and cultivation eliminated these grasses.

CULTURAL SETTING

Prehistory

The prehistory of the Perris Valley prior to A.D. 1000 is largely unknown as little archaeological work addressing that time period has been undertaken. It is generally accepted, however, that by the late Pleistocene/early Holocene (ca. 11,000 B.P. [years before present]), the area in what is now known as Riverside County was inhabited. These early inhabitants of southern California are believed to have been nomadic, large game hunters whose tool assemblage included percussion flaked scrapers and knives, fluted or leaf-shaped projectile points, crescents, core tools, hammerstones, and choppers. This cultural tradition is known as the Early Hunting Stage and approximate dates assigned to this tradition range from 11,000 to 8500 B.P. The absence of milling tools commonly used for seed preparation suggests an orientation towards hunting, possibly of the now extinct Pleistocene megafauna.

Marked increases in plant exploitation and population size signal the start of the Early Millingstone Stage (8500 to 5000 B.P.). The artifact assemblage of this cultural tradition is similar to that of the preceding stage and includes hammerstones, scraper planes, choppers, large drills, large flake tools, manos, and metates. Projectile points are generally rare. The subsistence pattern related to this tradition is believed to be exemplified by an emphasis on seed gathering with sites exhibiting a depth of midden suggestive of seasonal campsites. The related subsistence pattern suggests a seasonal-round movement of the population.

Gradually populations grew and became more sedentary. Associated with this sedentism and population size was an intensification of local resource utilization. These in-place adaptations to the various ecological niches and further growth typify the Regional Specialization Stage (5000 to 300 B.P.). This tradition is marked by the transition from the atlatl to bow and arrow for hunting, and by the introduction of the use of acorns along with the mortar and pestle. The subsistence base appears to have been expanded to include hunting with a bow and arrow, the utilization of acorns and holly-leaf cherries, and an expansion of trade networks (Meighan 1978:223-237).

History

Prior to the 1880's, Perris Valley was known as the San Jacinto Plains after the San Jacinto Nuevo y Potrero Rancho, and the San Jacinto River which crosses the southern section of the valley in a southwesternly direction. Bands of cattle and sheep roamed the valley and a few Mexican and Spanish miners worked the gold deposits in the surrounding hills. The first two Anglo families to settle permanently in Perris Valley were the Copelands and the Frazees, although earlier settlement house locations are shown on historic Government Land Office (GLO) Maps within the general study area. Arriving in 1880, the Copeland family settled in an area approximately three miles north of the present location of the City of Perris. The Frazee family settled in the Twin Butte area, approximately six miles southeast of the present townsite.

In 1881 the California Southern Railroad decided to lay its tracks through the valley, terminating the transcontinental route of the Santa Fe at San Diego. Fred Perris, later

Chief Engineer and Superintendent of Construction of the California Southern Railroad, was in personal charge of all surveying and construction of the route which was completed in 1882. Following a pattern repeated across America in the second half of the nineteenth century, settlers followed the railroad, homesteading along the railroad right-of-ways and founding towns. The townsite of Pinacate had been established where a siding and station were built in the general vicinity of the present site of Orange Empire Trolley Museum, about a mile south of the present Perris City Limits. The first business established there, the first in the valley, catered to miners and early settlers selling groceries and supplies (Gunther 1984). The original townsite of Pinacate is located roughly one half mile north of the current study area.

As early as 1885, people from the central and northern parts of the valley discussed the desirability of a town more conveniently located. Together they interested a group of San Bernardino financiers in the project and land was purchased from the California Southern Railroad. The backers agreed to erect a depot, dig a well, and donate a number of lots to the railroad in exchange for establishing a station at the new town. Perris was officially named a station on the transcontinental route of the Santa Fe on April 1, 1886 (Chamber of Commerce 1961:6). The railroad had now extended its lines into Los Angeles, and in 1887 six passenger trains and two freight trains stopped at Perris daily. Heavy storms, however, repeatedly washed out the tracks in the Temecula Gorge, and by 1892 service to San Diego was abandoned. Perris was no longer on the transcontinental route.

The railroad had clearly played an important part in the early development of Perris Valley. In addition, the Perris Irrigation District had been formed in 1890 to bring water from Big Bear Lake to Perris Valley. Practically no water was delivered to the newly planted orange groves because the Big Bear Land and Water Company had contracted to sell more water than was available. Consequently, the land was devoted almost entirely to dry farming of grain crops. By 1900, it was discovered that great quantities of water were underground which could be pumped to the surface from depths of five to forty feet. With water available for irrigation, alfalfa became a major crop.

During the following years, the Temescal Water Company contributed greatly to the depletion of the abundant underground water supply by pumping a continuous stream of water from the Perris Valley to Corona. Wells were drilled ever deeper, with water secured by turbine pumps. Gradually the land was turned to more practical (less irrigated) farming and King potatoes became the major crop of the valley. In the 1950's taxes began to rise, and while potato crops remained stable, the farmers began to look for crops that yielded higher monetary returns. The sugar beet became the mainstay of farming in the valley and is today one of the farming industry's major crops. T

PREVIOUS RESEARCH

A records search was conducted at the Archaeological Research Unit (ARU), University of California, Riverside on January 26, 1989, by Ms. Romano. The purpose of this search was to ascertain if and to what extent cultural resources would be affected by proposed development of the 160 acre project area by the Gary Cook Corporation. This search indicated that several cultural resource inventories have been conducted within a one mile radius of the project area. Table 1 lists these investigations and the pertinent data concerning them.

Table 1. Archaeological Investigations Conducted within a One-Mile Radius of the 160 Acre Parcel of Land Proposed by the Gary Cook Corporation , Riverside County, California.

CAI/ARU Project File #	Author/Date	Description
#200	ARU/1976	Archaeological Survey of Case Road Water Systems Addition
#458	ARU/1979a	Archaeological Assessment of Tentative Parcel 13405
#466	CSR/1979	Cultural Resources and the Devers-Mira Loma 500 kV Transmis. Line
#518	ARU/1979b	Archaeological Assessment of Tentative Parcel 14619
#521	ARU/1979c	Archaeological Assessment of Tentative Parcel 14732, Rancho Santa Rosa Area
#681	SBCMA/1980a	Cultural Resources Assessment Parcel Map 15131, Riverside Co.
#682	SBCMA/1980b	Cultural Resources Assessment Parcel Map 15080, Riverside Co.
#723	Bowles/1980	Archaeological Assessment of Parcel 16265
#847	ARU/1980	Archaeological Assessment of Tentative Parcel 15656, Sun City
#1231	Greenwood/1980	Cultural Resource Overview: Devers Substation to Serrano Substation

In addition to these reports, numerous historic maps and documents were examined for information regarding the potential historic use of the 160 acre study area. Results of a majority of these archaeological investigations (those with specific project areas within the one-mile radius of the current study area were negative. Only one prehistoric site, CA-Riv-1078, was recorded and consists of two bedrock milling slicks on a small granitic outcrop. As previously indicated, granitic outcrops were favored by the prehistoric inhabitants of the region for both milling rock art surfaces. No such outcrops were observed on the current 160 acre project area.

An extremely early "Settlers house" was identified on an 1865 historic GLO Map (Government Land Office) within what is now the NPI nursery area. By 1894, however, the GLO Maps do not show this "Settlers house". Figure 3 illustrates the approximate location of the 1865 "house".

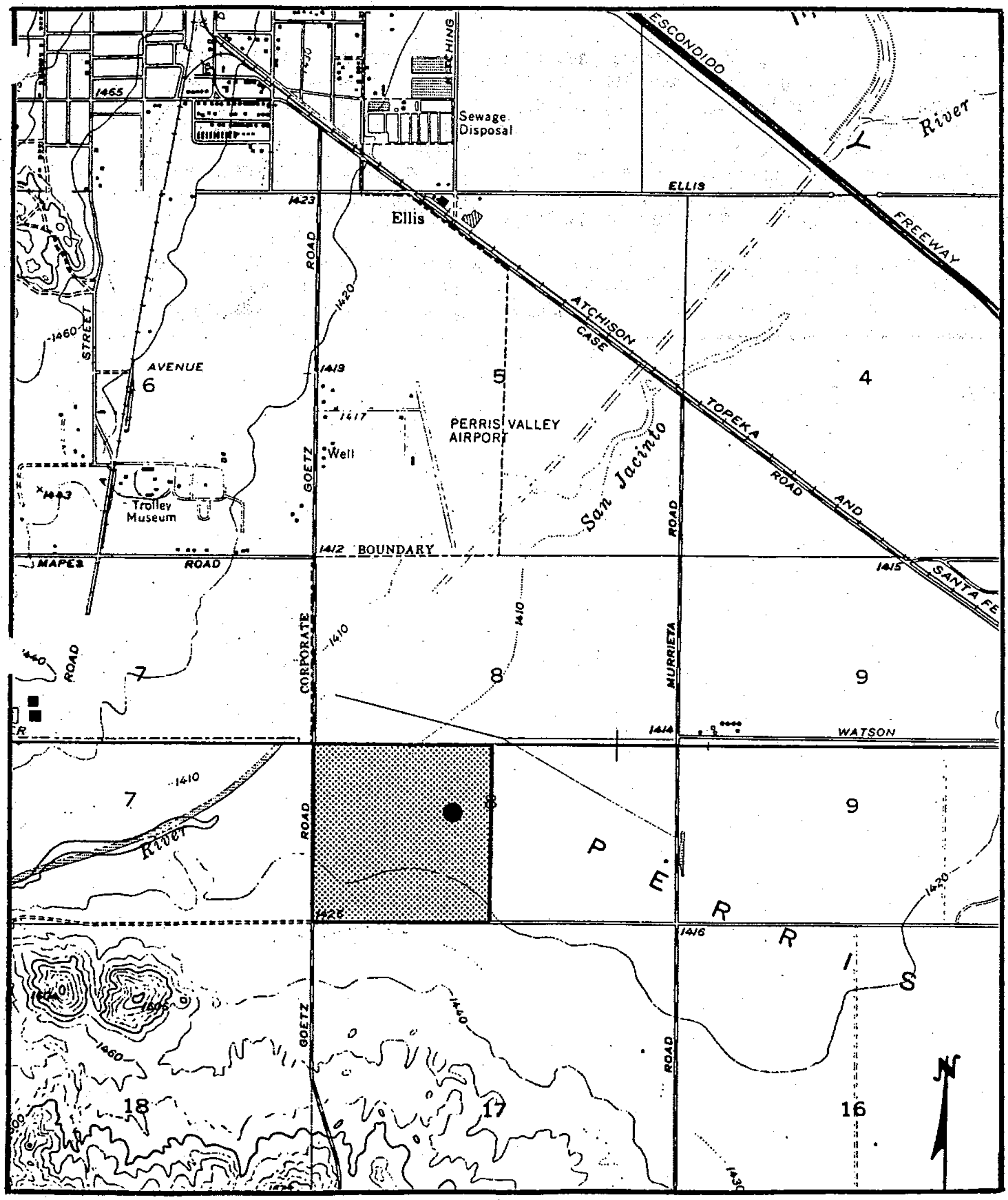

Figure 3. Location of "Settlers house" as mapped on the 1865 GLO Map.

FIELD INVESTIGATION

A systematic pedestrian survey of the 160 acre project area was conducted on February 3, 1989. The survey consisted of walking a series of north-south parallel transects across portions of the property not currently used by NPI Nursery, spaced approximately 20 meters apart. In those areas currently in use by the nursery the ground surface has been completely altered, gravel has been placed beneath all the potted shrubs and trees and the walk-ways and been covered with clean sands.

Topographically, the property was found to be extremely flat and the slight northwestern gradient is almost imperceptible. As stated, approximately 100 acres of the project area is currently utilized by NPI Nursery for retail/wholesale potted shrubs and trees. The remaining 60 acres is covered with introduced plant species such as wild mustard and thistle, both of which are found in areas that have been recently disturbed. During the survey of this portion of the study area, large rows of old plastic pots, dead trees and shrubs, gravel and black plastic were observed. It appears that this portion of the study area had been previously used as part of the nursery. Ground visibility during the survey ranged from good (70-90%) to poor (<30%), depending upon the maturity of the vegetation. Soils were generally medium to fine grained alluvial deposits, gravel was observed on the surface of the ground in many areas. No natural water sources were observed on the subject property.

Upon completion of the intensive field investigation, no prehistoric or historic resources were identified on the 160 acre parcel proposed by the Gary Cook Corporation. Although in some areas, ground visibility was poor, the probability of unidentified cultural resources being located on the subject property is highly unlikely. The area in which the early (1865) "Settlers House" was mapped is currently beneath the NPI Nursery, and covered with gravel and potted shrubs. This area appears to have been graded and the ground surface has been extensively altered.

CONCLUSIONS AND RECOMMENDATIONS

The intensive cultural resources investigation of approximately 160 acres of land proposed by the Gary Cook Corporation reported herein, did not reveal the presence of either prehistoric or historic resources on the subject property. The project area, therefore, warrants no further investigation or management with regard to prehistoric cultural resources. Two factors support this recommendation:

1) Based on the negative results of both the records and document search as well as the intensive field inspection of the property, the 160 acre project area contains no prehistoric cultural resources; and

2) The subject 160 acre property includes no areas likely to contain subsurface manifestations of such resources.

With regard to historic resources, the early "Settlers house", identified on an 1865 historic GLO Map, was located within what is now the NPI nursery area. It is suggested that if subsurface cultural deposits are encountered at the former "house" location during grading, earth moving activities be halted (in the immediate area only) and that these deposits are evaluated by a qualified historic archaeologist.

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APPENDIX A

HATHEWAY & McKENNA: GENERAL QUALIFICATIONS

HATHEWAY & McKENNA

History / Architecture / Archaeology

23301-A La Glorieta, Mission Viejo, CA 92691 (714) 458-1245

GENERAL QUALIFICATIONS

Hatheway & McKenna is a partnership offering over twenty-four years of combined experience in the identification, evaluation and management of cultural resources. Although based in Southern California, the partnership offers expertise throughout the southwest region including Arizona, Nevada, Texas and Utah. These projects encompass the full range of cultural resource investigation from survey and resource identification to large-scale mitigation and analysis. Our clientele has included both the public and private sectors, although a significant percentage of our work has been as consultants to larger environmental, planning and engineering firms. Approximately 80% of all projects within the last calendar year have been conducted in the Southern California area.

Organization

Hatheway & McKenna is organized as a Womens Business Enterprise. The principal partners are Roger G. Hatheway (senior historian), Jeanette A. McKenna (senior archaeologist) and Deborah M. Hatheway (editor and business manager). In addition, the firm draws upon research assistants, field staff and photographers according to individual project needs. These include both consultant firms and individuals from the academic and professional fields. Key personnel employed by Hatheway & McKenna offer Masters degrees in their respective fields and are certified by the Society of Professional Archaeologists (SOPA) in the categories of Field Research and/or Historical Archaeology

In-house resources include IBM and Macintosh word processing systems with a wide range of software including statistical and graphics packages, reproduction and cartographic equipment, cameras ranging from micro to macro format, and the necessary field equipment to conduct full-scale data recovery programs. Digital computer mapping and additional photographic services are provided by associated consultant groups.

Scope of Services

Hatheway & McKenna covers the entire spectrum of cultural resource studies ranging from history and architecture to both prehistoric and historic archaeology. Within these major categories the following specific areas of expertise are included:

* Cultural Resource Overviews and Management Plans (CRM)
* National Register Identification and Evaluation (NRHP)
* Federal and State Environmental Survey Reports (CEQA and NEPA)
* Historic Buildings Survey Reports (HABS)
* Historic Property Survey Reports (HPSR)
* Historic American Engineering Record Reports (HAER)
* Architectural Surveys and Preservation Elements
* EIR and EIS Documentation
* Predictive Modeling and Spatial Analysis
* Archaeological Computer Mapping

Complete Project Coverage and Quality Assurance

Hatheway & McKenna is certified to conduct architectural, historical and archaeological surveys by the State Historic Preservation Office, and by numerous local cultural resource management and information centers throughout the State of California. In Southern California, the firm is officially recognized by San Bernardino, Orange, Ventura, Riverside, San Diego and Los Angeles counties. Mr. Hatheway has served as a prime consultant to the City of Los Angeles Planning and Engineering Departments and the Community Redevelopment Agency. He is also an instructor associated with the UCLA Extension Program. Ms. McKenna is certified by the Society of Professional Archaeologists (SOPA) in the categories of Field Research and Historical Archaeology.

These certifications and associations assure that the firm is legally qualified to conduct NEPA and CEQA analyses for every type of cultural resource and historic documentation-related studies in the State of California. The firm's established working relationship with local, state and federal regulatory agencies has consistently resulted in high quality, cost-effective and timely completion of projects for their clients. This includes compliance with requirements of the State Historic Preservation Offices (SHPO) and the Federal Advisory Council on Historic Preservation, as well as various city and county regulations and ordinances.

HATHEWAY & McKENNA
History / Architecture / Archaeology

KEY PERSONNEL

ROGER G. HATHEWAY: Principal Investigator History and Architecture

Mr. Hatheway is a senior historical consultant with over twelve years of experience in California and Texas. He has served as Principal Investigator on over 150 CEQA and NEPA projects and has prepared a large number of cultural resource overviews dealing directly with architectural, historical, and both prehistoric and historic archaeological sites. Mr. Hatheway's expertise includes the History of Science, American History of Technology, Architectural History, Military History and the History of Southern California. His diverse experience includes numerous city-wide architectural surveys in Southern California and Enivornmental Impact and Alternative Analyses for transportation studies in California and Texas. Mr. Hatheway has worked as an historical consultant on several Army Corp. of Engineers projects and as a military historian for various military installations throughout California. He has served as principal consultant to the City of Angels Bureau of Engineering, City of Los Angeles Cultural Heritage Commission, City of Los Angeles Planning Department, the Community Redevelopment Agency, and many other California city planning departments. He has the longest-term and most broadly based expertise of any architectural history consultant with experience in Southern California. Mr. Hatheway is affiliated with the UCLA Extension Center and is an instructor for a course entitled, "Practical Approaches to Historic Preservation", serving in this capacity for the past eight years.

JEANETTE A. McKENNA: Principal Investigator Archaeology

Ms. McKenna is a partner with Hatheway & McKenna with over twelve years of professional experience, seven of which pertain to Southern California archaeology. She is certified by the Society of Professional Archaeologists (SOPA) in both Prehistoric and Historic Archaeology. Ms. McKenna has served as Principal Investigator on over 50 CEQA and NEPA projects in Southern California and has authored numerous cultural resource management reports. Her extensive archaeological experience includes field directorship of numerous archaeological surveys and excavations in Southern California and the regional southwest. This includes historic and prehistoric artifact analysis, in-depth Native American consultation, and research and report preparation.

DEBORAH M. HATHEWAY: Partner and Editor

Ms. Hatheway is a partner of Hatheway & McKenna, and serves as the firm's principal editor. She has served as the Graduate Student Advisor to the UCLA School of Art and Architecture for a period of four years and as an advisor in the UCLA Extension Design Program for two years. Ms. Hatheway has a Masters Degree in Education and is completing a second Masters Degree in English at UC Irvine.

MELINDA C. ROMANO: Archaeology and Physical Geography

Ms. Romano has over twelve years of professional experience and is certified by the Society of Professional Archaeologists (SOPA) in the category of Field Research. Her diverse experience includes field directorship of numerous archaeological surveys and excavations in Southern California and Utah, statistical predictive modeling for site location, cartography, arid lands geomorphology, and research and report preparation. Ms. Romano has served as Project Manager on over 30 archaeological investigations in Southern California and has authored numerous cultural resource management reports.

ANNE DUFFIELD: History and Archaeology

Ms. Duffield has over six years experience as a historical and archaeological consultant in Southern California and is certified by the Society of Professional Archaeologist (SOPA) in Historical Archaeology. Her diverse expertise includes historic artifact analysis, archival research, oral histories, artifact illustration, rock art documentation, and photography. Ms. Duffield is Vice President of Pacific Coast Archaeological Society (PCAS) and is a long-time member of the Society of Historical Archaeology.

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ARCHAEOLOGICAL RESEARCH UNIT
(714) 787-3885

RIVERSIDE, CALIFORNIA 92521

RECEIVED
DEC 27 1988

February 22, 1979

(ARU #401)

Harry C. Schrey
Rodeffer Investments
P. O. Box 2460
Newport Beach, CA 92660

Dear Mr. Schrey:

Enclosed please find one copy of our report entitled "Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcel 13405, South of Perris, Riverside County, California."

Sincerely,

James D. Swenson

James D. Swenson
Senior Staff Archaeologist

k

Enclosure

cc: Robert S. Kipper
J.F. Davidson & Associates
(3 copies of report)

ENVIRONMENTAL IMPACT EVALUATION: An Archaeological Assessment of Tentative Parcel 13405, South of Perris, Riverside County, California

by: James P. Barker
Staff Archaeologist

Archaeological Research Unit
University of California
Riverside, CA 92521

UCRARU #401

for: Rodeffer Investments
P. O. Box 2460
Newport Beach, CA 92660

Attn: Harry C. Schrey

February 1979

MANAGEMENT SUMMARY

At the request of Rodeffer Investments, Newport Beach, the Archaeological Research Unit (ARU), University of California, Riverside, conducted a reconnaissance of a parcel of land (designated as Tentative Parcel 13405) located south and east of the Perris Airport. This reconnaissance was conducted in two parts. First, the California Archaeological Site Survey (CASS) records were checked to see if there were any known archaeological resources within the subject property, and if there had been any archaeological investigations within the parcel. This search disclosed that part of Tentative Parcel 13405 (located in portions of Sections 4 and 9, T5S, R3W) had been surveyed by ARU staff on February 18, 1976, for the Eastern Municipal Water District. This survey did not locate any archaeological resources (Wilmoth 1976). Second, two staff archaeologists from the ARU conducted an on-foot reconnaissance of the remainder of Tentative Parcel 13405 on December 13, 1978. Again, no archaeological resources were located.

INTRODUCTION

The subject property, identified on Tentative Parcel Map 13405, comprises about 1150 acres of land. It is located in the SE 1/4 of Section 5; a portion of the SW 1/4 of Section 4 (south and west of the railroad line); the N 1/2 of Section 9, and all of Section 8, T5S, R3W, SBBM as shown on the Romoland and Perris 7.5' series USGS quadrangles. The 350 acres of Tentative Parcel 13405 located in Sections 4 and 9 were previously surveyed for the Eastern Municipal Water District (Wilmoth 1976). The 645 acres located in Sections 5 and 8 were surveyed on December 13, 1978. The remaining 155 acres of Tentative Parcel 13405 (located in the SW 1/4 of Section) were not surveyed because it is the site of Rodeffer and Sons Wholesale Nursery.

The area that was surveyed on December 13, 1978, is bounded on the west by Goetz Road, on the south by Ethanac Road, and on the east by Murrieta Road. The northeast corner of the area surveyed touches on Case Road. A dog-leg in Tentative Parcel 13405 on the north and west boundaries, surrounds the southwest corner of the Perris Airport and is partially bounded by Mapes Road. The northwestern portion of Tentative Parcel 13405 is bisected by the San Jacinto Flood Control Channel.

SUMMARY OF CURRENT KNOWLEDGE

The CASS records on file at the ARU were checked to see if there were any known archaeological sites located on the subject property. The records indicated that there are very few sites recorded within a seven mile radius of the subject property. The closest recorded site is CA-RIV-805. This site, identified as a possible plant processing/gathering station, consists of a small scatter of 15 cryptocrystalline flakes and is located about 0.5 mile northeast of Tentative Parcel 13405. In addition, two sites (CA-RIV-411 and 412) are recorded as located within a mile of Tentative Parcel 13405; both are reported as "presumably" destroyed by contemporary agricultural activity (Wilmoth 1976). As noted earlier, part of Tentative Parcel 13405 was survyed by the ARU in February of 1976 for the Eastern Municipal Water District.

Tentative Parcel 13405 is located in a region which was occupied at the time of contact by either Luiseño or Cahuilla speaking aboriginal groups. Ethnographic sources for these groups include Kroeber (1925), Strong (1929), White (1963), Barrows (1900), and Bean (1972). Both groups can be classified as hunter-gatherers who exploited the seasonal availability of a wide variety of plant and animal resources through a patterned movement of population clusters through time and space. This type of seasonal movement and resource exploitation system is common to aboriginal groups in interior southern California. Typically, a series of biotic communities including Chaparral, Riverine, Valley Grassland, Coastal Sage Scrub, and Oak Parkland would be exploited by a population throughout the year.

To cut down on travel time and to reduce the burden of carrying heavy loads long distances, villages, hamlets, and other population clusters were located in places that were in close proximity to as many zones as possible. Seasonal movement seems to have followed a basic pattern. In the spring, populations would be localized in lowland areas where individuals, or small family groups, gathered greens, tubers, and roots. Small rodents could be trapped while the men spent time hunting for deer and mountain sheep. During the summer, people would spread to the slopes of mountains and other upland areas where small seeds could be exploited from small temporary camps. Water was probably a major factor in localizing resource exploitation during this time. In the fall, people would move to acorn groves where winter food supplies could be gathered, processed, and stored. Fall was also a time of extensive hunting activities in upland areas. Finally, in the winter, the population would be clustered in "winter villages" where subsistence was based on stored resources and occasional hunting. Winter was the time of the largest population clustering and when major ceremonials, etc., would occur.

This seasonal round of resource exploitation for a given group took place within an area that was habitually used and can be considered the "property" of the group. Each group territory would contain one or more "winter villages" which provided a "permanent base" from which resource exploitation could be organized. In addition, there would be several hamlets, usually occupied in the summer, from which part of the seasonal round would be directed. Each of these major population center types would be associated with a series of small, single activity, temporary sites located within easy walking distance. Each group territory was probably occupied by a single patri-lineage which would be concentrated for part of the year in the "winter village" and dispersed in the hamlets throughout the rest of the year.

EFFECTIVE ENVIRONMENT

Due to recent agricultural activity, the flora and fauna of Tentative Parcel 13405 have been entirely changed from that of pre-contact times. This also limits our ability to say for sure what the pre-contact environment really was. In the portions of the subject property along the San Jacinto River, the area was probably characterized by a Riparian plant community. Such plant communities are usually composed of willow (<u>Salix</u> spp.), cottonwood (<u>Populus fremontii</u>), cattail (<u>Typha</u> spp.), and bullrush (<u>Scirpus</u> sp.) (Munz and Keck 1959). On drier ground, above and on each side of the river, there could have been stands of oaks (<u>Quercus</u> spp.), the normally dominant species in the Southern Oak Woodland association. On the other hand, areas away from the river could have been characterized by a Valley Grassland association composed mainly of bunch grasses such as <u>Stipa pluchra</u>, <u>S. cernua</u>, <u>Poa scabrella</u>, and <u>Aristida divaricata</u>. In the mountains around the subject property, can be found Chamise-Chaparral association which was important in pre-contact resource exploitation. This association's indicator species include chamise (Adenostoma fasciculatum), brittle brush (Encelia farinosa), white sage (Salvia apiana), and buckwheat (Eriogonum fasciculatum).

Important faunal resources which would have been exploited from the subject property include cottontail (Sylvilagus audobonii), jackrabbits (Lepus spp.), deer (Odocoileus hemionus), and possibly mountain sheep (Ovis canadenis) or pronghorn antelope (Antelocapra americana). Important floral resources include various oaks (Quercus agrifolia, Q. dumosa, Q. kelloggii, Q. chrysolepis, and Q. wislizenii), chia (Salvia columbariae), goose-foot (Chenopodium fremontii), sunflower (Helianthus sp.), blazing star (Mentzelia sp.), and big sage (Artemisia tridentata).

RESEARCH GOALS AND STRATEGIES

It is difficult to devise explicit research goals and a research strategy that can be applied to an area as small as Tentative Parcel 13405, and which can yield significant archaeological results on the basis of surface survey alone. However, any sites or other archaeological resources found on the parcel can be tied into attempts to understand the prehistory of the general region. In addition, the fact that no archaeological remains are present is also a significant piece to be put into the regional puzzle.

General questions now being asked in southern California include the relationship between Man and the surrounding environment. For example, it now seems as if most of the sites in this region are late sites, occurring only in the last few hundred years. This indicates that the region was not used as heavily in the past and may have come into use as a result of population pressure. Archaeologists are currently trying to see if this is true. The survey conducted on Tentative Parcel 13405 contributes to our understanding of this question by telling us the density of sites on the parcel. This information will eventually be tied into the data from other regions to see if in fact the density of sites in southern California has been increasing over time, or if this is merely a sampling problem. Thus, while there was no research strategy explicitly formulated for Tentative Parcel 13405, the survey conducted there does tie into one of the general research strategies of the ARU and other archaeological research units in the area.

METHODS OF DATA COLLECTION AND ANALYSIS

On December 13, 1978, two archaeologists from the ARU conducted a systematic on-foot survey of most of Tentative Parcel 13405. The parcel was surveyed using a series of north/south transects with the archaeologists spaced 30 meters apart. This spacing was possible because of the lack of ground cover due to prior agricultural activity. The entire surface of the parcel, except those portions previously surveyed in 1976 (parcels 14 through 20 of Tentative Parcel 13405) and the area presently in use as a nursery (parcels 1 and 4 of Tentative Parcel 13405), was covered in this manner.

RESULTS AND RECOMMENDATIONS

No archaeological resources were located during the survey. This was not unexpected since the conditions within the parcel are not those with which archaeological sites are usually associated in this region. In addition, Tentative Parcel 13405 has a long history of use for agriculture. Thus there were low expectations for the survival of any archaeological resources which might have been located on the parcel.

Given that there are no archaeological resources located on Tentative Parcel 13405, the proposed rural-residential and agricultural development of the parcel will have no direct or indirect adverse impacts on any archaeological resources. However, it is possible that subsurface archaeological remains could be located during the course of development activity. If this occurs, work should be stopped and a qualified archaeologist should be consulted immediately.

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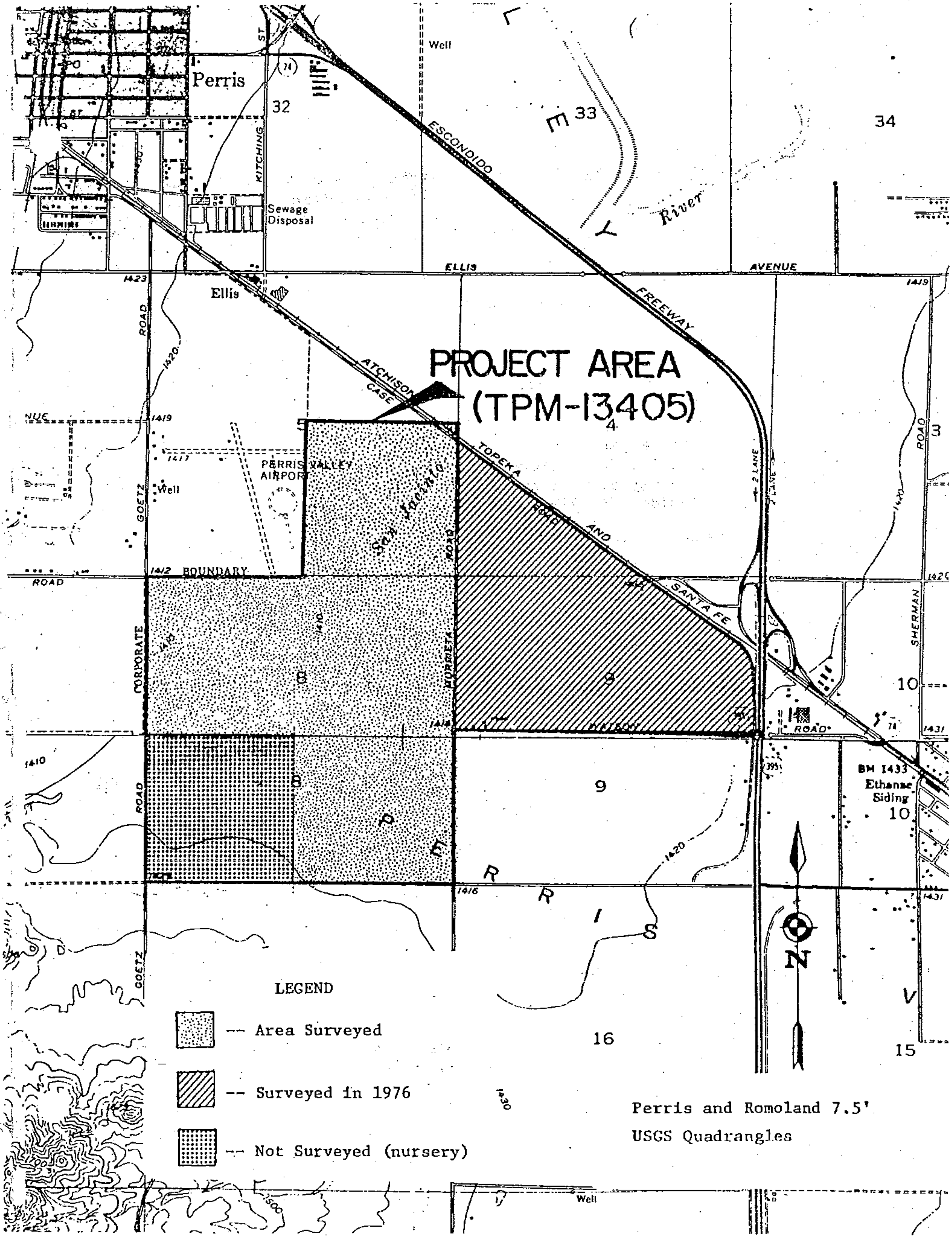
PROJECT AREA
(TPM-13405)
Perris
Sewage
Disposal
Well
Ellis
ELLIS
AVENUE
ESCONDIDO
FREEWAY
ATCHISON
TOPEKA
AND
SANTA FE
River
PERRIS VALLEY
AIRPORT
BOUNDARY
ROAD
GOETZ
ROAD
CORPORATE
MURRIETA
ROAD
SHERMAN
BM 1433
Ethanac
Siding
N
LEGEND
-- Area Surveyed
-- Surveyed in 1976
-- Not Surveyed (nursery)
Perris and Romoland 7.5'
USGS Quadrangles

ENVIRONMENTAL IMPACT EVALUATION: Archaeological Survey of Case Road Water Systems Addition, Eastern Municipal Water District, Riverside County, California

by: Stan C. Wilmoth
Archaeological Research Unit
University of California
Riverside, CA 92502

UCRARU #187

for: Eastern Municipal Water District
24550 San Jacinto Street
Hemet, CA 92343

March 1976

INTRODUCTION

This investigation was conducted as a result of an Eastern Municipal Water District request for an archaeological resource assessment in the Perris area. The survey area includes all land south of Case Road, west of Highway 395, east of Murrieta Road and north of Ethanac Road; except the southwest quarter of Section 9 (T5S, R3W, Section 9 and SW corner of Section 4; Perris and Romoland Quadrangles, 7.5 minute USGS series - see map).

Past studies of the surrounding areas have been done by L. E. Wildesen (1974), J. R. Smith (1974), H. Wells (1975), R. A. Weaver (1975). While many sites are known to exist outside a six to seven mile radius of the present survey area, there are few recorded sites within this radius. Two sites, 4-RIV-412 and 4-RIV-411 were within a mile of the survey area but both presumably have been destroyed. A more recently located site, 4-RIV-805 (J. R. Smith 1974) is within 0.5 miles of the northeast corner of the study area (see map). This location was tentatively characterized as a possible plant processing/gathering station and consisted of a 18 x 46 foot scatter of 15 cyptocrystalline flakes. Unlike the present survey area, this location had apparently not been cultivated and was relatively undisturbed. The entire surface of the present survey area has been disrupted in one or more of the following ways: (1) cultivation, (2) roads, pipes and transmission lines, (3) housing or agricultural structure construction, and (4) scraping, filling, and leveling for future development.

BACKGROUND DATA

The region surrounding the survey area was inhabited aboriginally by the Luiseno and/or the Cahuilla. Both groups apparently followed a seasonal/scheduling system common to interior southern California peoples. Seasonality was imposed on groups by the natural limitations and variability inherent in a procurement system based on seasonal wild plant and animal resources.

Utilization of a wide variety of animal and plant resources in a variety of biotic zones is much more secure than dependence on a single crop resource. Aboriginal procurement included the chaparral/riverine, valley grassland, coastal sage scrub and oak parkland biotic communities (Wilke 1971).

Villages and other population clusters occurred in locations in close proximity to as many zones as possible, i.e., the base of hills near stream. Seasonal scheduling appears to have followed a basic pattern. In the spring, individuals gathered greens and tubers and hunted or trapped rodents, deer, and mountain sheep. Groups then separated in the summer to exploit seed resources from small temporary camps. Village regrouping occurred in the early fall to maximize procurement of such things as the holly leaf cherry. The collection, processing, or storage of acorns occupied family groups in the late fall. Stored acorns along with a supply of other dried food provided the principal diet during the winter. Hunting occurred to some degree year round (Bettinger 1974).

The "seasonal round" of a given group took place within a habitually utilized area which coincided with the socio-political structure. This structure seems to have been centered around a more or less "permanent" village, whose membership was based on patri-lineages, and in some cases, on a wider moiety system. Lineage village groups have been estimated at 25 to 30 persons in size (Spencer and Jennings, et al. 1965)

METHODOLOGY

Maps, records, and personnel of the Archaeological Research Unit, University of California, Riverside, were consulted as to the location of known archaeological resources in or near the survey area. This disclosed the general information related in the above introduction.

On February 18, 1976, one archaeologist made a concentrated preliminary survey of the proposed pipeline itself. The line was walked, and an area of 20 meters on either side was covered. No archaeological remains were discovered and a survey of the surrounding section was organized.

On February 22, 1976, a field crew of 3 persons conducted a ground reconnaissance for surface archaeological remains. This was accomplished in most areas by means of a series of north-south transects, each 20 meters wide. In those areas where scraping, filling and leveling had accompanied long term plowing or discing, the distance between crew members was doubled and they walked in slightly overlapping "zig-zag" patterns. This was done to compensate for the nearly total surface disruption. Ground cover varied from light to entirely bare and visability was generally good. The single residence and the agricultural structures were given a wide berth because of loose guard dogs.

ARCHAEOLOGICAL RESOURCES

No archaeological remains were found during the survey. In this area occupation sites are most likely to occur along the base of hills near springs; seed processing stations may occur almost anywhere that granitic bedrock occurs. Neither of these types of conditions occurred in the survey area. As has been stated above, conditions for the preservation of surface archaeological residue in the area were poor. Aboriginal settlement patterns and sites are usually recognized by: (1) food remains, i.e., charred seeds or bone; (2) fragmentary or whole lithic, shell, fiber,wood or ceramic tools or ornaments; (3) manufacturing waste; (4) modified concentrations or alignments of stones; (5) soil or vegetation variations; (6) bedrock tool features; (7) human cremations; or (8) concave "house floors." The various forms of surface disruption found in the survey area (and designated in the introduction) all relocate, remove, or destroy archaeological surface residue, making recognition of archaeological sites difficult or impossible.

SUMMARY

The proposed additions to the water system will not have direct or indirect impact on archaeological resources in this project area. Unknown archaeological residue may, however, exist beneath the surface. If, during the course of proposed additions, any archaeological remains are uncovered, a qualified archaeologist should be consulted immediately.

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APPENDIX H

FISCAL IMPACT REPORT

FISCAL ANALYSIS OF THE GREEN VALLEY DEVELOPMENT PROJECT PERRIS, CALIFORNIA

DRAFT

Prepared For
Florian Martinez Associates

February 22, 1989

Prepared By
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Introduction

At the request of Florian Martinez Associates (FMA) and their client, Cook & Selich, we have prepared this fiscal analysis of the prospective Green Valley project in the City of Perris, California. Proposed development includes:

- 4,442 residential units.
- 195 acres of commercial and industrial development.

This analysis covers the principal functions which will be impacted by subject new development:

- Police protection, including animal control.
- Fire protection.
- Street maintenance, including street sweeping and related public works support functions.
- Park maintenance.
- Recreation services.
- Senior citizens' services.
- Development control, including planning, engineering, and building services.
- Administration.

Analysis coverage has been determined on the basis of our discussions with City officials. Specifically excluded from consideration in this analysis are enterprise operations (water and sewer utilities), which for purposes of this analysis are assumed to operate on a breakeven basis.

In this analysis, we have utilized an accepted revenue-cost methodology, including:

- Utilization of 1989 constant dollars (that is, no consideration of future inflationary impact on either revenues or costs).
- Case study analysis, with concentration on direct revenue and cost items—those which are directly affected by new development activity.
- Utilization of appropriate projection factors (per capita, per residential unit, per acre, per lane mile, etc.).
- Assumption that existing sources of revenues will prevail.

- Assumption that the level of governmental services to be provided to the area under study either will be equal to or higher than those currently prevailing in the City.

In many cost revenue analyses, no consideration is given to increased service levels. However, in the case at hand, City officials have requested that consideration be given to higher service levels, particularly in the possible areas of police protection and fire protection. The fiscal model utilized in this analysis provides the basis for evaluating impacts of such service level increases, and specific factors utilized herein for fire protection and police protection reflect an increase over current service levels in the City. However, we would like to note that our analysis does not contain final judgements concerning possible service level increases. Specific service levels to be provided to City residents—in Green Valley and elsewhere—are a matter for determination by City leadership.

In this analysis, we are dealing with a projected ten-year development period. Within the ten-year timeframe, we have considered both annual (on-going) financial items and one-time financial items, the latter involving cost and revenue aspects of the development process itself.

This analysis utilizes information from the following sources:

- Discussions with responsible City officials.

- Discussions with County Fire officials.

- The City's 1988-89 budget.

- FMA, planning and engineering consultants to Cook & Selich, who have provided information on the prospective development program.

- Cook & Selich officials, also providing information on the development program, development values, prospective development timing, and the like.

- Riverside County Assessor rolls, providing measures of current assessed values.

- Riverside County Auditor-Controller property tax rate breakdowns, providing tax rate allocations applicable against new development values.

- Our files of prototypical new development measures, obtained from extensive prior research, covering development densities, new development values, and taxable sales generation factors for residential and commercial uses under consideration.

Appendix F contains a list of governmental officials whom we have contacted during the course of the assignment.

This report is summary in nature, presenting principal findings and conclusions, including an Executive Summary in Section I following. Additional research data are available from our files upon request. With respect to the detailed calculations, the customized computer program used in this analysis is available to prepare projection revisions upon request.

I.

EXECUTIVE SUMMARY

The Green Valley Development Project under consideration in this analysis has a total land area of 1,194 acres. Of this amount, 759 acres will be developed for residential land uses. An additional 195 acres is designated for commercial and industrial development. The remainder of the project area will be in schools, parks, open space, and major roads. Development is projected to occur over a ten-year time period, between fiscal years 1989-90 and 1998-99. Important measures of resultant development at full buildout are as follows:

- o 4,442 residential units.
- o Approximately 2.7 million square feet of commercial and industrial building space.
- o Population of 12,369 residents.
- o New development values (to go on assessor rolls) of $723 million, versus $2.0 million today and $41,.8 million upon close of escrow of the developer's purchase of the property.
- o Taxable sales generation from residents and commercial and industrial facilities of $146 million annually.

The above measures have been used to compute various revenue and cost estimates. All figures are in 1989 constant dollars.

Table 1 presents cash flow estimates for the ten-year development period and an eleventh year beyond. Estimates may be further summarized as follows:

	Total 10-Year Development Period	Year 11 (1999-2000)
	- - - - - $000's	- - - -
On-Going Operations		
Revenues	$15,657	$ 3,628
Expenditures	12,829	2,628
Net Surplus	2,827	1,000
One-Time Items		
Revenues	5,860	—
Expenditures	5,614	—
Net Surplus	246	—

Table 1 (Continued.......page 2)
SUMMARY CASH FLOW (IN 1988 CONSTANT DOLLARS)

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
	$000's											
ONE-TIME ITEMS												
Revenues												
Property Transfer Tax—New	246	0	21	31	31	31	31	31	31	31	10	0
Development Control Fees	3,613	0	186	280	280	524	538	609	564	377	256	0
Fire Protection Fees	2,001	0	102	152	152	291	296	341	323	218	127	0
Park Fees	0	0	0	0	0	0	0	0	0	0	0	0
Master Plan Drainage Fees	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	5,860	0	308	463	463	845	865	980	917	626	393	0
Expenditures												
Development Control	3,142	0	162	243	243	455	468	529	490	328	222	0
Fire Protection Facilities	1,740	0	88	132	132	253	257	296	281	189	110	0
Other Direct	0	0	0	0	0	0	0	0	0	0	0	0
Administration	732	0	38	56	56	106	109	124	116	78	50	0
Total Expenditures	5,614	0	288	432	432	815	834	949	887	595	382	0
Net Surplus/(Deficit)	246	0	21	31	31	31	31	31	31	31	10	0
—Cumulative		0	21	51	82	113	144	174	205	236	246	246
ON-GOING & ONE-TIME ITEMS COMBINED												
Revenues	21,516	56	476	799	967	1,848	2,412	3,315	3,793	3,831	4,020	3,628
Expenditures	18,443	0	462	855	1,100	1,861	2,244	2,759	3,087	3,076	2,999	2,628
Net Surplus/(Deficit)	3,074	56	15	(56)	(132)	(13)	167	556	705	755	1,021	1,000
—Cumulative		56	70	14	(118)	(131)	36	592	1,297	2,052	3,074	4,074

Source: Nai vander Whitney, Inc.

Table 1
SUMMARY CASH FLOW (IN 1989 CONSTANT DOLLARS)

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
	$000's											
ON-GOING OPERATIONS												
Revenues												
Property Tax--Secured	4,974	56	104	177	249	387	529	690	839	937	1,005	1,005
Property Tax--Unsecured	115	0	0	0	0	5	11	18	24	27	31	31
Sales & Use Tax	5,844	0	9	22	36	280	566	879	1,152	1,293	1,609	1,609
Transient Occupancy Tax	767	0	0	0	0	0	0	192	192	192	192	192
Business Licenses	122	0	0	0	0	5	10	18	25	29	34	34
Franchises	503	0	7	17	27	41	55	71	86	97	102	102
Fines & Forfeitures	42	0	1	2	2	4	5	6	7	8	8	8
Documentary Transf Tax--Resale	182	0	3	7	12	16	21	25	29	34	35	35
Motor Vehicle In Lieu	2,097	0	30	75	121	179	236	294	352	397	412	412
State Gas Tax	671	0	10	24	39	57	76	94	113	127	132	132
Cigarette Tax	134	0	2	5	8	11	15	19	22	25	26	26
Refuse Collection	50	0	1	2	3	4	6	7	8	10	10	10
Animal License Fees	33	0	0	1	2	3	4	5	6	6	7	7
Transportation Tax	0	0	0	0	0	0	0	0	0	0	0	0
Administrative Service Fees												
Other Revenues	123	0	2	4	7	10	14	17	21	23	24	24
Total Revenues	15,657	56	168	336	505	1,002	1,547	2,335	2,875	3,205	3,628	3,628
Expenditures												
Police Protection	6,637	0	96	239	382	565	748	931	1,114	1,257	1,305	1,305
Animal Control	0	0	0	0	0	0	0	0	0	0	0	0
Fire Protection	3,099	0	34	85	135	232	330	444	551	623	665	665
Street Sweeping	243	0	11	17	19	26	29	32	35	37	38	38
Near-Term Street Maintenance	268	0	0	0	0	21	33	38	53	57	65	69
Longer-Term Street Maintenance	146	0	0	0	0	0	0	21	33	38	53	57
Refuse Collection	0	0	0	0	0	0	0	0	0	0	0	0
Flood Control Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Park Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Recreation Services	547	0	8	20	32	47	62	77	92	104	108	108
Senior Citizens Services	216	0	3	8	12	18	24	30	36	41	42	42
Administration	1,673	0	23	55	87	136	184	236	287	324	341	343
Total Expenditures	12,829	0	174	423	668	1,046	1,411	1,809	2,201	2,481	2,617	2,628
Net Surplus/(Deficit)	2,827	56	(6)	(87)	(163)	(44)	136	525	675	724	1,011	1,000
---Cumulative		56	50	(37)	(200)	(244)	(108)	418	1,092	1,816	2,827	3,828

Continued on next page..........

	Total 10-Year Devel Period	Year 11 (1999-2000)
	- - - - - $000's - - - -	
On-Going & One-Time Combined		
Revenues	21,516	3,628
Expenditures	18,443	2,628
Net Surplus	3,074	1,000

As indicated, Green Valley is projected to yield a positive cash flow to the City, both during the development period and beyond. In the long-term, the most important financial factor in the City's standpoint will likely be ongoing operating cash flow. The above projections indicate that at full development a favorable cash flow of $782,000 per year will be realized by the City.

(Please refer to Appendix A for detailed computer projections.)

II.

DEVELOPMENT PROGRAM AND MEASURES

1. LAND USE AND BUILDING FACILITIES

This analysis is based upon projected residential and commercial/industrial development as detailed in Exhibit 1 and Table 2.

2. RESIDENTIAL DEVELOPMENT PROGRAM AND SCHEDULE

Our analysis is predicated upon a nine-year buildout schedule, Year 2 through Year 10. Detailed annual quantities of residential development are found in Appendix Table A2. Development schedules are indicated by four major residential types.

3. COMMERCIAL/INDUSTRIAL DEVELOPMENT PROGRAM AND SCHEDULE

Commercial and industrial development is scheduled to occur over a five-year period, Year 6 through Year 10. Detailed quantities by individual commercial/ industrial type are summarized in Table A2. Additional detailed commercial/ industrial development program measures are found in Appendix Table B1, identifying individual types of commercial/industrial building space detailed for each of six separate planning areas.

Individual commercial/industrial types are specified at a level of detail beyond that found in the Specific Plan. These estimates reflect a collective judgement of our staff and the developer.

4. POPULATION

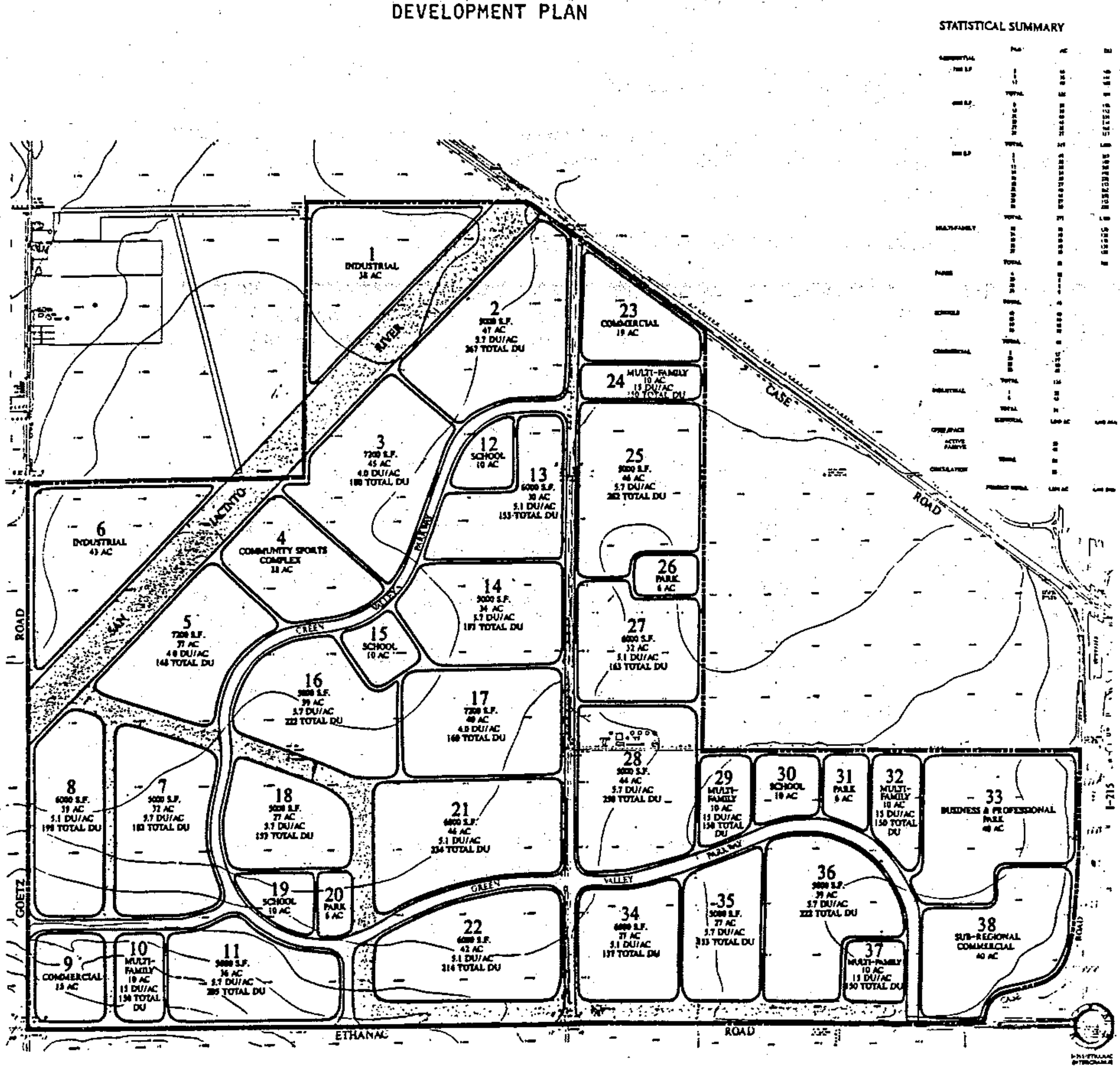
Total population projected at buildout is 12,369 residents. This figure is estimated on the basis of the following population factors:

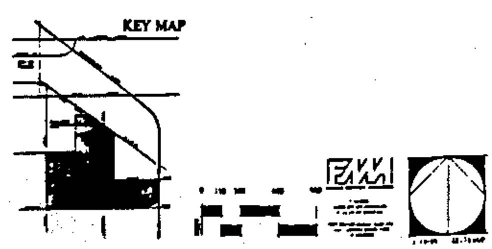
	# Units	Population Per Unit	Population
SF 5,000 (Cottage)	2,109	3.00	6,327
SF 6,000 (Conventional)	1,099	2.90	3,187
SF 7,000 (Large Lot)	484	2.80	1,355
Apartments	750	2.00	1,500
Total	4,442	2.78 (Average)	12,369

We have formulated these factors jointly with FMA, who are responsible for preparing the Environmental Impact Report. These factors are consistent with experience in new residential tracts throughout suburban Southern California.

Exhibit 1

DEVELOPMENT PLAN





GREEN VALLEY
COOK & SELICH

Table 2
DEVELOPMENT PROGRAM

	Acres	Residential Units	Commercial/ Industrial Bldg Sp (SF)
RESIDENTIAL			
SF 5,000 (Cottage)	371.0	2,109	
SF 6,000 (Coventional)	217.0	1,099	
SF 7,000	121.0	484	
Apartments (Large Lot)	50.0	750	
Total	759.0	4,442	
COMMERCIAL & INDUSTRIAL			
Regional Anchor	9.1		100,000
Neighborhood/Comm Anchor	17.7		195,000
Retail Tenant	37.4		411,000
Non-Retail Tenant	5.1		56,500
Hotel (150 Rooms)	2.7		67,500
Office (Business Park)	42.0		629,800
Industrial	81.0		1,215,000
Total	195.0		2,674,800
OTHER			
Parks	46.0		
Schools	40.0		
Open Space	96.0		
Major Roads	58.0		
Total	240.0		
Grand Total	1,194.0		

Source: Cook & Selich; FLorian Martinez Associates; Natelson Levander Whitney, Inc.

5. NEW DEVELOPMENT VALUES

At full buildout, we estimate that new development will be valued at $723 million. This figure is expressed in 1989 constant dollars, without consideration of ongoing inflation. It reflects the following unit value factors:

Residential (Per Unit)	
SF 5,000 (Cottage)	$225,000
SF 6,000 (Conventional)	180,000
SF 7,000 (Large Lot)	150,000
Apartment	60,000
Commercial/Industrial (Per SF Bldg Space)	
Retail/Non-Retail Anchor & Tenant	$ 110
Hotel	100
Office/Business Park	125
Industrial	50

Residential values have been provided by the developer. Commercial/industrial values are based upon Southern California prototypicals.

6. ASSESSED VALUE INCREASES

Existing assessed value of the project area is approximately $2.0 million. This figure has been determined from review of Riverside County assessor rolls as detailed in Appendix Table D1. Cook & Selich currently has an option to purchase the property for an amount of approximately $41.8 million, equal to $35,000 per acre. This purchase is scheduled to occur in April 1989. Upon purchase the project's assessed value will increase by approximately $39.6 million, effective in fiscal year 1989-90. Subsequent increases will occur as residential and commercial facilities are developed.

Future property tax impacts in the fiscal analysis are based upon assessed value increases. The projected increase is approximately $721 million. Thus, existing assessed values of approximately $2.0 million are of minor significance in relation to future growth.

7. ANNUAL TAXABLE SALES

Annual taxable sales to be generated by Green Valley residents and commercial/industrial establishments at full buildout are estimated at $146 million. These estimates are predicated upon the following base factors:

- Commercial/Industrial. Commercial and industrial establishments sales are based upon per square foot factors derived from our analysis of sales performance of commercial/industrial projects throughout Southern California. These factors are detailed in Appendix Table A3.

- o Residential. A significant portion of resident taxable purchases will be accounted for by sales of Green Valley commercial and industrial establishments to these residents. However, from the outset a portion of resident purchases will made at Perris stores outside the immediate Green Valley project. Our analysis assumes that 15% of resident purchases will be made at these other Perris stores.

Resident taxable purchases are based upon regional levels, tempered by relative housing values and resultant resident income levels. Specifically, resident taxable purchases have been estimated on a per-capita basis as follows:

- o Resident household incomes estimated at one-third of housing values.
- o Resident per capita incomes based upon household incomes divided by population per household.
- o Resident taxable purchases based upon a current regional average of $5,700 per year, multiplied by the relationship of resident per-capita incomes to regional per-capita incomes of $13,150 per year.

Detailed factors utilized are identified in Appendix Table A3.

8. ANNUAL HOTEL ROOM SALES

Hotel room sales are projected at approximately $1.9 million annually (upon completion of the hotel scheduled for Year 7). This room sales projection is based upon the following factors:

- o $50 average daily room rate.
- o 70% average occupancy.

This equates to annual room sales of $12,775 per room. Please refer to Appendix Table A3 for detailed projections.

9. PUBLIC STREETS TO BE MAINTAINED

Green Valley will contain an estimated 54.06 lane miles of publicly maintained streets at full buildout. This analysis assumes that internal streets within apartment complexes will be privately maintained. Specific factors utilized in the estimates are predicated upon:

- o A scaling of the land use plan for major streets.

- o An average street length of 100 lineal feet per single-family residential acre for neighborhood streets, which equates to 200 lane feet per residential acre. This factor has been applied to SF 5,000 (cottage), SF 6,000 (conventional), and SF 7,000 (large lot) single-family development.

Timing of major street development is projected in Appendix Table A3. Timing of neighborhood street development has been projected to be proportional to development of single-family residential acreage.

9. LOCAL PUBLIC PARKS

Green Valley will contain 46 acres of public parks:

- o A 28-acre community park.

- o Three neighborhood parks of six acres each.

This analysis assumes that none of the parks will be maintained by the City, but rather will be maintained through a lighting and landscaping district.

10. BICYCLE PATHS

Bicycle paths within Green Valley will be an integral part of public streets. As such, their maintenance is covered by cost factors applicable to street maintenance.

11. OPEN SPACE

In addition to public parklands, Green Valley also contains 96 acres of open space:

- o 50 acres identified as "open" in the land use plan, consisting of the San Jacinto River channel.

- o 46 acres identified as "passive," consisting of a 144-foot planted drainage channel.

Neither of these open space areas will require City maintenance. The County Flood Control District will maintain the San Jacinto River channel. A lighting and landscaping district will maintain the 144-foot channel.

12. <u>FLOOD CONTROL FACILITIES</u>

Flood control facilities in Green Valley will consist of:

- o The aforementioned San Jacinto River and 144-foot channels.
- o Flood control facilities within street rights-of-way.

As noted above, the City will not be required to maintain the channels. Costs of maintaining the flood control facilities within streets rights-of-way are included in street maintenance costs.

III.

REVENUE FACTORS

1. CITY BUDGET REVIEW

Specific financial factors utilized in this analysis reflect the combination of inputs, one of which is current City budget experience. To gain a measure of this experience, we prepared Appendix Table C1, which summarizes the City's budget and computes revenues on a per-capita basis.

2. REVENUE FACTORS—ONGOING OPERATIONS

(1) Secured Property Taxes

Secured property tax estimates are based upon specific tax rate allocations made by the County Auditor-Controller to each Tax Rate Area (TRA) within the County. Because the Green Valley project area has only been recently been annexed to the City of Perris, Auditor-Controller records indicates tax rate shares on the former unincorporated basis. We have utilized these figures in estimating City tax rates, as follows:

- o The City will obtain a 25% share of the County general property tax rate, per the standard County/City annexation agreement.
- o The City will obtain 100% of the County's Structural Fire Protection District's property tax share.

Accordingly, tax rates have been computed for each of the two Tax Rate Areas (TRA's) in Green Valley, as follows:

	County General		
TRA	Existing	City 1/4	Fire Protection
8717	29.53%	7.38%	6.06%
8907	30.86	7.72	6.34
Weighted Average Based On Assessed Values	30.62	7.66	6.29

Accordingly, the City's total tax rate allocation is 13.95%. Annual secured property tax estimates are a product of this tax rate and projected assessed value increases. Please refer to Appendix Tables A3 and A4 for the basis of detailed computations.

(2) Unsecured Property Taxes

Unsecured property taxes are estimated at 10% of secured property taxes, applicable only to commercial facilities. This factor covers assessments against tenant improvements and other personal property. Unsecured property taxes attributable to the residential sector will be relatively minor, and disregarded in this analysis.

(3) Sales Taxes

Sales taxes are estimated 1.105% of taxable sales. This rate includes the following:

- o The statutory 1.000% specified allocation of sales taxes to cities.
- o An additional 0.105%, which is our estimate of additional taxes prorated to cities as their share of "unallocated" taxes, as reported in the SBOE reports.

The basis of this 1.105% estimate is detailed in Appendix Table E1.

(4) Transient Occupancy Tax

The City's present transient occupancy tax is computed at 4.0% of room sales. However, at their recommendation of the City's Finance Director, this analysis assumes that a 10.0% rate will established prior to hotel development.

(5) Business License Fees

The City's annual business license fees are estimated at 1.28 cents per square foot of commercial and industrial building space. This figure is based upon the following number of business establishments at full buildout:

Land Use	Bldg Space (SF)	Average Bldg Sp Per Estab (SF)	# Estab
Regional Anchor	100,000	50,000	2
Neigh/Comm Anchor	195,000	32,500	6
Retail Tenant	411,000	2,600	158
Non-Retail Tenant	56,500	2,000	28
Hotel	67,500	67,500	1
Office/Bus Park	629,800	2,000	315
Industrial	121,000	2,000	60
Total	2,674,800		570

At the present time, the City charges a flat-rate business license fee of $60 per establishment. This fee, which is low in relation to many other cities in Southern California, has been utilized in our projections.

(6) Franchise Fees

Franchise fees are estimated at $7.33 per capita, based upon the City's 1988-89 budget levels, as detailed in Appendix Table C1.

(7) Fines and Forfeitures

These fines are estimated at 67 cents per capita. This figure is predicated on the City's 1988-89 budget as documented in Appendix Table C1.

(8) Property Transfer Tax--Resale

Property transfer taxes are estimated at 7.9 cents per $1,000 new development valuation, to reflect ongoing resale of residential units. No resale of commercial or income residential properties is assumed. The 7.9 cent factor is based upon upon 55 cents per $1,000 valuation at time of transaction, under the assumption that average resale occurs each seven years.

(9) Motor Vehicle In-Lieu

This State tax subvention is estimated at $33.33 per capita, based on current budget levels, per Appendix Table C1.

(10) State Gas Tax

Similarly, we have utilized a projection factor of $10.67 per capita for State gas tax, also based upon current budget levels, per Appendix Table C1. These gas tax revenues cover items designated as 2106 and 2107 only.

(11) Cigarette Tax

This tax is estimated at $2.13 per capita, based upon current budget levels, per Appendix Table C1. In actuality, 50% of this tax is allocable by the State on the basis of population and 50% is keyed to sales tax within a given jurisdiction. However, it is appropriate and in the interest of simplicity to utilize the aforementioned factor.

(12) Refuse Collection

As indicated in Table C1, the City's refuse collection in 1988-89 is budgeted at $210,000, which equates to $14.00 per capita. However, this fee is utilized primarily to reimburse a contract hauler. The City Finance Director indicates that approximately $12,000 of the fee covers City administrative reimbursement. Thus, our analysis utilizes a factor of 80 cents per capita, computed on the basis of the $12,000 divided by current population of 15,000.

(13) Animal License Fees

These fees are estimated at 53 cents per capita per year, based upon the City's 1988-89 budget, as detailed in Appendix Table C1.

(14) Public Transportation Sales Tax

This State subvention amounts to $8.27 per capita in the City's 1988-89 budget. A portion of this tax is probably keyed to City population levels. However, it is the City Engineer's judgement that future projections of this tax are unreliable, particularly on a per capita basis. Thus, this tax has been disregarded in this analysis.

(15) Other Revenues

Other revenues are projected at $1.95 per capita, composed of the following items:

	Per Capita
Other Licenses	$ 0.23
Public Fingerprinting	0.13
Misc Police Receipts	0.73
Misc Receipts	0.53
Housemoving Permits	0.13
Damage Claims	0.20
Total	1.95

These per capita figures are based upon the City's 1988-89 budget, as detailed in Appendix Table C1.

3. REVENUE FACTORS—ONE-TIME

(1) Property Transfer Tax—Initial Sale

Property transfer taxes collected by the City at time of initial sale of residential units are estimated at 55 cents per $1,000 of new development value. This is the City's 50% share of such taxes. Our analysis assumes that commercial properties will not be sold, and thus no taxes are assumed for these properties. This is a conservative approach.

(2) Development Control Fees

In this analysis, it is assumed that costs of providing the development control function are offset by development control fees. These fees cover such activities as the issuance of building permits, processing plan and zoning applications, etc. For purposes of perspective, we have utilized a regional average figure of 0.5% of new development value to project these fees.

(3) Fire Protection Mitigation Fee

This analysis assumes that the cost of fire protection facilities required by Green Valley will be paid through some form of mitigation fee. As discussed in Section IV, capital costs are estimated at:

- $330 per residential unit.
- 20 cents per square foot of commercial/industrial building space.

This analysis assumes that these fees are collected at time of building permit. Please refer to Section IV for further discussion of how these estimates were derived.

(4) Park Development Fee

The City has established a park requirement for residential development as follows:

- Provision of two acres of finished park (landscaped and irrigated) per 100 residential units.
- Or an in-lieu fee of $800 per unit.

On this basis, the Green Valley project would require 88.84 acres of finished park, 42.84 acres in excess of planned parks for Green Valley. Irrespective, the developer does not anticipate being required to provide additional park facilities or in-lieu payments. This analysis assumes that no in-lieu fees will be collected.

(5) Master Plan Drainage Fee

Green Valley is not within a master plan drainage district. Thus, no master plan drainage fee will be collected by the City.

IV.

COST FACTORS

1. CITY BUDGET REVIEW

Specific financial factors utilized herein reflect a combination of inputs, one of which is current City budget experience. To gain a measure of this experience, we prepared Appendix Table C2, which summarizes the City's 1988-89 budget and computes costs on a per-capita basis. Departmental costs include an allocation of employee benefits, computed on the basis of payroll dollars. For selected items we have computed costs on the basis of lane miles, park acres, and street trees.

2. COST FACTORS—ONGOING OPERATIONS

(1) Police Protection

The Police Department staff have indicated that they will require 18 additional sworn officers at time of full buildout. This number of officers has been computed on the basis of approximately 1.5 sworn officers per 1,000 population. On this basis, we have utilized a projection factor of $105.50 per capita (in current dollars), computed as follows:

# Sworn Officers	18.0
Annual Cost Per Officer	72,500
Total Annual Cost	1,305,000
Population	12,369
Annual Cost Per Capita	105.50

This factor covers both police protection and the animal control function within the Police Department. Also, this factor covers all police protection requirements in Green Valley—residential, commercial, and industrial.

The $72,500 estimated cost per officer is based on the City's current budget, as detailed in Appendix Table B2. More specifically, this factor has been derived from the City's total departmental budget of $2,174,000 (which includes an allocation of $368,000 for employee benefits) divided by a current level of 30 sworn officers (available positions) in the City.

(2) Fire Protection

The City presently sub-contracts its fire protection function to Riverside Fire Protection District. In the future, the City may opt to continue this arrangement or it may wish to establish its own Fire Department. In the interim, the City is having a special fire protection plan being prepared, which will be available later this year, which is to recommend levels of service and locations of future fire stations. Until this study is completed, we must rely upon less formal estimates, based upon discussions with District officials. More specifically, they are predicated upon the following assumptions:

- o That a two-engine fire station is required for each 4,000 residential units or their commercial/industrial equivalent. In reality, a larger number than 4,000 units may be served by a fire station, in which case our projections will be conservative. A commercial/industrial equivalent unit is computed on the basis of 1,667 square feet of building space.

- o No new facilities will be required in the immediate Green Valley area. Rather, service can be accomplished from a station located in the Downtown Perris area, possibly on a prospective site at 4th Street and Goetz Road, the Edison Yard.

- o A two-engine station as currently operated by County Fire will be operated by a combination of paid and volunteer personnel. It will contain one fire truck and one squad truck. No paramedic facilities will be provided.

- o The cost of operating this station will be $440,000 annually in current dollars, which equates to a cost of $110 per residential unit per year.

- o Which in turn equates to 6.6 cents per square foot of commercial/industrial building space.

As indicated in Appendix Table C2, the City's current cost of fire protection is estimated at $63.39 per unit. Thus, on a per-unit cost basis, the prospective level of service to be provided in Green Valley is 74% greater than that currently provided in the City.

(3) <u>Street Maintenance</u>

Three street maintenance cost factors are utilized in this analysis:

- o $700 per lane mile for street sweeping.

- o $1,400 per lane mile for selected street maintenance, including painting and striping, which we have identified as near-term maintenance.

- o $1,400 per lane mile for other street maintenance, which we have identified as longer-term maintenance.

The above cost factors exclude consideration of landscaping maintenance within street rights-of-way (medians, tree trimming, etc). These costs will be handled through a lighting and landscaping district. Street sweeping costs will be incurred as soon as new streets are completed. Near-term and longer-term maintenance costs will not be incurred for several years after new construction. This analysis assumes a three-year lag between construction and first maintenance costs for near-term maintenance items and a five-year lag for longer-term maintenance items.

The above factors reflect inputs from:

- o Discussions with the City Engineer and City Planning Director.
- o Factors utilized in other City analyses.
- o Review of the City's 1988-89 budget.

With respect to budget review, 1988-89 costs of a street related nature--as indicated in Appendix Table C2--are as follows:

- o $2,349 per lane mile for items budgeted under the "Streets" category.
- o $764 per lane mile for "Shop & Yard" costs.

(4) Street Lighting

No street lights costs will be borne by the City. These costs will be handled through a street lighting and landscaping district.

(5) Park Maintenance

No City park maintenance will be required. Park maintenance costs will handled through the lighting and landscaping district.

(6) Flood Control Maintenance

No flood control maintenance will be required. These costs will borne by the lighting and landscaping district.

(7) Recreation Services

Recreation service costs are estimated at $8.70 per capita, based on the City's 1988-89 budget, per Appendix Table C1. Discussions with the City's Director of Recreation indicate that City operations are in a very early stage, having been started within the past two years. A master plan for parks and recreation has not been completed. The $8.70 figure above should be adequate for financial projection purposes, particularly when it is considered that most cities offset 50% to 75% of recreational costs through associated recreational fees. The $8.70 figure should be considered as a "net" revenue at this point in planning.

(8) Senior Citizens' Services

These are estimated at $3.43 per capita. Current costs in the City for these services are $6.86 per capita. However, cost impacts of the Green

Valley project on a per-capita basis are estimated at 50% of current levels, in recognition of Green Valley's basic housing appeal to younger families with children.

(9) Administration

Additional administrative costs are estimated at 15.0% of other direct costs. This factor has been developed through:

- o Our review of the City's budget.
- o Discussion with the City Finance Director.
- o Experience gained in analyzing other City costs.

As indicated in Appendix Table C2, the City's present administrative costs are equal to an estimated 21.7% of direct costs. This analysis is based upon our classification of costs as either direct or administrative. Our experience in other cities suggest that as Perris grows, its administrative costs will not increase in direct proportion to direct costs. The 15% factor is consistent with experience found in many other cities, wherein administrative costs are in the range of 10% to 15% of direct costs.

3. COST FACTORS—ONE-TIME

(1) Development Control

For purposes of revenue cost analysis, we have defined the development control function to encompass those activities which are directly related to processing new development in the City. Consistent with commonly accepted cost-revenue methodology, this analysis assumes that the development control function is a breakeven situation. This means that the City charges fees appropriate to cover all direct costs involved. This is matter which could be subject to closer scrutiny, but the City Council has the power to establish fees to cover cost levels. Accordingly, development control costs are estimated at 0.435% of new development value. This factor plus a 15.0% administrative charge equates to the aforementioned projected development control fee of 0.50% of new development value.

(2) Capital Facilities

No capital facility costs are projected to be incurred by the City as a result of the development of Green Valley. All capital facility costs are assumed to be borne by the developer.

V.

DETAILED PROJECTIONS AND FISCAL MODEL

A full set of detailed projections are contained in Appendix A. Each set of detailed projections (and summary projections) included herein cover an 11-year projection period:

- o Each of the ten years during the development period (Year 1 through Year 10).
- o A total for this ten-year development period.
- o Estimates for Year 11, which basically reflect ongoing years beyond development.

Each set of detailed projections contains four tables, as illustrated by the following tables in Appendix A:

- o <u>Table A1</u>. A two-page summary of City projected cash flow, with the first page presenting on-going revenue and cost items and the second page presenting one-time items and also a summary of all items.
- o <u>Table A2</u>. A one-page table presenting base development schedules of commercial building space and residential units.
- o <u>Table A3</u>. A four-page table presenting annual and cumulative measures used to compute various revenues and costs--including population, new development values, assessed value increases, taxable sales, hotel room sales, acres of publicly maintained local public parks, and lane miles of publicly maintained streets.
- o <u>Table A4</u>. A one-page table presenting unit revenue and cost factors.

Further details of projected commercial/industrial development are presented in Appendix B. These appendix tables have been prepared in a form so that the basis of all computations can be determined without reference to additional documentation.

Each set of detailed computer printouts contained herein is in computer disk form. These disks are being made available to client staff for their subsequent use as appropriate. In addition, we stand ready to assist the client in further evaluation of project alternatives if this be appropriate. The fiscal model utilized herein is in Symphony Spreadsheet form, and requires approximately 157,000 bytes of computer memory.

APPENDIX TABLES

Table A1
SUMMARY CASH FLOW (IN 1989 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11	Yr 11 Anal Per Res Unit	Yr 11 Anal Per Capita
	Development Period													
	$000's												$	
ON-GOING OPERATIONS														
Revenues														
Property Tax—Secured	4,974	56	104	177	249	387	529	690	839	937	1,005	1,005	226.29	81.26
Property Tax—Unsecured	115	0	0	0	0	5	11	18	24	27	31	31	6.96	2.50
Sales & Use Tax	5,844	0	9	22	36	280	566	879	1,152	1,293	1,609	1,609	362.19	130.07
Transient Occupancy Tax	767	0	0	0	0	0	0	192	192	192	192	192		
Business Licenses	122	0	0	0	0	5	10	18	25	29	34	34	7.71	2.77
Franchises	503	0	7	17	27	41	55	71	86	97	102	102	23.06	8.28
Fines & Forfeitures	42	0	1	2	2	4	5	6	7	8	8	8	1.87	0.67
Documentary Transf Tax—Resale	182	0	3	7	12	16	21	25	29	34	35	35	7.91	2.84
Motor Vehicle In Lieu	2,097	0	30	75	121	179	236	294	352	397	412	412	92.81	33.33
State Gas Tax	671	0	10	24	39	57	76	94	113	127	132	132	29.71	10.67
Cigarette Tax	134	0	2	5	8	11	15	19	22	25	26	26	5.93	2.13
Refuse Collection	50	0	1	2	3	4	6	7	8	10	10	10	2.23	0.80
Animal License Fees	33	0	0	1	2	3	4	5	6	6	7	7	1.48	0.53
Transportation Tax	0	0	0	0	0	0	0	0	0	0	0	0		
Administrative Service Fees														
Other Revenues	123	0	2	4	7	10	14	17	21	23	24	24	5.43	1.95
Total Revenues	15,657	56	168	336	505	1,002	1,547	2,335	2,875	3,205	3,628	3,628	816.71	293.29
Expenditures														
Police Protection	6,637	0	96	239	382	565	748	931	1,114	1,257	1,305	1,305	293.78	105.50
Animal Control	0	0	0	0	0	0	0	0	0	0	0	0		
Fire Protection	3,099	0	34	85	135	232	330	444	551	623	665	665	149.74	53.77
Street Sweeping	243	0	11	17	19	26	29	32	35	37	38	38	8.52	3.06
Near-Term Street Maintenance	268	0	0	0	0	21	33	38	53	57	65	69		
Longer-Term Street Maintenance	146	0	0	0	0	0	0	21	33	38	53	57		
Refuse Collection	0	0	0	0	0	0	0	0	0	0	0	0		
Flood Control Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Park Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Recreation Services	547	0	8	20	32	47	62	77	92	104	108	108	24.23	8.70
Senior Citizens Services	216	0	3	8	12	18	24	30	36	41	42	42		
Administration	1,673	0	23	55	87	136	184	236	287	324	341	343	77.16	27.71
Total Expenditures	12,829	0	174	423	668	1,046	1,411	1,809	2,201	2,481	2,617	2,628	591.54	212.43
Net Surplus/(Deficit)	2,827	56	(6)	(87)	(163)	(44)	136	525	675	724	1,011	1,000	225.17	80.86
—Cumulative		56	50	(37)	(200)	(244)	(108)	418	1,092	1,816	2,827	3,828		

Continued on next page..........

Table A1 (Continued.......page 2)
SUMMARY CASH FLOW (IN 1988 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11	Yr 11 Anal Per Res Unit	Yr 11 Anal Per Capita
	Development Period													
	$000's												$	
ONE-TIME ITEMS														
Revenues														
Property Transfer Tax—New	246	0	21	31	31	31	31	31	31	31	10	0	0.00	0.00
Development Control Fees	3,613	0	186	280	280	524	538	609	564	377	256	0	0.00	0.00
Fire Protection Fees	2,001	0	102	152	152	291	296	341	323	218	127	0	0.00	0.00
Park Fees	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Master Plan Drainage Fees	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Total Revenues	5,860	0	308	463	463	845	865	980	917	626	393	0	0.00	0.00
Expenditures														
Development Control	3,142	0	162	243	243	455	468	529	490	328	222	0	0.00	0.00
Fire Protection Facilities	1,740	0	88	132	132	253	257	296	281	189	110	0		
Other Direct	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Administration	732	0	38	56	56	106	109	124	116	78	50	0	0.00	0.00
Total Expenditures	5,614	0	288	432	432	815	834	949	887	595	382	0	0.00	0.00
Net Surplus/(Deficit)	246	0	21	31	31	31	31	31	31	31	10	0	0.00	0.00
—Cumulative		0	21	51	82	113	144	174	205	236	246	246		
ON-GOING & ONE-TIME ITEMS COMBINED														
Revenues	21,516	56	476	799	967	1,848	2,412	3,315	3,793	3,831	4,020	3,628	816.71	293.29
Expenditures	18,443	0	462	855	1,100	1,861	2,244	2,759	3,087	3,076	2,999	2,628	591.54	212.43
Net Surplus/(Deficit)	3,074	56	15	(56)	(132)	(13)	167	556	705	755	1,021	1,000	225.17	80.86
—Cumulative		56	70	14	(118)	(131)	36	592	1,297	2,052	3,074	4,074		

Source: Natelson Levander Whitney, Inc.

Table A2
DEVELOPMENT SCHEDULE
GREEN VALLEY PROJECT FISCAL IMPACTS--CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11	
	Development Period												
RESIDENTIAL UNITS COMPLETED													
SF 5,000 (Cottage)	2,109		176	264	264	264	264	264	264	264	88		
SF 6,000 (Conventional)	1,099		92	137	137	137	137	137	137	137	46		
SF 7,000 (Large Lot)	484		40	61	61	61	61	61	61	61	20		
Apartments	750					188	188	188	188				
	0												
Total	4,442	0	308	462	462	649	649	649	649	462	154	0	
—Cumulative		0	308	769	1,231	1,880	2,529	3,178	3,827	4,288	4,442	4,442	
RESIDENTIAL ACRES DEVELOPED													
SF 5,000 (Cottage)	371.0	0.0	30.9	46.4	46.4	46.4	46.4	46.4	46.4	46.4	15.5		
SF 6,000 (Conventional)	217.0	0.0	18.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	9.0		
SF 7,000 (Large Lot)	121.0	0.0	10.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	5.0		
Apartments	50.0	0.0	0.0	0.0	0.0	12.5	12.5	12.5	12.5	0.0	0.0		
	0.0												
Total	759.0	0.0	59.1	88.6	88.6	101.1	101.1	101.1	101.1	88.6	29.5		
COMM BLDG SPACE COMPL ($000's SF)													
Regional Anchor	100.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0		
Neighborhood/Community Anchor	195.0	0.0	0.0	0.0	0.0	65.0	0.0	0.0	65.0	0.0	65.0		
Retail Tenant	411.0	0.0	0.0	0.0	0.0	50.0	90.5	85.0	45.5	40.0	100.0		
Non-Retail Tenant	56.5	0.0	0.0	0.0	0.0	8.5	8.5	8.5	5.6	5.6	20.0		
Hotel	67.5	0.0	0.0	0.0	0.0	0.0	0.0	67.5	0.0	0.0	0.0		(150 Rooms)
Office/Business Park	629.8	0.0	0.0	0.0	0.0	146.3	146.3	146.3	152.3	6.0	32.8		
Industrial	1,215.0	0.0	0.0	0.0	0.0	114.0	114.0	275.3	275.3	275.3	161.3		
Total	2,674.8	0.0	0.0	0.0	0.0	383.7	409.2	632.5	543.6	326.8	379.0		
CUM COMM BLDG SPACE (000's SF)													
Regional Anchor	100.0	0.0	0.0	0.0	0.0	0.0	50.0	100.0	100.0	100.0	100.0	100.0	
Neighborhood/Community Anchor	195.0	0.0	0.0	0.0	0.0	65.0	65.0	65.0	130.0	130.0	195.0	195.0	
Retail Tenant	411.0	0.0	0.0	0.0	0.0	50.0	140.5	225.5	271.0	311.0	411.0	411.0	
Non-Retail Tenant	56.5	0.0	0.0	0.0	0.0	8.5	16.9	25.4	30.9	36.5	56.5	56.5	
Hotel	67.5	0.0	0.0	0.0	0.0	0.0	0.0	67.5	67.5	67.5	67.5	67.5	
Office/Business Park	629.8	0.0	0.0	0.0	0.0	146.3	292.5	438.8	591.0	597.0	629.8	629.8	
Industrial	1,215.0	0.0	0.0	0.0	0.0	114.0	228.0	503.3	778.5	1,053.8	1,215.0	1,215.0	
Total	2,674.8	0.0	0.0	0.0	0.0	383.7	792.9	1,425.4	1,968.9	2,295.8	2,674.8	2,674.8	
COMM LAND AREA DEVEL (ACRES)													
Regional Anchor	9.1	0.0	0.0	0.0	0.0	0.0	4.5	4.5	0.0	0.0	0.0		
Neighborhood/Community Anchor	17.7	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	0.0	5.9		
Retail Tenant	37.4	0.0	0.0	0.0	0.0	4.5	8.2	7.7	4.1	3.6	9.1		
Non-Retail Tenant	5.1	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.5	0.5	1.8		
Hotel	2.7	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0		
Office/Business Park	42.0	0.0	0.0	0.0	0.0	9.8	9.8	9.8	10.2	0.4	2.2		
Industrial	81.0	0.0	0.0	0.0	0.0	7.6	7.6	18.4	18.4	18.4	10.8		
Total	195.0	0.0	0.0	0.0	0.0	28.6	30.9	43.8	39.1	22.9	29.8		
TOTAL RES/COMM ACRES DEVELOPED	954.0	0.0	59.1	88.6	88.6	129.7	132.0	145.0	140.2	111.5	59.3		

Source: Cook & Selich; FMA; Natelson Levander Whitney, Inc.

Table A3
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

RESIDENTIAL FACTORS	# Units	Population Per Unit	Population #	Units Per Ac	Building Area Per Unit (SF)	Building Area Amount (000'sSF)	New Dev Value Per Unit ($)	New Dev Value Per SF ($)	New Dev Value Amount ($000's)	Tot Res Tax Pur Per Capita ($)	Tot Res Tax Pur Amount ($000's)	Tax Pur @ Perris Stores Excluding Green Valley %	Per Cap ($)	Total ($000's)
							In 1989 Constant $							
SF 5,000 (Cottage)	2,109	3.00	6,327	5.685	1,400	2,953	110,000	78.57	231,990	5,298	33,519	15.0	795	5,028
SF 6,000 (Conventional)	1,099	2.90	3,187	5.065	1,600	1,758	130,000	81.25	142,870	6,477	20,643	15.0	972	3,096
SF 7,000 (Large Lot)	484	2.80	1,355	4.000	1,800	871	150,000	83.33	72,600	7,740	10,490	15.0	1,161	1,573
Apartments	750	2.00	1,500	15.000	900	675	60,000	66.67	45,000	4,335	6,502	15.0	650	975
	0		0			0			0		0		0	0
Total/Average	4,442	2.78	12,369	5.852	1,409	6,257	110,864	78.70	492,460	5,752	71,154	15.0	863	10,673

COMMERCIAL FACTORS	Bldg Space Total (000'sSF)	Bldg Space Per Ac (SF)	New Dev Val Per SF ($)	New Dev Val Amount ($000's)	Total Tax Sales Per SF ($)	Total Tax Sales Amount ($000's)	Taxable Sales Incremental Increase % of Total	Per SF ($)	Amount ($000's)	Hotel Room Sales Aver Rm Rate $)	Aver % Occ	Ann Sales Per Rm ($)	Bl Sp Per Rm (SF)	Ann Sales Per SF ($)	Ann Sales Amount ($000's)
			In 1989 Constant $												
Regional Anchor	100.0	11,000	110.00	11,000	150.00	15,000	100.0	150.00	15,000						
Neighborhood/Community Anchor	195.0	11,000	110.00	21,450	150.00	29,250	100.0	150.00	29,250						
Retail Tenant	411.0	11,000	110.00	45,210	150.00	61,650	100.0	150.00	61,650						
Non-Retail Tenant	56.5	11,000	110.00	6,215	0.00	0	100.0	0.00	0						
Hotel	67.5	25,000	100.00	6,750	0.00	0	100.0	0.00	0	50.00	70.00	12,775	450	28.39	1,916
Office/Business Park	629.8	15,000	125.00	78,719	7.50	4,723	100.0	7.50	4,723						
Industrial	1,215.0	15,000	50.00	60,750	20.00	24,300	100.0	20.00	24,300						
Total/Average	2,674.8	13,717	86.02	230,094	50.44	134,923	100.00	50.44	134,923						

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
POPULATION ADDED												
SF 5,000 (Cottage)	6,327	0	527	791	791	791	791	791	791	791	264	0
SF 6,000 (Conventional)	3,187	0	266	398	398	398	398	398	398	398	133	0
SF 7,000 (Large Lot)	1,355	0	113	169	169	169	169	169	169	169	56	0
Apartments	1,500	0	0	0	0	375	375	375	375	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Total	12,369	0	906	1,359	1,359	1,734	1,734	1,734	1,734	1,359	453	0
CUMULATIVE POPULATION												
SF 5,000 (Cottage)	6,327	0	527	1,318	2,109	2,900	3,691	4,482	5,273	6,063	6,327	6,327
SF 6,000 (Conventional)	3,187	0	266	664	1,062	1,461	1,859	2,258	2,656	3,054	3,187	3,187
SF 7,000 (Large Lot)	1,355	0	113	282	452	621	791	960	1,129	1,299	1,355	1,355
Apartments	1,500	0	0	0	0	375	750	1,125	1,500	1,500	1,500	1,500
	0	0	0	0	0	0	0	0	0	0	0	0
Total	12,369	0	906	2,264	3,623	5,357	7,090	8,82[illegible]	[illegible]58	11,916	12,369	12,369

Continued on next page..................

Table A3 (Continued......page 2)
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

	Development Period											
Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
EXISTING ASSESSED VALUE	Total Amount ($000's):		Prior to Acquisition					2,002				
			After Acquisition					41,790				
	Per Acre After Acq ($):		Total Land Area					35,000		(	1,194.00 Acres)	
NEW DEVELOPMENT VALUE ADDED EACH YEAR ($000's)			Res/Com/Ind Acres Only					43,885		(	954.00 Acres)	
Initial Acq Increase	39,788	39,788										
Residential												
SF 5,000 (Cottage)	231,990	0	19,333	28,999	28,999	28,999	28,999	28,999	28,999	28,999	9,666	0
SF 6,000 (Conventional)	142,870	0	11,906	17,859	17,859	17,859	17,859	17,859	17,859	17,859	5,953	0
SF 7,000 (Large Lot)	72,600	0	6,050	9,075	9,075	9,075	9,075	9,075	9,075	9,075	3,025	0
Apartments	45,000	0	0	0	0	11,250	11,250	11,250	11,250	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Total Residential	492,460	0	37,288	55,933	55,933	67,183	67,183	67,183	67,183	55,933	18,644	0
Commercial												
Regional Anchor	11,000	0	0	0	0	0	5,500	5,500	0	0	0	0
Neighborhood/Community Anchor	21,450	0	0	0	0	7,150	0	0	7,150	0	7,150	0
Retail Tenant	45,210	0	0	0	0	5,500	9,955	9,350	5,005	4,400	11,000	0
Non-Retail Tenant	6,215	0	0	0	0	930	930	930	613	613	2,200	0
Hotel	6,750	0	0	0	0	0	0	6,750	0	0	0	0
Office/Business Park	78,719	0	0	0	0	18,281	18,281	18,281	19,031	750	4,094	0
Industrial	60,750	0	0	0	0	5,700	5,700	13,763	13,763	13,763	8,063	0
Total Comm/Indus	230,094	0	0	0	0	37,561	40,366	54,573	45,562	19,526	32,506	0
Total New Devel Value	762,341	39,788	37,288	55,933	55,933	104,743	107,548	121,756	112,745	75,458	51,150	0
—Cumulative		39,788	77,076	133,008	188,941	293,684	401,232	522,988	635,733	711,191	762,341	762,341
Total Sales Housing (SF Only)	447,460	0	37,288	55,933	55,933	55,933	55,933	55,933	55,933	55,933	18,644	0
—Cumulative		0	37,288	93,221	149,153	205,086	261,018	316,951	372,883	428,816	447,460	447,460
EXISTING ASSESSED VALUE REPLACED—AFTER ACQ ($000's)												
Residential	33,248	0	2,588	3,882	3,882	4,430	4,430	4,430	4,430	3,882	1,294	0
Commercial	8,542	0	0	0	0	1,252	1,353	1,920	1,711	1,003	1,303	0
Total	41,790	0	2,588	3,882	3,882	5,681	5,783	6,350	6,140	4,885	2,597	0
ASSESSED VALUE INCREASE ($000's)												
Initial Acq Increase	39,788	39,788										
Residential	459,212	0	34,700	52,050	52,050	62,753	62,753	62,753	62,753	52,050	17,350	0
Commercial	221,552	0	0	0	0	36,309	39,013	52,653	43,851	18,523	31,203	0
Total	720,551	39,788	34,700	52,050	52,050	99,062	101,765	115,406	106,604	70,573	48,553	0
CUMULATIVE ASSESSED VALUE INCREASE ($000's)												
Initial Acq Increase	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788
Residential	459,212	0	34,700	86,750	138,801	201,553	264,306	327,059	389,812	441,862	459,212	459,212
Commercial	221,552	0	0	0	0	36,309	75,322	127,974	171,826	190,349	221,552	221,552
Total	720,551	39,788	74,488	126,538	178,588	277,650	379,416	494,821	601,425	671,998	720,551	720,551

Continued on next page..................

Table A3 (Continued......page 3) Alternative: #1. Baseline Projections

DEVELOPMENT MEASURES

GREEN VALLEY PROJECT FISCAL IMPACTS--CITY OF PERRIS

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
ANNUAL TAXABLE SALES INCREASES ($000's)												
Green Valley Resident Purchases @ Stores in Perris Excluding Green Valley Estab												
SF 5,000 (Cottage)	25,978	0	419	1,047	1,676	2,304	2,933	3,561	4,190	4,818	5,028	5,028
SF 6,000 (Conventional)	15,998	0	258	645	1,032	1,419	1,806	2,193	2,580	2,967	3,096	3,096
SF 7,000 (Large Lot)	8,130	0	131	328	524	721	918	1,115	1,311	1,508	1,573	1,573
Apartments	4,389	0	0	0	0	244	488	731	975	975	975	975
	0	0	0	0	0	0	0	0	0	0	0	0
Total Res Purch	54,494	0	808	2,020	3,233	4,689	6,145	7,601	9,057	10,269	10,673	10,673
Green Valley Establishment Sales												
Regional Anchor	67,500	0	0	0	0	0	7,500	15,000	15,000	15,000	15,000	15,000
Neighborhood/Community Anchor	97,500	0	0	0	0	9,750	9,750	9,750	19,500	19,500	29,250	29,250
Retail Tenant	211,350	0	0	0	0	7,500	21,075	33,825	40,650	46,650	61,650	61,650
Non-Retail Tenant	0	0	0	0	0	0	0	0	0	0	0	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0
Office/Business Park	20,214	0	0	0	0	1,097	2,194	3,291	4,433	4,478	4,723	4,723
Industrial	77,850	0	0	0	0	2,280	4,560	10,065	15,570	21,075	24,300	24,300
Total Estab Sales	474,414	0	0	0	0	20,627	45,079	71,931	95,153	106,703	134,923	134,923
Total Tax Sales Increase	528,908	0	808	2,020	3,233	25,316	51,223	79,531	104,209	116,972	145,596	145,596
ANNUAL HOTEL ROOM SALES ($000's)	7,665	0	0	0	0	0	0	1,916	1,916	1,916	1,916	1,916

Continued on next....................

Table A3 (Continued......page 4)
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS--CITY OF PERRIS

Alternative: #1. Baseline Projections

Item	10-Year Total	Development Period 89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
PUBLIC STREET MILES ADDED (LANE MILES)												
Major Streets			Phase I	Phase II		Phase III		Phase IV				
Case Road	2.81			1.96				0.85				
Murietta Road	5.68		2.56			3.12						
Ethanac Road	3.47		3.47									
Goetz Road	1.99		1.02					0.97				
West Loop	3.98					3.98						
East Loop	0.00											
South Loop	7.22		3.81	3.41								
West Tee	1.48		1.48									
South Tee	0.57		0.57									
Total	27.20	0.00	12.91	5.37	0.00	7.10	0.00	1.82	0.00	0.00	0.00	0.00
—Cumulative		0.00	12.91	18.28	18.28	25.38	25.38	27.20	27.20	27.20	27.20	27.20
Neighborhood Streets												
Factor		200	Lane Feet Per Developed Single-Family Residential Acre (Lineal Feet)									
# Lane Lineal Feet	141,800	0	11,817	17,725	17,725	17,725	17,725	17,725	17,725	17,725	5,908	0
# Lane Miles	26.86	0.00	2.24	3.36	3.36	3.36	3.36	3.36	3.36	3.36	1.12	0.00
—Cumulative		0.00	2.24	5.60	8.95	12.31	15.67	19.02	22.38	25.74	26.86	26.86
Total All Streets	54.06	0.00	15.15	8.73	3.36	10.46	3.36	5.18	3.36	3.36	1.12	0.00
—Cumulative		0.00	15.15	23.88	27.23	37.69	41.05	46.22	49.58	52.94	54.06	54.06
—Cumulative @ 3-Year Lag					0.00	15.15	23.88	27.23	37.69	41.05	46.22	49.58
—Cumulative @ 5-Year Lag							0.00	15.15	23.88	27.23	37.69	41.05
PUBLIC PARKS TO MAINTAIN (ACRES)												
Community Park (Plan Area #5)	0.0											
Neighborhood Park (Plan Area #14)	0.0											
Neighborhood Park (Plan Area #22)	0.0											
Neighborhood Park (Plan Area #29)	0.0											
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
—Cumulative		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL CON FACIL TO MAINT (Lin Mi)												
144-Foot Channel	0.00											
Other	0.00											
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
—Cumulative		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Cook & Selich; FMA; Natelson Levander Whitney, Inc.

Table A4
REVENUE AND COST FACTORS (IN 1988 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

	Measure Applied									
	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Lump Sum	Comment
		$ Per Measure								
ON-GOING OPERATIONS										
Revenues										
Property Tax—Secured	13.950									% of $1.00 Per $100 A.V. Tax Rate; Applied to Cum New Devel Val Increase (Table A3).
Property Tax—Unsecured	10.000									% of Secured Property Tax (Table A1).
Sales & Use Tax	1.105									% of Taxable Sales (Table A3).
Transient Occupancy Tax	10.000									% of Hotel Room Sales (Table A3).
Business Licenses					0.0128					Applied to Cumulative Population (Table A3).
Franchises			7.33		0.0044					Applied to Cumulative Population (Table A3).
Fines & Forfeitures			0.67							Applied to Cumulative Population (Table A3).
Documentary Transf Tax—Resale		0.079								Applied to Cum New Devel Value— Sales Housing Only (Table A3).
Motor Vehicle In Lieu			33.33							Applied to Cumulative Population (Table A3).
State Gas Tax			10.67							Applied to Cumulative Population (Table A3).
Cigarette Tax	0.000		2.13							Applied to Cumulative Population (Table A3).
Refuse Collection			0.00							Applied to Cumulative Population (Table A3).
Animal License Fees			0.53							Applied to Cumulative Population (Table A3).
Transportation Tax			0.00							Applied to Cumulative Population (Table A3).
Administrative Service Fees										
Other Revenues			1.95							Applied to Cumulative Population (Table A3).
Expenditures										
Police Protection			105.50							Applied to Cumulative Population (Table A3).
Animal Control										Applied to Cumulative Population (Table A3).
Fire Protection				110.00	0.0660					Applied to Cumulative Residential Units (Table A2).
Street Sweeping								700		Applied to Cumulative Lane Miles (Table A3).
Near-Term Street Maintenance								1,400		Applied to Cumulative Lane Miles @ 3-Yr Lag (Table A3).
Longer-Term Street Maintenance								1,400		Applied to Cumulative Lane Miles @ 5-Yr Lag (Table A3).
Refuse Collection			0.00							Applied to Cumulative Population (Table A3).
Flood Control Maintenance								0		Applied to Cum Lineal Miles of Fl Con Facilities (Table A3).
Park Maintenance							5,000			Applied to Cumulative Public Park Acres (Table A3).
Recreation Services			0.70							Applied to Cumulative Population (Table A3).
Senior Citizens Services			3.43							Applied to Cumulative Population (Table A3).
Administration	15.000									Applied to Other Costs (Table A1).
ONE-TIME ITEMS										
Revenues										
Property Transfer Tax—New		0.550								Applied to New Devel Value Added Ea Yr—Sgl Fam/Condo/TH Residential Only (Table A3).
Development Control Fees	0.500									% of New Development Value Added Each Year (Table A3).
Fire Protection Fees				330	0.2000					Applied to Residential Units Completed (Table A2).
Park Fees				0						Applied to Residential Units Completed (Table A2).
Master Plan Drainage Fees							0.00			Applied to Acres Developed (Table A2).
Expenditures										
Development Control	0.435									% of New Development Value Added Each Year (Table A3).
Fire Protection Facilities				287	0.1739					
Other Direct				0	0.0000					Applied to Residential Units Completed (Table A2).
Administrati	15.000									Applied to Other Costs (Table A1).

Source: City of Perris; Natelson Levander Whitney, Inc.

Table B1
COMMERCIAL/INDUSTRIAL DEVELOPMENT ANALYSIS
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/83

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	Bldg Space Per Ac (SF)
		Development Period										
BUILDING SPACE DEVELOPED—ANNUAL (SF)												
Planning Area 1												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	0											11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	0											15,000
Industrial	570,000					114,000	114,000	114,000	114,000	114,000		15,000
Total	570,000	0	0	0	0	114,000	114,000	114,000	114,000	114,000	0	
Planning Area 23												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	65,000										65,000	11,000
Retail Tenant	100,000										100,000	11,000
Non-Retail Tenant	20,000										20,000	11,000
Hotel	0											25,000
Office/Business Park	32,750										32,750	15,000
Industrial	0											15,000
Total	217,750	0	0	0	0	0	0	0	0	0	217,750	
Planning Area 6												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	0											11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	0											15,000
Industrial	645,000							161,250	161,250	161,250	161,250	15,000
Total	645,000	0	0	0	0	0	0	161,250	161,250	161,250	161,250	
Planning Area 9												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	65,000								65,000			11,000
Retail Tenant	80,000								40,000	40,000		11,000
Non-Retail Tenant	11,150								5,575	5,575		11,000
Hotel	0											25,000
Office/Business Park	12,000								6,000	6,000		15,000
Industrial	0											15,000
Total	168,150	0	0	0	0	0	0	0	116,575	51,575	0	
Planning Area 33												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	11,000						5,500		5,500			11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	585,000					146,250	146,250	146,250	146,250			15,000
Industrial	0											15,000
Total	596,000	0	0	0	0	146,250	151,750	146,250	151,750	0	0	

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Table B1 (Continued..........page 2)
COMMERCIAL/INDUSTRIAL DEVELOPMENT ANALYSIS
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	Bldg Space Per Ac (SF)
		Development Period										
BUILDING SPACE DEVELOPED—ANNUAL (SF)—CONTINUED												
Planning Area 38												
Regional Anchor	100,000						50,000	50,000				11,000
Neighborhood/Community Anchor	65,000					65,000						11,000
Retail Tenant	220,000					50,000	85,000	85,000				11,000
Non-Retail Tenant	25,350					8,450	8,450	8,450				11,000
Hotel	67,500							67,500				25,000
Office/Business Park	0											15,000
Industrial	0											15,000
Total	477,850	0	0	0	0	123,450	143,450	210,950	0	0	0	
Total Building Space												
Regional Anchor	100,000	0	0	0	0	0	50,000	50,000	0	0	0	
Neighborhood/Community Anchor	195,000	0	0	0	0	65,000	0	0	65,000	0	65,000	
Retail Tenant	411,000	0	0	0	0	50,000	90,500	85,000	45,500	40,000	100,000	
Non-Retail Tenant	56,500	0	0	0	0	8,450	8,450	8,450	5,575	5,575	20,000	
Hotel	67,500	0	0	0	0	0	0	67,500	0	0	0	
Office/Business Park	629,750	0	0	0	0	146,250	146,250	146,250	152,250	6,000	32,750	
Industrial	1,215,000	0	0	0	0	114,000	114,000	275,250	275,250	275,250	161,250	
Total	2,674,750	0	0	0	0	383,700	409,200	632,450	543,575	326,825	379,000	
LAND AREA DEVELOPED—ANNUAL (ACRES)												
Planning Area 1												
Regional Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Neighborhood/Community Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Retail Tenant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Non-Retail Tenant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Office/Business Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Industrial	38.00	0.00	0.00	0.00	0.00	7.60	7.60	7.60	7.60	7.60	0.00	
Total	38.00	0.00	0.00	0.00	0.00	7.60	7.60	7.60	7.60	7.60	0.00	
Planning Area 23												
Regional Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Neighborhood/Community Anchor	5.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.91	
Retail Tenant	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.09	
Non-Retail Tenant	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Office/Business Park	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18	
Industrial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.00	

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Table B1 (Continued..........page 3)
COMMERCIAL/INDUSTRIAL DEVELOPMENT ANALYSIS
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR1A
SL204
02/24/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	Bldg Space Per Ac (SF)
		Development Period										
LAND AREA DEVELOPED—ANNUAL (ACRES)—CONTINUED												
Planning Area 6												
Regional Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Neighborhood/Community Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Retail Tenant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Non-Retail Tenant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Office/Business Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Industrial	43.00	0.00	0.00	0.00	0.00	0.00	0.00	10.75	10.75	10.75	10.75	
Total	43.00	0.00	0.00	0.00	0.00	0.00	0.00	10.75	10.75	10.75	10.75	
Planning Area 9												
Regional Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Neighborhood/Community Anchor	5.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.91	0.00	0.00	
Retail Tenant	7.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	3.64	0.00	
Non-Retail Tenant	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.51	0.00	
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Office/Business Park	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.00	
Industrial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.45	4.54	0.00	
Planning Area 33												
Regional Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Neighborhood/Community Anchor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Retail Tenant	1.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	
Non-Retail Tenant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Office/Business Park	39.00	0.00	0.00	0.00	0.00	9.75	9.75	9.75	9.75	0.00	0.00	
Industrial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	40.00	0.00	0.00	0.00	0.00	9.75	10.25	9.75	10.25	0.00	0.00	
Planning Area 38												
Regional Anchor	9.09	0.00	0.00	0.00	0.00	0.00	4.55	4.55	0.00	0.00	0.00	
Neighborhood/Community Anchor	5.91	0.00	0.00	0.00	0.00	5.91	0.00	0.00	0.00	0.00	0.00	
Retail Tenant	20.00	0.00	0.00	0.00	0.00	4.55	7.73	7.73	0.00	0.00	0.00	
Non-Retail Tenant	2.30	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	
Hotel	2.70	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	
Office/Business Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Industrial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	40.00	0.00	0.00	0.00	0.00	11.22	13.04	15.74	0.00	0.00	0.00	
Total Acres												
Regional Anchor	9.09	0.00	0.00	0.00	0.00	0.00	4.55	4.55	0.00	0.00	0.00	
Neighborhood/Community Anchor	17.73	0.00	0.00	0.00	0.00	5.91	0.00	0.00	5.91	0.00	5.91	
Retail Tenant	37.36	0.00	0.00	0.00	0.00	4.55	8.23	7.73	4.14	3.64	9.09	
Non-Retail Tenant	5.14	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.51	0.51	1.82	
Hotel	2.70	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	
Office/Business Park	41.98	0.00	0.00	0.00	0.00	9.75	9.75	9.75	10.15	0.40	2.18	
Industrial	81.00	0.00	0.00	0.00	0.00	7.60	7.60	18.35	18.35	18.35	10.75	
Total	195.00	0.00	0.00	0.00	0.00	28.57	30.89	43.84	39.05	22.89	29.75	

Source: Cook & Selich; FMA; Natelson Levander Whitney, Inc.

Table C1
ANALYSIS OF CITY OF PERRIS 1988-89 BUDGET
SELECTED REVENUE ITEMS

1213Bud1
SL204
02/21/89

Budget Item	Amount	Per Capita
GENERAL FUND		
Property Tax	1,162,000	77.47
Sales & Use Tax	1,200,000	80.00
Development Control Fees		
Building Permits	600,000	40.00
Plan Checking	418,000	27.87
Planning Department Fees	550,000	36.67
Engineering Fees	390,000	26.00
Electrical/Plumbing Permits	180,000	12.00
Total	2,138,000	142.53
Refuse Collection	210,000	14.00
Fire Protection Fees (Mitigations)	175,000	11.67
Franchises	110,000	7.33
Business Licenses	88,500	5.90
Other Local		
Animal Licenses	8,000	0.53
Other Licenses	3,400	0.23
Transient Occupancy Tax	2,500	0.17
Police Fingerprinting	2,000	0.13
Misc Police Receipts	11,000	0.73
Misc Receipts	8,000	0.53
Housemoving Permits	2,000	0.13
Damage Claims	3,000	0.20
Total	39,900	2.66
State/Federal Shares/Grants		
Cigarette Tax	32,000	2.13
Trailer Coach In-Lieu	90,000	6.00
Motor Vehicle In-Lieu	500,000	33.33
Documentary Transfer Tax	30,000	2.00
Police Off Training Grant	40,000	2.67
Sr Citizens Title III Funds	10,000	0.67
Total	702,000	46.80
All Other General Fund		
Interest Income	240,000	16.00
Sale of Property	3,000	0.20
Fines & Forfeitures	10,000	0.67
Total	253,000	16.87
T[illegible] General Fund	6,078,400	405.23

Cont[illegible] on next page..........

Table C1 (Continued..........page 2)
ANALYSIS OF CITY OF PERRIS 1988-89 BUDGET
SELECTED REVENUE ITEMS

1213Bud1
5L204
02/21/89

Budget Item	Amount	Per Capita
OTHER FUNDS		
Traffic Safety Fund	82,000	5.47
Lighting District Property Tax	65,100	4.34
Water Service Fund	834,900	55.66
Sewer Service Fund	440,000	29.33
Park Fees From Bldg Permits (Mitigations)	250,000	16.67
Traffic Light Mitigation	175,000	11.67
Special Gas Tax Funds		
2106 A&B	71,500	4.77
2107	88,500	5.90
Sub-Total	160,000	10.67
2107.5	3,000	0.20
Special Income	2,000	0.13
Interest Income	10,000	0.67
Total	175,000	11.67
Transportation		
Streets	124,000	8.27
Interest Income	1,000	0.07
Total	125,000	8.33
Total Other Funds	2,147,000	143.13
Grand Total All Funds	8,225,400	548.36

POPULATION JANUARY 1, 1989 15,000

Source: City of Perris; Natelson Levander Whitney, Inc.

1213Bud1
SL204
02/21/89

Table C2
ANALYSIS OF CITY OF PERRIS 1988-89 BUDGET
EXPENDITURES

Budget Item	Maint & Operation ($)	Capital Outlay ($)	Salaries ($)	Employee Benefit Alloc ($)	Total ($)	Analysis Classification — Direct ($)	Analysis Classification — Admin/ Indirect ($)	Analysis Classification — % Direct To Total	Per Capita — Total ($)	Per Capita — Direct ($)	Per Capita — Indirect ($)	Direct Cost—Per Special Measure ($)
GENERAL FUND												
General Government												
City Council	39,585	5,000	18,000	5,293	67,878	0	67,878	0.0	4.53	0.00	4.53	
Administration	71,950	1,200	160,614	47,232	280,996	0	280,996	0.0	18.73	0.00	18.73	
City Clerk	30,800	3,000	92,130	27,093	153,023	0	153,023	0.0	10.20	0.00	10.20	
Finance	57,450	4,750	70,300	20,673	153,173	0	153,173	0.0	10.21	0.00	10.21	
Auditing & Consulting	20,000	0	0	0	20,000	0	20,000	0.0	1.33	0.00	1.33	
City Attorney	126,000	0	0	0	126,000	0	126,000	0.0	8.40	0.00	8.40	
Special Election	8,000	0	0	0	8,000	0	8,000	0.0	0.53	0.00	0.53	
General Election	0	0	0	0	0	0	0	0.0	0.00	0.00	0.00	
Civic Promotion	3,400	800	0	0	4,200	0	4,200	0.0	0.28	0.00	0.28	
Civic Center Bldg Maint	76,600	0	0	0	76,600	0	76,600	0.0	5.11	0.00	5.11	
City Emergency	1,420	600	0	0	2,020	0	2,020	0.0	0.13	0.00	0.13	
Total	435,205	15,350	341,044	100,290	891,889	0	891,889	0.0 (Average)	59.46	0.00	59.46	
Police Protection	233,050	323,100	1,250,321	367,680	2,174,151	2,174,151	0	100.0	144.94	144.94	0.00	72,472 Per Sworn Officer
Fire Protection (Contract)	271,331	90,000	0	0	361,331	361,331	0	100.0	24.09	24.09	0.00	63.39 Per Housing Unit
Public Works												
Streets	173,561	187,748	419,156	123,261	903,726	903,726	0	100.0	60.25	60.25	0.00	2,349 Per Lane Mile
Shop & Yard	47,700	76,110	145,049	42,654	311,513	311,513	0	100.0	20.77	20.77	0.00	764
Refuse	6,600	0	0	0	6,600	6,600	0	100.0	0.44	0.44	0.00	
Recreation	23,696	29,830	59,500	17,497	130,523	130,523	0	100.0	8.70	8.70	0.00	
Parks	67,199	41,305	78,480	23,078	210,062	210,062	0	100.0	14.00	14.00	0.00	3,642 Per Park Acre (Finished)
Total	318,756	334,993	702,185	206,490	1,562,424	1,562,424	0	100.0 (Average)	104.16	104.16	0.00	
Development Control												
Planning & Commun Development	375,000	40,000	355,000	104,394	874,394	582,930	291,465	66.7	58.29	38.86	19.43	
Engineering	85,000	0	0	0	85,000	56,667	28,333	66.7	5.67	3.78	1.89	
Total	460,000	40,000	355,000	104,394	959,394	639,596	319,798	66.7 (Average)	63.96	42.64	21.32	
Senior Citizens Center	17,070	5,500	62,032	18,242	102,844	102,844	0	100.0	6.86	6.86	0.00	
Employee Benefits												
Social Security	134,500	0	0	(134,500)	0	0	0		0.00	0.00	0.00	
Public Employees' Retirement	350,000	0	0	(350,000)	0	0	0		0.00	0.00	0.00	
State Unemployment	25,500	0	0	(25,500)	0	0	0		0.00	0.00	0.00	
Workmen's Comp & Health Insur	400,000	0	0	(400,000)	0	0	0		0.00	0.00	0.00	
Total	910,000	0	0	(910,000)	0	0	0		0.00	0.00	0.00	
Insurance & Bonds	120,000	0	0	0	120,000	0	120,000	0.0	8.00	0.00	8.00	
Total General Fund	2,765,412	808,943	2,710,582	(112,903)	6,172,034	4,840,346	1,331,687	78.4 (Average)	411.47	322.69	88.78	

Continued on next page..........

1213Bud1
SL204
02/21/89

Table C2 (Continued..........page 2)
ANALYSIS OF CITY OF PERRIS 1988-89 BUDGET
EXPENDITURES

Budget Item	Maint & Operation ($)	Capital Outlay ($)	Salaries ($)	Fringe Alloc ($)	Total ($)	Analysis Classification: Direct ($)	Analysis Classification: Admin/ Indirect ($)	Analysis Classification: % Direct To Total	Per Capita: Total ($)	Per Capita: Direct ($)	Per Capita: Indirect ($)	Direct Cost—Per Special Measure ($)
OTHER FUNDS												
Street Lighting	58,000	0	0	0	58,000	58,000	0	100.0	3.87	3.87	0.00	
Water	525,335	95,500	310,150	91,205	1,022,190	1,022,190	0	100.0	68.15	68.15	0.00	
Sewer	72,692	45,800	73,785	21,698	213,975	213,975	0	100.0	14.26	14.26	0.00	
Total Other Funds	656,027	141,300	383,935	112,903	1,294,165	1,294,165	0	100.0 (Average)	86.28	86.28	0.00	
Grand Total All Funds	3,421,439	950,243	3,094,517	0	7,466,199	6,134,512	1,331,687	82.2 (Average)	497.75	408.97	88.78	

% Admin/Indirect to Direct
(Overhead Rate) 21.7

STREET LENGTHS	
# Miles of Streets	
Paved	68.65
Unpaved	97.90
Total	166.55
PARK AREA (ACRES)	
Finished	40.0
POPULATION JANUARY 1, 1989	15,000
HOUSING UNITS JANUARY 1, 1989	5,700
SWORN POLICE OFFICERS POSITIONS--FEBRUARY 1989	30

Effective Lane Miles From Maintenance Standpoint	Factor	# Lane Miles
Paved	2.25	154.46
Unpaved	1.00	97.90
Total	1.52	252.36

Source: City of Perris; Natelson Levander Whitney, Inc.

Table D1
PARCEL INVENTORY
GREEN VALLEY DEVELOPMENT PROJECT
(IN ANNEXATION AREA #29)

Sort Sequence
Primary: Book
Secondary: Page
Tertiary: Parcel

Assessor ID — Book	Page	Par	Ownership	Land Area (Acres)	TRA	Assessed Value ($) — Land	Impr	Other	Total	AV Per Ac ($)	Prop Tax Rate Share[a] (% $1.00/$100AV) — County General — Current	To Transf To City	Fire District	Annual Property Tax ($) — City	Fire District
327	200	5	Rodeffer	68.47	8907	280,758			280,758	4,100	30.86	7.72	6.34	217	178
327	200	8	Rodeffer	53.47	8907	61,417			61,417	1,149	30.86	7.72	6.34	47	39
327	210	3	Rodeffer	9.68	8907	12,112	17,745		29,857	3,084	30.86	7.72	6.34	23	19
327	210	9	Rodeffer	29.32	8907	33,687			33,687	1,149	30.86	7.72	6.34	26	21
327	210	11	Rodeffer	38.64	8907	44,380			44,380	1,149	30.86	7.72	6.34	34	28
327	220	1	Rodeffer	75.01	8907	125,313			125,313	1,671	30.86	7.72	6.34	97	79
327	220	2	Rodeffer	75.21	8907	125,640			125,640	1,671	30.86	7.72	6.34	97	80
327	220	3	Rodeffer	75.41	8907	126,400			126,400	1,676	30.86	7.72	6.34	98	80
327	220	4	Rodeffer	51.77	8907	89,384			89,384	1,727	30.86	7.72	6.34	69	57
330	110	2	Rodeffer	157.36	8717	166,166			166,166	1,056	29.53	7.38	6.06	123	101
330	110	3	Rodeffer	0.41	8717	414			414	1,010	29.53	7.38	6.06	0	0
330	140	1	Rodeffer	156.94	8717	194,491	12,999		207,490	1,322	29.53	7.38	6.06	153	126
330	140	2	Rodeffer	156.94	8907	259,056	17,845		207,490	1,322	30.86	7.72	6.34	160	132
330	150	1	Rodeffer	234.98	8907	401,389	22,279		423,668	1,803	30.86	7.72	6.34	327	269
330	150	2	Rodeffer	38.97	8907	65,101	4,450		69,551	1,785	30.86	7.72	6.34	54	44
330	150	3	Rodeffer	38.44	8907	64,158	58,475		122,633	3,190	30.86	7.72	6.34	95	78
Total				1,261.02		2,049,866	133,793	0	2,114,248	1,677	30.62469	7.65617	6.29046	1,619	1,330
—Per Acre						1,626	106	0	1,677		(Composite Rates.........)				

[a] Note: Property tax rate shares are those in effect prior to annexation.
The City/County annexation agreement calls for 25% of County General
[illegible]% of County Fire rates to be transferred to the City.

Source: Riverside County Assessor; Riverside County Auditor-Controller; Natelson Levander Whitney, Inc.

Table E1
UNALLOCATED TAXABLE SALES
AT STATE AND RIVERSIDE COUNTY LEVELS

	1985	1986	1987	1988 1st Quarter
	$000's			
STATE OF CALIFORNIA				
Total Taxable Sales	206,809,128	214,910,748	232,564,584	57,055,910
Identifiable to County Location	201,442,691	209,066,759	226,519,384	55,484,560
Net "Unallocated"	5,366,437	5,843,989	6,045,200	1,571,350
—% "Unallocated" To Identifiable	2.66%	2.80%	2.67%	2.83%
RIVERSIDE COUNTY				
Total Taxable Sales	5,402,546	5,958,886	6,740,821	1,749,817
Identifiable to a City or Unincorporated Area	4,995,073	5,550,897	6,222,423	1,626,694
Net "Unallocated"	407,473	407,989	518,398	123,123
—% "Unallocated" To Identifiable	8.16%	7.35%	8.33%	7.57%
TOTAL % "UNALLOCATED" TO IDENTIFIABLE	10.82%	10.15%	11.00%	10.40%

(13-Quarter Average = 10.64%)

Source: State Board of Equalization; Natelson Levander Whitney, Inc.

APPENDIX F

LIST OF GOVERNMENTAL OFFICALS CONTACTED

CITY OF PERRIS

William Gaskins	Lieutenant, Police Department
Betti An Hynes	City Clerk
Ronald W. Kwiatkoski	Director of Public Works
Habib Motlagh	City Engineer
Carl Parsons	Director of Community Development
Joel Patton	Chief, Police Department
Faye Shirley	Director of Recreation
Larry Weaver	Director of Finance
Ray Wilson	Lieutenant, Police Department

RIVERSIDE COUNTY FIRE PROTECTION DISTRICT

Mike Gray	Deputy Fire Marshall/Planning

NATELSON • LEVANDER • WHITNEY, Inc.
1815 VIA EL PRADO, SUITE 308 REDONDO BEACH, CALIFORNIA 90277 (213) 540-1549

MEMORANDUM

To: Florian Martinez Associates
Attention: Mr. Richard Goacher

Date: March 20, 1989

From: Dale H. Levander

File: 1213

Subject: FISCAL ANALYSIS OF THE GREEN VALLEY DEVELOPMENT PROJECT—REVISED PROJECTIONS

This memorandum report supplements our report to you of February 22, 1989. It presents projections, which reflect the following development program revisions:

- o <u>Residential Units</u>. A net increase of 20 units, from 4,442 to 4,462 (87-unit increase for SF 5,000, 71-unit decrease for SF 6,000, 4-unit increase for SF 7,000, and no change for apartments).
- o <u>Residential Acreage</u>. Net increase of 1.0 acre.
- o <u>Commercial and Industrial</u>. Changes in designations of planning areas; but no changes in development quantities.
- o <u>Public Streets to be Maintained</u>. Elimination of the 0.57 lane-mile South Tee.

Resultant revised revised projections are within 1% of initial projections, as indicated by the following comparative tabulation:

	Initial Projections	Revised Projections	% Revised To Initial
	$000's		
Total 10-Year Development Plan			
Revenues	$21,516	$21,556	100.2%
Expenditures	18,443	18,501	100.3
Net Surplus/(Deficit)	3,074	3,056	99.4
Year 11 (1999-2000)			
Revenues	3,628	3,633	100.1
Expenditures	2,628	2,637	100.3
Net Surplus/(Deficit)	1,000	996	99.6

These comparative figures cover combined one-time and on-going revenue and expenditure items, as discussed in our report of February 22, 1989, and as detailed in the full set of computer projections attached.

DHL:rr:s53

Table A1
SUMMARY CASH FLOW (IN 1989 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. B [illegible] e Projections

1213CR2A
SL220
03/18/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11	Yr 11 Anal — Per Res Unit	Yr 11 Anal — Per Capita
	Development Period — $000's												$	
ON-GOING OPERATIONS														
Revenues														
Property Tax—Secured	4,980	56	104	177	250	388	530	691	840	939	1,006	1,006	225.57	80.94
Property Tax—Unsecured	115	0	0	0	0	5	11	18	24	27	31	31	6.93	2.49
Sales & Use Tax	5,846	0	9	22	36	280	566	879	1,152	1,293	1,609	1,609	360.61	129.39
Transient Occupancy Tax	767	0	0	0	0	0	0	192	192	192	192	192		
Business Licenses	122	0	0	0	0	5	10	18	25	29	34	34	7.67	2.75
Franchises	506	0	7	17	27	41	56	71	86	98	103	103	23.06	8.28
Fines & Forfeitures	42	0	1	2	2	4	5	6	7	8	8	8	1.87	0.67
Documentary Transf Tax—Resale	182	0	3	7	12	16	21	25	29	34	35	35	7.90	2.83
Motor Vehicle In Lieu	2,108	0	30	76	121	180	238	296	354	399	414	414	92.89	33.33
State Gas Tax	675	0	10	24	39	57	76	95	113	128	133	133	29.74	10.67
Cigarette Tax	135	0	2	5	8	11	15	19	23	26	26	26	5.94	2.13
Refuse Collection	51	0	1	2	3	4	6	7	8	10	10	10	2.23	0.80
Animal License Fees	34	0	0	1	2	3	4	5	6	6	7	7	1.48	0.53
Transportation Tax	0	0	0	0	0	0	0	0	0	0	0	0		
Administrative Service Fees														
Other Revenues	123	0	2	4	7	11	14	17	21	23	24	24	5.43	1.95
Total Revenues	15,685	56	168	337	506	1,005	1,550	2,338	2,880	3,211	3,633	3,633	814.26	292.16
Expenditures														
Police Protection	6,673	0	96	240	385	568	752	936	1,120	1,264	1,312	1,312	294.03	105.50
Animal Control	0	0	0	0	0	0	0	0	0	0	0	0		
Fire Protection	3,111	0	34	85	136	233	332	445	553	625	667	667	149.56	53.66
Street Sweeping	240	0	10	16	19	26	28	32	34	37	37	37	8.40	3.01
Near-Term Street Maintenance	263	0	0	0	0	20	33	37	52	57	64	69		
Longer-Term Street Maintenance	142	0	0	0	0	0	0	20	33	37	52	57		
Refuse Collection	0	0	0	0	0	0	0	0	0	0	0	0		
Flood Control Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Park Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Recreation Services	550	0	8	20	32	47	62	77	92	104	108	108	24.25	8.70
Senior Citizens Services	217	0	3	8	13	18	24	30	36	41	43	43		
Administration	1,679	0	23	55	88	137	185	237	288	325	343	344	77.08	27.66
Total Expenditures	12,876	0	174	425	671	1,050	1,416	1,815	2,208	2,490	2,626	2,637	590.97	212.05
Net Surplus/(Deficit)	2,809	56	(6)	(87)	(165)	(45)	134	523	672	721	1,007	996	223.29	80.12
—Cumulative		56	50	(38)	(203)	(248)	(114)	409	1,081	1,802	2,809	3,805		

Continued on next page..........

Table A1 (Continued.......page 2)   Alternative: #1. Baseline Projections
SUMMARY CASH FLOW (IN 1989 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11	Yr 11 Anal Per Res Unit	Yr 11 Anal Per Capita
	Development Period													
	$000's												$	
ONE-TIME ITEMS														
Revenues														
Property Transfer Tax—New	247	0	21	31	31	31	31	31	31	31	10	0	0.00	0.00
Development Control Fees	3,617	0	187	280	280	524	538	609	564	378	256	0	0.00	0.00
Fire Protection Fees	2,007	0	102	153	153	292	297	341	324	218	127	0	0.00	0.00
Park Fees	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Master Plan Drainage Fees	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Total Revenues	5,871	0	309	464	464	847	866	982	919	627	393	0	0.00	0.00
Expenditures														
Development Control	3,146	0	162	244	244	456	468	530	491	329	223	0	0.00	0.00
Fire Protection Facilities	1,746	0	89	133	133	254	258	297	281	190	110	0		
Other Direct	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
Administration	734	0	38	57	57	106	109	124	116	78	50	0	0.00	0.00
Total Expenditures	5,625	0	289	433	433	816	835	951	888	596	383	0	0.00	0.00
Net Surplus/(Deficit)	247	0	21	31	31	31	31	31	31	31	10	0	0.00	0.00
—Cumulative		0	21	51	82	113	144	175	206	236	247	247		
ON-GOING & ONE-TIME ITEMS COMBINED														
Revenues	21,556	56	478	801	971	1,852	2,416	3,320	3,799	3,838	4,026	3,633	814.26	292.16
Expenditures	18,501	0	463	858	1,104	1,866	2,251	2,766	3,096	3,086	3,009	2,637	590.97	212.05
Net Surplus/(Deficit)	3,056	56	15	(57)	(134)	(15)	165	554	703	751	1,017	996	223.29	80.12
—Cumulative		56	70	13	(120)	(135)	30	584	1,287	2,038	3,056	4,052		

Source: Natelson [illegible]der Whitney, Inc.

Table A2
DEVELOPMENT SCHEDULE
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. [illegible]e Projections

1213CR2A
SL220
03/18/89

		Development Period										
Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
RESIDENTIAL UNITS COMPLETED												
SF 5,000 (Cottage)	2,196		183	275	275	275	275	275	275	275	92	
SF 6,000 (Conventional)	1,028		86	129	129	129	129	129	129	129	43	
SF 7,200 (Large Lot)	488		41	61	61	61	61	61	61	61	20	
Apartments	750					188	188	188	188			
	0											
Total	4,462	0	309	464	464	652	652	652	652	464	155	0
—Cumulative		0	309	773	1,237	1,889	2,540	3,192	3,843	4,307	4,462	4,462
RESIDENTIAL ACRES DEVELOPED												
SF 5,000 (Cottage)	386.0	0.0	32.2	48.3	48.3	48.3	48.3	48.3	48.3	48.3	16.1	
SF 6,000 (Conventional)	202.0	0.0	16.8	25.3	25.3	25.3	25.3	25.3	25.3	25.3	8.4	
SF 7,200 (Large Lot)	122.0	0.0	10.2	15.3	15.3	15.3	15.3	15.3	15.3	15.3	5.1	
Apartments	50.0	0.0	0.0	0.0	0.0	12.5	12.5	12.5	12.5	0.0	0.0	
	0.0											
Total	760.0	0.0	59.2	88.8	88.8	101.3	101.3	101.3	101.3	88.8	29.6	
COMM BLDG SPACE COMPL (000's SF)												
Regional Anchor	100.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	
Neighborhood/Community Anchor	195.0	0.0	0.0	0.0	0.0	65.0	0.0	0.0	65.0	0.0	65.0	
Retail Tenant	411.0	0.0	0.0	0.0	0.0	50.0	90.5	85.0	45.5	40.0	100.0	
Non-Retail Tenant	56.5	0.0	0.0	0.0	0.0	8.5	8.5	8.5	5.6	5.6	20.0	
Hotel	67.5	0.0	0.0	0.0	0.0	0.0	0.0	67.5	0.0	0.0	0.0	(150 Rooms)
Office/Business Park	629.8	0.0	0.0	0.0	0.0	146.3	146.3	146.3	152.3	6.0	32.8	
Industrial	1,215.0	0.0	0.0	0.0	0.0	114.0	114.0	275.3	275.3	275.3	161.3	
Total	2,674.8	0.0	0.0	0.0	0.0	383.7	409.2	632.5	543.6	326.8	379.0	
CUM COMM BLDG SPACE (000's SF)												
Regional Anchor	100.0	0.0	0.0	0.0	0.0	0.0	50.0	100.0	100.0	100.0	100.0	100.0
Neighborhood/Community Anchor	195.0	0.0	0.0	0.0	0.0	65.0	65.0	65.0	130.0	130.0	195.0	195.0
Retail Tenant	411.0	0.0	0.0	0.0	0.0	50.0	140.5	225.5	271.0	311.0	411.0	411.0
Non-Retail Tenant	56.5	0.0	0.0	0.0	0.0	8.5	16.9	25.4	30.9	36.5	56.5	56.5
Hotel	67.5	0.0	0.0	0.0	0.0	0.0	0.0	67.5	67.5	67.5	67.5	67.5
Office/Business Park	629.8	0.0	0.0	0.0	0.0	146.3	292.5	438.8	591.0	597.0	629.8	629.8
Industrial	1,215.0	0.0	0.0	0.0	0.0	114.0	228.0	503.3	778.5	1,053.8	1,215.0	1,215.0
Total	2,674.8	0.0	0.0	0.0	0.0	383.7	792.9	1,425.4	1,968.9	2,295.8	2,674.8	2,674.8
COMM LAND AREA DEVEL (ACRES)												
Regional Anchor	9.1	0.0	0.0	0.0	0.0	0.0	4.5	4.5	0.0	0.0	0.0	
Neighborhood/Community Anchor	17.7	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	0.0	5.9	
Retail Tenant	37.4	0.0	0.0	0.0	0.0	4.5	8.2	7.7	4.1	3.6	9.1	
Non-Retail Tenant	5.1	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.5	0.5	1.8	
Hotel	2.7	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	
Office/Business Park	42.0	0.0	0.0	0.0	0.0	9.8	9.8	9.8	10.2	0.4	2.2	
Industrial	81.0	0.0	0.0	0.0	0.0	7.6	7.6	18.4	18.4	18.4	10.8	
Total	195.0	0.0	0.0	0.0	0.0	28.6	30.9	43.8	39.1	22.9	29.8	
TOTAL RES/COMM ACRES DEVELOPED	955.0	0.0	59.2	88.8	88.8	129.8	132.1	145.1	140.3	111.6	59.3	

Source: Cook & Selich; FMA; Natelson Levander Whitney, Inc.

Table A3
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR2P
SL220
03/18/89

RESIDENTIAL FACTORS	# Units	Population Per Unit	Population #	Units Per Ac	Building Area Per Unit (SF)	Building Area Amount (000'sSF)	New Dev Value Per Unit ($)	New Dev Value Per SF ($)	New Dev Value Amount ($000's)	Tot Res Tax Pur Per Capita ($)	Tot Res Tax Pur Amount ($000's)	Tax Pur @ Perris Stores Excluding Green Valley %	Per Cap ($)	Total ($000's)
							In 1989 Constant $							
SF 5,000 (Cottage)	2,196	3.00	6,588	5.689	1,400	3,074	110,000	78.57	241,560	5,298	34,902	15.0	795	5,235
SF 6,000 (Conventional)	1,028	2.90	2,981	5.089	1,600	1,645	130,000	81.25	133,640	6,477	19,309	15.0	972	2,896
SF 7,200 (Large Lot)	488	2.80	1,366	4.000	1,800	878	150,000	83.33	73,200	7,740	10,576	15.0	1,161	1,586
Apartments	750	2.00	1,500	15.000	900	675	60,000	66.67	45,000	4,335	6,502	15.0	650	975
	0		0			0			0		0		0	0
Total/Average	4,462	2.79	12,436	5.871	1,406	6,273	110,578	78.66	493,400	5,733	71,290	15.0	860	10,693

COMMERCIAL FACTORS	Bldg Space Total (000'sSF)	Bldg Space Per Ac (SF)	New Dev Val Per SF ($)	New Dev Val Amount ($000's)	Total Tax Sales Per SF ($)	Total Tax Sales Amount ($000's)	Taxable Sales Incremental Increase % of Total	Per SF ($)	Amount ($000's)	Hotel Room Sales Aver Rm Rate $)	Aver % Occ	Ann Sales Per Rm ($)	Bl Sp Per Rm (SF)	Ann Sales Per SF ($)	Ann Sales Amount ($000's)
			In 1989 Constant $												
Regional Anchor	100.0	11,000	110.00	11,000	150.00	15,000	100.0	150.00	15,000						
Neighborhood/Community Anchor	195.0	11,000	110.00	21,450	150.00	29,250	100.0	150.00	29,250						
Retail Tenant	411.0	11,000	110.00	45,210	150.00	61,650	100.0	150.00	61,650						
Non-Retail Tenant	56.5	11,000	110.00	6,215	0.00	0	100.0	0.00	0						
Hotel	67.5	25,000	100.00	6,750	0.00	0	100.0	0.00	0	50.00	70.00	12,775	450	28.39	1,916
Office/Business Park	629.8	15,000	125.00	78,719	7.50	4,723	100.0	7.50	4,723						
Industrial	1,215.0	15,000	50.00	60,750	20.00	24,300	100.0	20.00	24,300						
Total/Average	2,674.8	13,717	86.02	230,094	50.44	134,923	100.00	50.44	134,923						

Item	10-Year Total	Development Period 89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
POPULATION ADDED												
SF 5,000 (Cottage)	6,588	0	549	824	824	824	824	824	824	824	275	0
SF 6,000 (Conventional)	2,981	0	248	373	373	373	373	373	373	373	124	0
SF 7,200 (Large Lot)	1,366	0	114	171	171	171	171	171	171	171	57	0
Apartments	1,500	0	0	0	0	375	375	375	375	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Total	12,436	0	911	1,367	1,367	1,742	1,742	1,742	1,742	1,367	456	0
CUMULATIVE POPULATION												
SF 5,000 (Cottage)	6,588	0	549	1,373	2,196	3,020	3,843	4,667	5,490	6,314	6,588	6,588
SF 6,000 (Conventional)	2,981	0	248	621	994	1,366	1,739	2,112	2,484	2,857	2,981	2,981
SF 7,200 (Large Lot)	1,366	0	114	285	455	626	797	968	1,139	1,309	1,366	1,366
Apartments	1,500	0	0	0	0	375	750	1,125	1,500	1,500	1,500	1,500
	0	0	0	0	0	0	0	0	0	0	0	0
Total	12,436	0	911	2,278	3,645	5,387	7,129	[illegible]	[illegible]	11,980	12,436	12,436

Continued on nex[illegible]..................

Table A3 (Continued......page 2) Alternative: #1. [illegible]he Projections
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

1213CR2A
SL220
03/10/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
		—— Development Period ——										
EXISTING ASSESSED VALUE	Total Amount ($000's):			Prior to Acquisition				2,002				
				After Acquisition				41,790				
	Per Acre After Acq ($):			Total Land Area				35,000		(1,194.00	Acres)	
NEW DEVELOPMENT VALUE ADDED EACH YEAR ($000's)				Res/Com/Ind Acres Only				43,759		(955.00	Acres)	
Initial Acq Increase	39,788	39,788										
Residential												
SF 5,000 (Cottage)	241,560	0	20,130	30,195	30,195	30,195	30,195	30,195	30,195	30,195	10,065	0
SF 6,000 (Conventional)	133,640	0	11,137	16,705	16,705	16,705	16,705	16,705	16,705	16,705	5,568	0
SF 7,200 (Large Lot)	73,200	0	6,100	9,150	9,150	9,150	9,150	9,150	9,150	9,150	3,050	0
Apartments	45,000	0	0	0	0	11,250	11,250	11,250	11,250	0	0	0
—	0	0	0	0	0	0	0	0	0	0	0	0
Total Residential	493,400	0	37,367	56,050	56,050	67,300	67,300	67,300	67,300	56,050	18,683	0
Commercial												
Regional Anchor	11,000	0	0	0	0	0	5,500	5,500	0	0	0	0
Neighborhood/Community Anchor	21,450	0	0	0	0	7,150	0	0	7,150	0	7,150	0
Retail Tenant	45,210	0	0	0	0	5,500	9,955	9,350	5,005	4,400	11,000	0
Non-Retail Tenant	6,215	0	0	0	0	930	930	930	613	613	2,200	0
Hotel	6,750	0	0	0	0	0	0	6,750	0	0	0	0
Office/Business Park	78,719	0	0	0	0	18,281	18,281	18,281	19,031	750	4,094	0
Industrial	60,750	0	0	0	0	5,700	5,700	13,763	13,763	13,763	8,063	0
Total Comm/Indus	230,094	0	0	0	0	37,561	40,366	54,573	45,562	19,526	32,506	0
Total New Devel Value	763,281	39,788	37,367	56,050	56,050	104,861	107,666	121,873	112,862	75,576	51,190	0
—Cumulative		39,788	77,154	133,204	189,254	294,115	401,781	523,654	636,516	712,092	763,281	763,281
Total Sales Housing (SF Only)	448,400	0	37,367	56,050	56,050	56,050	56,050	56,050	56,050	56,050	18,683	0
—Cumulative		0	37,367	93,417	149,467	205,517	261,567	317,617	373,667	429,717	448,400	448,400
EXISTING ASSESSED VALUE REPLACED—AFTER ACQ ($000's)												
Residential	33,257	0	2,589	3,884	3,884	4,431	4,431	4,431	4,431	3,884	1,295	0
Commercial	8,533	0	0	0	0	1,250	1,352	1,918	1,709	1,002	1,302	0
Total	41,790	0	2,589	3,884	3,884	5,681	5,782	6,349	6,140	4,885	2,596	0
ASSESSED VALUE INCREASE ($000's)												
Initial Acq Increase	39,788	39,788										
Residential	460,143	0	34,778	52,166	52,166	62,869	62,869	62,869	62,869	52,166	17,389	0
Commercial	221,561	0	0	0	0	36,310	39,014	52,655	43,853	18,524	31,204	0
Total	721,491	39,788	34,778	52,166	52,166	99,180	101,883	115,524	106,722	70,690	48,593	0
CUMULATIVE ASSESSED VALUE INCREASE ($000's)												
Initial Acq Increase	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788	39,788
Residential	460,143	0	34,778	86,944	139,110	201,980	264,849	327,719	390,588	442,754	460,143	460,143
Commercial	221,561	0	0	0	0	36,310	75,324	127,979	171,832	190,356	221,561	221,561
Total	721,491	39,788	74,565	126,732	178,898	278,078	379,961	495,485	602,208	672,898	721,491	721,491

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Table A3 (Continued......page 3)
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS--CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR2A
SL220
03/18/89

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
	Development Period											
ANNUAL TAXABLE SALES INCREASES ($000's)												
Green Valley Resident Purchases @ Stores in Perris Excluding Green Valley Estab												
SF 5,000 (Cottage)	27,049	0	436	1,091	1,745	2,400	3,054	3,708	4,363	5,017	5,235	5,235
SF 6,000 (Conventional)	14,965	0	241	603	965	1,328	1,690	2,052	2,414	2,776	2,896	2,896
SF 7,200 (Large Lot)	8,197	0	132	331	529	727	925	1,124	1,322	1,520	1,586	1,586
Apartments	4,389	0	0	0	0	244	488	731	975	975	975	975
	0	0	0	0	0	0	0	0	0	0	0	0
Total Res Purch	54,599	0	810	2,025	3,239	4,698	6,157	7,615	9,074	10,289	10,693	10,693
Green Valley Establishment Sales												
Regional Anchor	67,500	0	0	0	0	0	7,500	15,000	15,000	15,000	15,000	15,000
Neighborhood/Community Anchor	97,500	0	0	0	0	9,750	9,750	9,750	19,500	19,500	29,250	29,250
Retail Tenant	211,350	0	0	0	0	7,500	21,075	33,825	40,650	46,650	61,650	61,650
Non-Retail Tenant	0	0	0	0	0	0	0	0	0	0	0	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0
Office/Business Park	20,214	0	0	0	0	1,097	2,194	3,291	4,433	4,478	4,723	4,723
Industrial	77,850	0	0	0	0	2,280	4,560	10,065	15,570	21,075	24,300	24,300
Total Estab Sales	474,414	0	0	0	0	20,627	45,079	71,931	95,153	106,703	134,923	134,923
Total Tax Sales Increase	529,014	0	810	2,025	3,239	25,325	51,235	79,546	104,226	116,991	145,617	145,617
ANNUAL HOTEL ROOM SALES ($000's)	7,665	0	0	0	0	0	0	1,916	1,916	1,916	1,916	1,916

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Table A3 (Continued......page 4)
DEVELOPMENT MEASURES
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. ...ne Projections

Item	10-Year Total	89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	99-00 Yr 11
		Development Period										
PUBLIC STREET MILES ADDED (LANE MILES)												
Major Streets			Phase I	Phase II		Phase III		Phase IV				
Case Road	2.81			1.96				0.85				
Murietta Road	5.68		2.56			3.12						
Ethanac Road	3.47		3.47									
Goetz Road	1.99		1.02					0.97				
West Loop	3.98					3.98						
East Loop	0.00											
South Loop	7.22		3.81	3.41								
West Tee	1.48		1.48									
South Tee	0.00											
Total	26.63	0.00	12.34	5.37	0.00	7.10	0.00	1.82	0.00	0.00	0.00	0.00
—Cumulative		0.00	12.34	17.71	17.71	24.81	24.81	26.63	26.63	26.63	26.63	26.63
Neighborhood Streets												
Factor		200	Lane Feet Per Developed Single-Family Residential Acre (Lineal Feet)									
# Lane Lineal Feet	142,000	0	11,833	17,750	17,750	17,750	17,750	17,750	17,750	17,750	5,917	0
# Lane Miles	26.89	0.00	2.24	3.36	3.36	3.36	3.36	3.36	3.36	3.36	1.12	0.00
—Cumulative		0.00	2.24	5.60	8.96	12.33	15.69	19.05	22.41	25.77	26.89	26.89
Total All Streets	53.52	0.00	14.58	8.73	3.36	10.46	3.36	5.18	3.36	3.36	1.12	0.00
—Cumulative		0.00	14.58	23.31	26.67	37.14	40.50	45.68	49.04	52.40	53.52	53.52
—Cumulative @ 3-Year Lag					0.00	14.58	23.31	26.67	37.14	40.50	45.68	49.04
—Cumulative @ 5-Year Lag							0.00	14.58	23.31	26.67	37.14	40.50
PUBLIC PARKS TO MAINTAIN (ACRES)												
Community Park (Plan Area #5)	0.0											
Neighborhood Park (Plan Area #14)	0.0											
Neighborhood Park (Plan Area #22)	0.0											
Neighborhood Park (Plan Area #29)	0.0											
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
—Cumulative		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL CON FACIL TO MAINT (Lin Mi)												
144-Foot Channel	0.00											
Other	0.00											
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
—Cumulative		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Cook & Selich; FMA; Natelson Levander Whitney, Inc.

Table A4
REVENUE AND COST FACTORS (IN 1983 CONSTANT DOLLARS)
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. Baseline Projections

1213CR2A
SL220
03/18/83

	Measure Applied									
	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Lump Sum	Comment
		$ Per Measure								
ON-GOING OPERATIONS										
Revenues										
Property Tax—Secured	13.950									% of $1.00 Per $100 A.V. Tax Rate; Applied to Cum New Devel Val Increase (Table A3).
Property Tax—Unsecured	10.000									% of Secured Property Tax (Table A1).
Sales & Use Tax	1.105									% of Taxable Sales (Table A3).
Transient Occupancy Tax	10.000									% of Hotel Room Sales (Table A3).
Business Licenses					0.0120					Applied to Cumulative Population (Table A3).
Franchises			7.33		0.0044					Applied to Cumulative Population (Table A3).
Fines & Forfeitures			0.67							Applied to Cumulative Population (Table A3).
Documentary Transf Tax—Resale		0.079								Applied to Cum New Devel Value— Sales Housing Only (Table A3).
Motor Vehicle In Lieu			33.33							Applied to Cumulative Population (Table A3).
State Gas Tax			10.67							Applied to Cumulative Population (Table A3).
Cigarette Tax	0.000		2.13							Applied to Cumulative Population (Table A3).
Refuse Collection			0.80							Applied to Cumulative Population (Table A3).
Animal License Fees			0.53							Applied to Cumulative Population (Table A3).
Transportation Tax			0.00							Applied to Cumulative Population (Table A3).
Administrative Service Fees										
Other Revenues			1.95							Applied to Cumulative Population (Table A3).
Expenditures										
Police Protection			105.50							Applied to Cumulative Population (Table A3).
Animal Control										Applied to Cumulative Population (Table A3).
Fire Protection				110.00	0.0660					Applied to Cumulative Residential Units (Table A2).
Street Sweeping								700		Applied to Cumulative Lane Miles (Table A3).
Near-Term Street Maintenance								1,400		Applied to Cumulative Lane Miles @ 3-Yr Lag (Table A3).
Longer-Term Street Maintenance								1,400		Applied to Cumulative Lane Miles @ 5-Yr Lag (Table A3).
Refuse Collection			0.00							Applied to Cumulative Population (Table A3).
Flood Control Maintenance								0		Applied to Cum Lineal Miles of Fl Con Facilities (Table A3).
Park Maintenance							5,000			Applied to Cumulative Public Park Acres (Table A3).
Recreation Services			8.70							Applied to Cumulative Population (Table A3).
Senior Citizens Services			3.43							Applied to Cumulative Population (Table A3).
Administration	15.000									Applied to Other Costs (Table A1).
ONE-TIME ITEMS										
Revenues										
Property Transfer Tax—New		0.550								Applied to New Devel Value Added Ea Yr—Sgl Fam/Condo/TH Residential Only (Table A3).
Development Control Fees	0.500									% of New Development Value Added Each Year (Table A3).
Fire Protection Fees				330	0.2000					Applied to Residential Units Completed (Table A2).
Park Fees				0						Applied to Residential Units Completed (Table A2).
Master Plan Drainage Fees							0.00			Applied to Acres Developed (Table A2).
Expenditures										
Development Control	0.435									% of New Development Value Added Each Year (Table A3).
Fire Protect on Facilities				287	0.1739					Applied to Residential Units Completed (Table A2).
Other Dire				0	0.0000					Applied to Other Costs (Table A1).
Administra	15.000									

Source: City of [illegible]; Natelson Levander Whitney, Inc.

Table B1
COMMERCIAL/INDUSTRIAL DEVELOPMENT ANALYSIS
GREEN VALLEY PROJECT FISCAL IMPACTS—CITY OF PERRIS

Alternative: #1. ...ine Projections

1213CR2A
SL220
03/10/89

Item	10-Year Total	Development Period 89-90 Yr 1	90-91 Yr 2	91-92 Yr 3	92-93 Yr 4	93-94 Yr 5	94-95 Yr 6	95-96 Yr 7	96-97 Yr 8	97-98 Yr 9	98-99 Yr 10	Bldg Space Per Ac (SF)
BUILDING SPACE DEVELOPED—ANNUAL (SF)												
Planning Area 1 (Industrial)												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	0											11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	0											15,000
Industrial	570,000					114,000	114,000	114,000	114,000	114,000		15,000
Total	570,000	0	0	0	0	114,000	114,000	114,000	114,000	114,000	0	
Planning Area 28 (Commercial)												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	65,000										65,000	11,000
Retail Tenant	100,000										100,000	11,000
Non-Retail Tenant	20,000										20,000	11,000
Hotel	0											25,000
Office/Business Park	32,750										32,750	15,000
Industrial	0											15,000
Total	217,750	0	0	0	0	0	0	0	0	0	217,750	
Planning Area 8 (Industrial)												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	0											11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	0											15,000
Industrial	645,000							161,250	161,250	161,250	161,250	15,000
Total	645,000	0	0	0	0	0	0	161,250	161,250	161,250	161,250	
Planning Area 11 (Commercial)												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	65,000								65,000			11,000
Retail Tenant	80,000								40,000	40,000		11,000
Non-Retail Tenant	11,150								5,575	5,575		11,000
Hotel	0											25,000
Office/Business Park	12,000								6,000	6,000		15,000
Industrial	0											15,000
Total	168,150	0	0	0	0	0	0	0	116,575	51,575	0	
Planning Area 39-40 (Bus & Prof)												
Regional Anchor	0											11,000
Neighborhood/Community Anchor	0											11,000
Retail Tenant	11,000						5,500		5,500			11,000
Non-Retail Tenant	0											11,000
Hotel	0											25,000
Office/Business Park	585,000					146,250	146,250	146,250	146,250			15,000
Industrial	0											15,000
Total	596,000	0	0	0	0	146,250	151,750	146,250	151,750	0	0	

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