APPENDIX A

INITIAL STUDY
NOTICE OF PREPARATION
AND
RESPONSES TO NOTICE OF PREPARATION

PREPARED BY:

TOWN OF YUCCA VALLEY

JUNE 27, 1995

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

NOTICE OF PREPARATION

TO: _____ (Responsible Agency or Trustee Agency)

_____ (Address)

FROM: Town of Yucca Valley
57090 29 Palms Hwy
Yucca Valley, CA 92284
(619) 369-6575

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report.

The Town of Yucca Valley will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The Project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study ✓ is ___ is not attached.

Your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to Shane R. Stueckle Town Planner at the address shown above. We will need the name for a contact person in your agency.

PROJECT TITLE: Town of Yucca Valley Comprehensive General Plan
PROJECT LOCATION: Town of Yucca Valley, San Bernardino County, California
PROJECT DESCRIPTION (brief): _____

PROJECT APPLICANT, IF ANY: Town of Yucca Valley

Date: 6/27/95 Signature Shane R. Stueckle

Title Town Planner

Telephone (619) 369-6575

Consulting firm retained to prepare draft EIR (if applicable):

Name: _____
Address: _____
City/State/Zip: _____
Contact Person: _____

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE COMPREHENSIVE GENERAL PLAN FOR THE TOWN OF YUCCA VALLEY

SAN BERNARDINO COUNTY

Introduction

The Town of Yucca Valley, San Bernardino County, California is in the process of drafting its first comprehensive General Plan. As an essential part of this effort, the Town and its consultant have been collecting a broad range of data and information of the physical and environmental conditions within the Town and a broader study area. A series of special studies have been prepared covering such subjects as traffic and circulation, geotechnical conditions, noise, as well as the occurrence of biological and cultural resources in the community and surrounding areas. With the nature of the General Plan project and the broad scope of the project, as well as the need for subsequent environmental analysis for specific projects within the community, a program EIR is currently envisioned. The following provides a description of the study area and the areas of environmental concern that will be addressed in the EIR.

Project Description

The Town of Yucca Valley incorporated an area encompassing approximately 38 square miles. The incorporated boundaries and the Town's Sphere-of-Influence are co-terminus. Over the past three and a half years the Town government and a broadly based General Plan Advisory Committee have held extensive public meetings to discuss overall and specific goals for the community, as well as policies and programs for inclusion in the comprehensive General Plan. A detailed assessment of the San Bernardino County Land Use/Zoning designations was conducted and a new set of land use designations and their assignments have been considered. In addition to land use, additions to the circulation system have also been considered. The comprehensive General Plan has been conceived as twenty six (26) elements encompassed in five major chapters. The Elements includes purpose and intent statements, extensive background and technical information, and goals, objectives, policies and programs.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Residential		
(R-HR) Hillside Reserve	0-1 du/10 ac and 0-1 du/20ac	This designation provides for limited single-family residential development within hillside areas and similarly constrained areas, providing the greatest potential for open space preservation but allowing the managed keeping of animals. It serves as an intermediate land use designation between Open Space lands constrained by topography, biological resources, etc., and more intense residential uses. It precludes premature or inappropriate expansion of urban development. Development in this designation is restricted by topography/ slopes, drainage and sensitive biological resources.
(R-L) Rural Living	1, 2.5, 5, 10 du/ac	This designation provides for single-family residential development on a range of lot sizes, including 1, 2.5, 5 and 10 acres. It also reflects lands constrains by topography, drainage, sensitive biological resources and surrounding patterns of subdivided land. This land use provides intermediate steps in development density between more typical urban residential densities and "reserve" densities, providing lots sufficient for rural lifestyle, keeping of animals and country living.
(R-S-3.5) Residential Single Family	0-3.5 du/acre	This designation provides for low density subdivisions with minimum lot sizes of 10,000 sq. feet. This designation serves to transition between lower and more moderate (medium) residential densities. This is the most common type of residential development in the Town.
(R-S-5) Residential Single Family	0-5 du/ac	Appropriate residential development under this designation is limited to single family. Residential uses may also be developed as Planned Residential Developments (PRD's) with shared recreation and other amenities.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
(R-M-10) Residential Multi-Family	0-10 du/ac	This designation allows for the greatest diversity of residential development, ranging from single family to apartments. This designation is most suitable for planned communities and affordable and senior housing, where smaller units and higher densities may be appropriate. Duplex and multiplex development is the most common and provides for PRD's comprised of a varying range of residential types, including apartments and condominiums. Mobile home parks or subdivisions with PRD type development are also allowed with the approval of a Conditional Use Permit (CUP).
(R-M-14) Residential Multi-Family	0-14 du/ac	The purpose of this designation is to promote planned residential development and amenities beyond those expected under conventional development, to achieve greater flexibility in design, varying ranges in densities, and encourage well planned neighborhoods through creative and imaginative planning, to provide for an appropriate mix of housing types, which are unique in their physical characteristics to warrant special methods of residential development. A full range of residential development is permitted, with apartments and condominiums being typical.
Commercial		
(C-MU) Mixed Use Commercial	Varies	This designation is intended for a mix of land uses, including commercial, professional office, recreational and high density residential uses in and near the downtown area. Its purpose is to allow highly integrated uses with residential development that can rely on pedestrian access to commercial services and employment centers and to create new consumer retail markets in the downtown area. Senior housing and convalescent homes may also be appropriate in these areas. Development in this designation shall require a Specific Plan.
(C-S) Service Commercial		This designation allows for the development of small scale commercial centers that provide a limited range of convenience commercial services, smaller grocery and convenience stores, service stations, and other limited retail operations. Developments typical range between 1-2 acres with up to 15,000 square feet of gross leasable floor area.

Town of Yucca Valley General Plan Land Use Designations

and Use Designation	Density	Purpose of Land Use
-N) Neighborhood Commercial		This designation provides for neighborhood scale shopping centers conveniently located near residential areas. These development areas anchored by supermarkets and super drugstores. A wide range of other uses, including banking, barbers/beauty salons, dry cleaners, restaurants and other related activities are typically found these planned centers. Typical sizes are 8 to 10 acres providing approximately 80,000 to 100,000 square feet of gross leasable floor area.
-G) General Commercial		These lands includes a wide variety of smaller commercial centers, specialty retail shops, a broad range of clothing and apparel, jewelry stores and a variety of personal service businesses. Smaller, moderately priced department stores may also be appropriate under this designation. Development may range from free standing retail buildings and restaurants, to planned commercial centers. Typical sizes range between 2 to 8 acres with gross leasable square footage varying with uses. Hotels and Motels may also be appropriate on these lands.
-C) Community Commercial		This designation provides for larger, community scale shopping centers and malls, which may be anchored by several department stores, a variety of retail outlets, and restaurant and entertainment uses. Hotels and motels may also be appropriate on these lands. Typical sizes range between 100 - 200,000 square feet or more of gross leasable floor area. This type of development requires approval of a Specific Plan. While smaller than regional facilities, the community commercial center will serve the entire community, as well as the surrounding market area.
-O) Office Commercial		This designation is limited to a variety of professional office development, including administrative and corporate, law, medical, financial and insurance, real estate, and government offices. It may also be combined with Neighborhood, General and Community scale commercial uses. These less intense uses may also be compatible with medium and higher density residential development.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Commercial (cont.) (C-RR) Resort/Recreation Commercial		This designation allows for the development of hotel and motels, and destination resort development with limited commercial uses such as restaurants, lounges and small retail shops that directly support the primary use. In addition, recreational facilities may include golf courses, tennis courts, swimming pools and spas, theaters, miniature golf and batting cages. Recreational vehicle (RV) parks, campgrounds and similar types of limited stay occupancy may also be appropriate.
(SP) Specific Plan Overlay		This designation is used in conjunction with other underlying designations. It requires the development of a Specific Plan of Land Use. Designation is applied as an overlay on the General Plan Land Use Map and can be added to any land use designations. It is also an integral part of the Mixed Use Commercial (C-MU) land use designation and is required as a means of processing community scale commercial development proposals. Specific Plans provide detailed design and analysis of large scale and/or complex mixed use projects indicating the distribution, location, and intensity of proposed land uses. It also examines the required level of public facilities and services and their availability, establishes economic viability of proposed development.
(I) Industrial		This designation provides for the development of any and all industrial uses operating entirely in enclosed buildings, and those requiring limited outdoor storage. Examples include clean manufacturing operations, warehousing and mini-warehouse storage, fabrication of cabinets and other wood products, and contractor's storage facilities. Preferred development includes master planned business and industrial parks with integrated access and internal circulation. This designation may also allow conditional development of more intense industrial uses with the potential to generate objectionable levels of noise; smoke, dust, glare, traffic vibration or other nuisance. Examples include the manufacturing of durable goods such as appliances, furniture, fabricated metal products, and light electrical and

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Industrial (cont)		transportation equipment. Potential for greater dependence on outdoor storage. Proponents would be required to mitigate any adverse impacts to levels of insignificant, demonstrate conformance with all community environmental standards and compatibility with existing and planned land uses.
Public Services and Facilities		
(P/QP) Public/Quasi-Public		As noted herein and on the Land Use Map, this designation provides for the Civic Center, other Town and County offices, libraries, airport, schools, hospitals, parks, floodways, police and fire stations, utility substations, as well as other public administrative offices.
(AP) Airport		Yucca Valley Airport District
(CC)		Town Hall
(FS) Fire Station		Fire Station
(PS) Police Station		Police Station
(H) Hospital		Hospitals and similar in t out patient medical services. Also may be assigned to convalescent and skilled nursing facilities.
(S)		Provides for educational facilities such as day care, elementary, intermediate, high schools, special schools and technical schools.
(L)		Libraries
(U-SS)		Utility Substation - designates electric, gas, telephone, water and other similar facilities.
(FW)		Flood ways such as natural or man-made flood-way/drainage channels.
Open Space (OS)		This designation is assigned to those lands which constitute a special, important or valuable natural resource, which warrant protection. The designations is primarily assigned to parklands, which carry a designation of (P). The Blue Skies Golf Course is also defined as open space. The designation may also be used to define special resource areas or those that may pose threats or hazards to development. Lands important for their

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Open Space (cont.)		recreational, biological, or regional economic value are also candidates for inclusion in this land use designation. Examples of resource lands and hazards include liquefaction hazard areas, detention/retention basins, trails, estuaries and large habitat areas for biological resources.
(P)		Public Parks

Statistical Summary of Land Uses for the Town of Yucca Valley

Category	Density	Total Acres	% of Total Acreage
H-R-20	0-1 du/20 acres	4,177	16.76%
R-L-5	0-1 du/5 acres	4,675	18.76%
R-L-10	0-1 du/10 acres	139	.56%
R-L-2.5	0-1 du/2.5 acres	5,049	20.26%
R-L-1	0-1 du/acre	2,387	9.58%
R-S-2	0-2 du/acre	3,821	15.34%
R-S-3.5	0-3 du/acre	17	.07%
R-S-4	0-4 du/acre	25	.1%
R-S-5	0-5 du/acre	1,254	5.03%
R-M-4	0-4 du/acre	12	.05%
R-M-8	0-8 du/acre	30	.12%
R-M-10	0-10 du/acre	335	1.34%
R-M-F	0-12 du/acre	9	.04%
R-M-14	0-14 du/acre	97	.39%
Sub Total		22,027	88.4%
C-MU	Varies	281	1.13%
C-S	N/A	63	.25%
C-N	N/A	102	.41%
C-G	N/A	497	2%
C-C	N/A	20	.1%
C-O	N/A	49	.2%
C-RR	N/A	121	4.59%
I	N/A	860	3.5%
P-QP	N/A	385	1.5%
O-S	N/A	511	2.1%
TOTAL		24,916	100%

TOWN OF YUCCA VALLEY
GPAC PREFERRED ALTERNATIVE
LAND USE BUILDOUT

Land Use	Acres	Total Acres	Dev Acres	Vac Units	Developed Acres	Potential Units	Potential Acres	Buildout Units	Buildout Acres
Residential									
R-S-2	3,821	1396	2,425	2,876	-	4,523	-	7,726	-
R-S-3.5	17	-	17	-	-	60	-	60	-
R-S-4	25	15	10	5	-	40	-	45	-
R-L-2.5	5049	1522	3,527	777	-	1,411	-	2,188	-
R-M-10	335	101	234	770	-	2,340	-	3,110	-
RHR20	4,177	330	3847	53	-	192	-	245	-
R-L-5	4,675	894	3,781	355	-	756	-	111	-
R-L-10	139	53	86	9	-	9	-	18	-
R-S-5	1,254	382	872	1,359	-	4,360	-	5,719	-
R-L-1	2,387	568	1,819	646	-	1,819	-	2,465	-
R-M-4	12	3	9	6	-	36	-	42	-
R-M-8	42	6	24	27	-	192	-	219	-
R-M-14	97	-	97	-	-	1,358	-	1,358	-
R-M-F	9	2	7	11	-	84	-	95	-
Subtotal	22,027	5272	16,755	6,894	0	17,507	0	24,401	0
Commercial									
CRR	121	7	114		7	-	114		121
CO	49	25.75	23.25		25 75	-	23 75		49
CS	63	22.00	41		22 00	-	41		63
CG	497	137.75	359.25		137 75	-	359.25		497
CN	102	37.50	64.5		37 50	-	64 5		102
CC	20	13.50	6.50		13.50	-	6 5		20
CMU	281	48.50	232.5		48.50	-	232.5		281
Subtotal	1,133	292.00	841.00		292.00	0	841		1133
Industrial									
IN	860.00	304.00	556.00		304.00	-	556.00		860
Subtotal	860.00	304.00	556.00		304.00	0	556.00		860
Public Services and Facilities:									
P/QP	385.00	335.00	50.00		335.00	-	50.00		385 00
OS	511	69.50	441.5		69.50	-	441.50		511.00
Subtotal	896	404.50	491.5		404.5	0	491.5		896
Grand Total	24,916	6,272.5	18,593.5		1,000.5	0	1,888.5		2,889

1 Represents Total of Non-Residential developed acreage.
2 Represents Total of Non-Residential vacant acreage.
3 Represents Total Build-Out of Non-Residential acreage.

Project Location

The boundaries of the Town of Yucca Valley Comprehensive General Plan can generally be described as follows: on the east by La Contenta/Yucca Mesa Road; on the west by the ridgeline of the foothills separating Morongo Valley with the Town; on the south by the Joshua Tree National Monument; and on the north by Alters Hill and Buena Vista Drive. The Town of Yucca Valley can be more particularly described as including all or portions of the following sections:

All of Sections 14, 22, 23, 24, 25, 26, 27,32, 33, 34, 35 & 36, and portions of 13, Township 1 North, Range 5 East; Sections 19, 20, 21, 29, 30, 31, 32 and portions of Sections 16, 17 and 18 of Township 1 North, Range 6 East; Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, and portions of Section 5 of Township 1 South, Range 5 East; Sections 5, 6, 7, 8, 17 and 18 of Township 1 South, Range 6 East of the San Bernardino Baseline and Meridian. Also see attached Exhibit A.

Environmental Setting

The following briefly describes the Yucca Valley General Plan area and the surrounding environment. It also identifies the current state of development and the existing land use designations and acreage assignments under the San Bernardino County General Plan. Environmental resources, which may be adversely affected by the proposed development and environmental hazards which currently or may in the future impact the community are also briefly discussed.

Current Land Use

The current land use pattern in the Town of Yucca Valley can be best characterized as a rural residential community with generally low densities, bisected by a well traveled state highway that also serves as the primary commercial corridor for the Town. The most intense land uses occur along State Highway 62 and generally progressively decrease further north and south of this corridor.

Current residential development is predominantly low density detached single family on larger lots within large lot subdivisions, including government lots of five acres and larger holdings of up to 40 acres. Higher density residential development occurs primarily in multi-family condominium and apartment developments with total units ranging from four to 20 units each, making even these types of development more consistent with the rural residential character of the Town.

Commercial development is concentrated along State Highway 62 and ranges from free standing restaurants and general merchandise outlets, through smaller strip-type malls, to larger community scale shopping centers anchored by large chain outlets. In between, the Town is well serviced by neighborhood shopping centers and a wide range of general commercial and professional services. Newer commercial development has occurred in the central and eastern portions of the Town, where larger blocks of vacant property and limited topographic constraints have allowed larger scale development to occur.

Industrial development is currently limited to a few areas and types. These are largely focused on light industrial uses serving the local market. However, there are important industrial lands adjacent to the Yucca Valley Airport, where major warehousing and storage facilities are located, as well at the northern Town-limits northwest of the Highway 247 and Buena Vista intersection. Other important industrial lands are located in Section 32 in the eastern portion of the incorporated limits.

TOWN OF YUCCA VALLEY
EXISTING COUNTY LAND USE BUILDOUT

Land Use	Total Acres	Developed Acres	Vacant Acres	Exist Units	Ac	Potential Units	Ac	Buildout Units	Ac
Residential									
RL	6179	1369	4810	412		12,025		12,437	
RS8M	244.5	197	47.5	694		169.5		863.5	
14.5MRM	60	0	60	0		150		150	
PD	35	0	35	0		490		490	
RL10	230	29	201	2		20		22	
RL20	25	0	25	0		1		1	
RL5	3684	760	2924	99		587		686	
RC	2426	318	2108	8		54		62	
RS1	1649.5	536	1113.5	683		1113.5		1769.5	
RS18M	2673.5	1094.5	1579	2047		3513		5560	
RS10M	4093	1205	2888	1895		11836		13,731	
3MRM	260	143	117	898		1696.5		2594.5	
4MRM	620	320.5	299.5	1196		3280.5		4476.5	
Total	22,179.5	5972	16,206.5	7934		34,936		42,870	
Non-Residential									
CG/SPC	622.5	275	347.5	19	243.5A		347.5A	19	591A
IC	1182	323	859	15	301A		859A	15	1160A
OS	24	15	9		15A		9A		24A
CO	88	40	48	2	38A		48A	2	86A
IN	157	60	97		35A		97A		132A
CS	16	10	6		10A		6A		16A
CN	75	13	62	15	5A		62A	15	67A
PQP	46	46	0		0A		0A		0A
Total	2210.5	784	1428.5	51	647.4A		1428.5A	51	2076A
Residential	22,179.5	5972	16,206.5	7934		34,936		42,870	
Non-Res.	2210.5	784	1428.5	51	647.4A		1428.5A	51	2076A
Total	24,390	6754	17,636	7985	647.5A	34,936	1428.5A	42,921	2076A

Surrounding Land Use

The communities of Morongo Valley and Joshua Tree are located immediately west and east of the Town respectively. Both of these communities are primarily residential, with very limited commercial or other types of development. Immediately east of Town is the Institute of Mental Physics, which is located on a large holding. To the immediate south are the federally managed lands of the Joshua Tree National Park and mountainous terrain to the south west. North of the Town limits are large lots residential subdivisions with substantial subdivided land developed with scattered homes, and including the community of Yucca Mesa.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Land Use Compatibility

Land use compatibility is an essential part of the planning effort to create a new General Plan for the Town. The General Plan elements, especially the Land Use Element, have been developed to reflect basic goals and policies for a low density, rural residentially oriented community, with distinctive high desert character preserved and enhanced. Patterns of low density and open space preservation have been assigned to lands adjacent to the National Park and other sensitive open space lands. Intra-Town and especially lands on the Town perimeter are consistent with residential densities within an surrounding the community. The pattern of land uses within the community are designed to complement existing patterns, while enhancing the functional and aesthetic relationships of future land uses and development.

Hydrology

Several major natural drainage courses pass through the community, including Covington, Water Canyon and Yucca Creek Washes. Yucca Creek Wash provides backbone drainage through the community, roughly paralleling the Town's geographic and roadway layout. Areas of 100-year flooding are largely limited to the confluence of major drainage, especially along Yucca Creek. A master drainage plan for the community is currently underway, under the supervision of the San Bernardino County Flood Control/Transportation Department.

Air Quality

In the Yucca Valley region, the responsibility for establishing criteria by which air quality is measured rests with the Mojave Desert Air Quality Management District (MDAQMD).

Compared to other areas of Southern California, the Town of Yucca Valley has generally good air quality. In the past few decades noticeable deterioration of air quality has occurred due to increased development and population growth, traffic, construction activity and various site disturbances. It is apparent that although air pollution is emitted from various sources in the Morongo Basin, the most evident degradation of air quality is attributed mainly to sources outside of the area, including the Los Angeles County and San Bernardino/Riverside air basins.

Regionally representative air quality measurements, especially for ozone, are taken at the Twentynine Palms Monitoring Site. The Yucca Valley area has exceeded the State standard for Ozone (.09 ppm/hr.) 164 days, and has exceeded the federal standard (.12 ppm/hr..) 10 days from 1989 to 1992. For PM_{10} measurements at the Twentynine Palms Monitoring Site have exceeded the State standard (50µg/m twenty-seven times, and the federal standard (150µg/m two times from 1989 to 1992.

Of all pollutants, Ozone and PM_{10} are the most prevalent. Other pollutants are more difficult to infer and are not believed to constitute significant threats to public health. Present air quality in the Town can generally be expected to be equal or superior to that of all but one of the other communities in the MDAQMD region, with the possible exception of occasionally high amounts of ozone and suspended particulate which are generally transported from other areas of the region.

Water Resources

Domestic water resources for the Town of Yucca Valley are provided by the Hi-Desert Water District (HDWD) which utilize approximately sixteen (16) wells to extract groundwater from the Warren Valley Groundwater Basin. Water storage facilities are provided by sixteen (16) above- ground welded steel reservoirs with a total capacity of 12.41 million gallons.

Depths to groundwater on the Warren Valley Groundwater Basin vary, with approximately 45,000- 59,000 acre feet estimated to currently be in storage. The current per capita water usage excluding non-residential uses is approximately 103 gallon per day compared to the statewide average of 140 gallons per day. Some groundwater recharge comes from natural sources such as precipitation and infiltration of runoff from the surrounding hills and mountains. Additional sources of groundwater recharge include the State Water Project. Groundwater quality is generally good, with one inactive well have unacceptable levels of nitrates.

Biological Resources

The Morongo Basin region is home to a wide variety of plants and animals that are well adapted to the high desert environment. Of special concern are the Parish's Daisy (proposed for federal listing) and the Desert Tortoise (federally listed "Threatened"). The area is dominated

y the Joshua Tree woodland habitat, which here is typically associated with Mojave yucca, California juniper, boxthorn, joint fir, creosote ush and other common shrubs. Mojavean pinyon-juniper woodland scrub, Blackbush scrub and other plant communities also occur in e area.

hese varying habitats support a wide variety of reptiles, birds and small to medium sized mammals. In addition to cited sensitive species, e area supports the desert iguana, zebra tailed lizard, red diamond rattlesnake, Cooper's and Sharp-shinned hawks, Golden eagle, Western ellow-billed cuckoo, and Townsend's Big-Eared and Spotted bat 5. Portions of Joshua Tree National Monument are being considered the Draft Recovery Plan for the Desert Tortoise.

loise

he predominant noise source in the Town of Yucca Valley and the General Plan Study Area is vehicular traffic. In general, the existing oise environment in the Town and Study Area is typical of a rural community with a limited number of heavily traveled roadways. The ajor sources of vehicular noise are local and through traffic traveling on the two Highways 62 and 247, major arterial, including Yucca rail, Onaga Trail, and Joshua Lane.

rchaeological and Cultural Resources

he Yucca Valley region was first occupied some time between 12,000 and 7,000 years ago. A wide variety of cultural artifacts, including rowheads, spear points and cutting tools have been found in the region. These include habitation sites, as well as pictographs, petrographs nd cupule boulders. Historic resources include the original Warren's Well site and early homesteading use for many purposes, including esidential over the past 100 years.

ransportation/Circulation

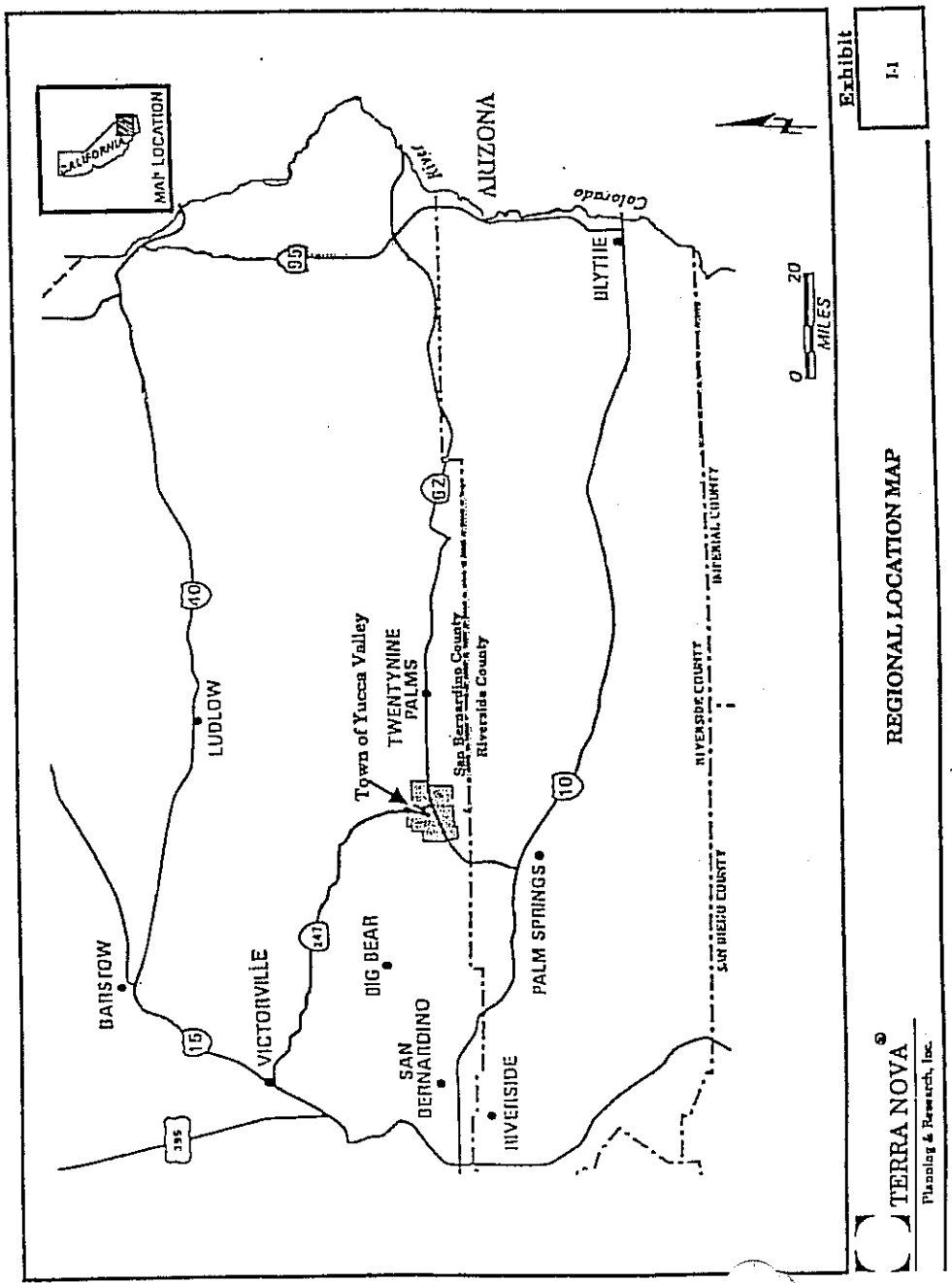
he western portion of the Morongo Basin and is served by local, regional and inter-regional roadway networks including State Highways 2 and 247, Pioneertown Road, Joshua Lane, Onaga Trail, and Yucca Trail. State highways 62 and 247, provide major access outside the lanning area boundaries. In the Morongo Basin State Highway 62 is designated "Conventional (No Access Control)". In 1993 this four ane road carried approximately 18,950 ADT east of Acoma Trail in Yucca Valley, 22,300 ADT west of Hwy 247, and 14,490 west of Yucca Mesa Road/La Contents Road. Highway 62 is planned for an ultimate six travel lanes with a controlled (raised median) center turn ane.

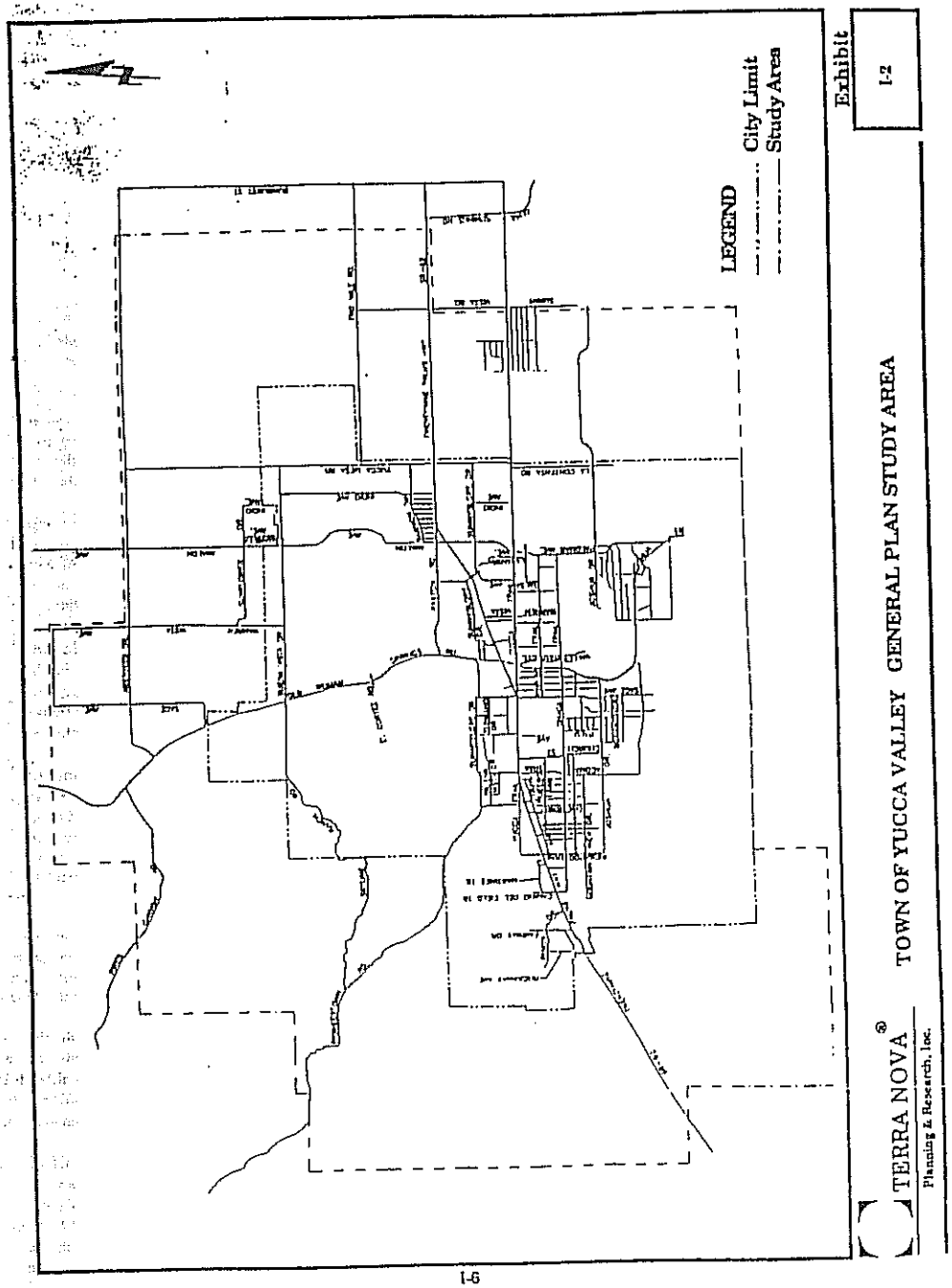
tate Highway 247 begins at Highway 62 and proceeds north to service other Mojave Desert communities to the north. Currently(1993), is highway is a two lane facility north of the airport, widening to five lanes southward to the intersection at Highway 62. In 1993 traffic olumes were 9,330 south of Buena Vista, and 14,250 north of Highway 62. This roadway is planned for an ultimate six travel lanes with controlled (raised median) center turn lane.

he circulation system for the Town and other basin communities has developed peripherally from the City's two major regional oadways/highways, as residential areas and strip commercial development has occurred along Highway 62. Existing traffic counts indicate at traffic volumes in the Town are low, and that all roadways are operating at acceptable levels of service, general LOS A. There are even traffic signals currently(1993) installed within the Town, all along Highway 62. Additional signals are also proposed along Hwy 47 at Sunnyslope Drive and Buena Vista Drive/Skyline Ranch Road.

ocio-Economic Impacts

ocio-economic conditions have been rapidly evolving the in the past few years. With a steady increase in family-type household ormation lowering the average age to 40.8 years in 1990 with an average household size of 2.35. The per capita median income in 1990 vas $13,697 and the median household income was $23,741. Residential development over the past few years has been slow, effected y the restrictions on domestic water hook-up, but primarily being affected by the regional recession. Housing is primarily single family n nature. Strong commercial development in the past four years has expanded community scale services. The community shows strong etail sales trends, especially when compared to Town population and median income levels. A jobs/housing imbalance seems to exist, vith a need for more local jobs with higher salary levels. Major employers include the Morongo Unified School District, major retailers, ealth care facilities, and general and service commercial.





I-6

57090 29 PALMS HIGHWAY, YUCCA VALLEY, CA 92284
PHONE (619) 369-7207 • FAX (619) 369-0626

ENVIRONMENTAL ANALYSIS/INITIAL STUDY

In accordance with the procedures of the Town of Yucca Valley regarding implementation of the California Environmental quality Act, this analysis, the associated Environmental Application form, and supporting data constitute the initial study of the subject project. The initial study provides the basis for a determination whether the project may have a significant effect on the environment.

PROJECT TITLE AND FILE NUMBER: Town of Yucca Valley Comprehensive General Plan	
PROJECT APPLICANT: Town of Yucca Valley	PROJECT CONTACT PERSON: Shane Stueckle, Town Planner
ADDRESS: 57090 29 Palms Hwy. Yucca Valley, CA 92284	ADDRESS: same
TELEPHONE: 619-369-6575	TELEPHONE: 619-369-6575
PROJECT LOCATION: Town of Yucca Valley, San Bernardino County, California	
PROJECT DESCRIPTION: The Town of Yucca Valley incorporated an area encompassing approximately 38 square miles. The incorporated boundaries and the Town's Sphere-of-Influence are co-terminus. Over the past three and a half years the Town government and a broadly based General Plan Advisory Committee have held extensive public meetings to discuss overall and specific goals for the community, as well as policies and programs for inclusion in the Comprehensive General Plan. A detailed assessment of the San Bernardino County Land Use/Zoning designations was conducted and a new set of land use designations and their assessments have been considered. In addition to land use, additions to the circulation system have been considered to relieve volumes on State Highways 62 and 247, which serve as the backbones of the Town's transportation system. The Comprehensive General Plan has been conceived as twenty six (26) elements encompassed in five major chapter. The Plan includes purpose and intent statements, extensive background and technical information, goals, objectives, polices and programs.	
GENERAL PLAN LAND USE DESIGNATION OF SITE: Varies, see attached descriptions.	
ZONING DESIGNATION OF SITE: Same	
NOISE SENSITIVE LAND USES PROPOSED? YES ____ NO _X_	

SECTION II. IMPACT ASSESSMENT CHECKLIST

		YES	MAYBE	NO
	EARTH RESOURCES. Will the project result in or be affected by:			
A.	Unstable earth conditions or changes in geologic substructures?	___	___	X
B.	Substantial disruptions, displacements, compaction or over covering of the soil?	___	X	___
C.	Significant change in topography or ground surface relief features?	___	X	___
D.	The destruction, covering or modification of any unique geologic or physical features?	___	___	X
E.	Substantial increase in water or wind erosion of soils, either on or off the site?	___	X	___
F.	Changes in siltation, deposition, or erosion which may modify the channel of a river or stream or the bed of any bay, inlet, or lake?	___	X	___
G.	Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	___	X	___
	AIR RESOURCES. Will the project result in:			
A.	The creation of objectionable odors?	___	X	___
B.	Substantial contribution to an existing or projected air quality violation?	___	___	X
C.	Violation of any ambient air quality standard?	___	___	X
D.	Exposure of sensitive receptors to substantial pollutant concentrations?	___	___	X
	WATER RESOURCES. Will the project result in:			
A.	Changes in drainage patterns, rate and amount of surface water runoff, or substantial changes in absorption rates?	___	X	___
B.	Alterations to the flow or course of flood waters?	___	X	___
C.	Change in the amount of surface water in any water body?	___	___	X
D.	Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	___	___	X
E	Alteration of the level, direction, or rate of flow of ground waters?	___	___	X

		YES	MAYBE	NO
F.	Change in the quantity or quality of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	___	___	X
G.	Reduction in the amount of water otherwise available for public use?	___	X	___
H.	Exposure of people or property to water related hazards, such as flooding?	___	X	___
I.	Wasteful use of water?	___	X	___
4.	BIOLOGICAL RESOURCES. Will the project result in:			
A.	Change in the diversity or number of any species of plants or animals (including trees, shrubs, grass, crops, WP, aquatic plants, birds, land animals, reptiles, fish and shellfish, insects or microfauna)?	___	X	___
B.	Any reduction in the numbers of unique, aesthetically significant, rare or endangered species of plants or animals?	___	X	___
C.	Introduction of new species of plants or animals into an area as a barrier to the normal replenishment or migration of existing species?	___	X	___
D.	Reduction in acreage of any agricultural crop?	___	___	X
E.	Deterioration of existing fish or wildlife habitat?	___	X	___
5.	CULTURAL/SCIENTIFIC RESOURCES. Will the project:			
A.	Result in the alteration of a paleontological, archaeological, or historical site?	___	X	___
B.	Result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	___	X	___
C.	Have the potential to cause a physical change which would affect unique ethnic cultural values?	___	X	___
D.	Restrict existing religious or sacred uses within the potential impact area?	___	___	X
6.	NATURAL RESOURCES. Will the project result in:			
A.	An increase in the rate of use of any natural resource?	___	X	___
B.	Substantial depletion of any nonrenewable natural resource, including agricultural soils or open space?	___	___	X
7.	AESTHETICS. Will the project result in the obstruction of any scenic vista or view open to the public, or will the proposal create a substantial, negative aesthetic effect?	___	X	___

		YES	MAYBE	NO
8.	ENERGY. Will the project:			
	A. Result in substantial use of fuel or energy?	____	X	____
	B. Substantially increase demand upon existing sources of energy or require the development of new sources of energy?	____	____	X
9.	LAND USE. Will the project:			
	A. Conflict with zoning or general plan designations, or policies?	____	____	X
	B. Conflict with adjacent, existing or planned land uses?	____	____	X
	C. Significantly induce urban growth?	____	____	X
	D. Disrupt the physical arrangement of an established community.	____	____	X
	E. Result in conversion of prime agricultural land to non-agricultural use, or impair the agricultural productivity of prime agricultural land?	____	____	X
10.	TRANSPORTATION/CIRCULATION. Will the project:			
	A. Result in generation of substantial traffic in excess of existing or planned system capacity?	____	X	____
	B. Effects on existing parking facilities or demand for new parking?	____	X	____
	C. Alter present patterns of circulation or movement of people and/or goods?	X	____	____
	D. Create substantial demand for rail or air traffic beyond existing or planned capacity?	____	____	X
	E. Increase traffic hazards to equestrians, motor vehicles, bicyclists, or pedestrians?	____	X	____
	F. Create internal circulation problems?	____	X	____
11.	POPULATION. Will the project significantly:			
	A. Alter the location, distribution, density, or growth rate of the human population of the area?	X	____	____
	B. Displace a large number of people?	____	____	X
12.	HOUSING.			
	Will the project alter existing housing types, or create a substantial demand for additional housing?	____	____	X
13.	RECREATION.			
	Will the project result in a major impact upon the quality or quantity of existing recreational opportunities?	____	X	____

		YES	MAYBE	NO
14.	PUBLIC HEALTH AND SAFETY. Will the project:			
	A. Create a potential public health hazard, or involve the use, production or disposal of materials which pose a hazard to people, animal, or plant populations in the area affected?	____	____	X
	B. Expose persons or property to high fire hazard conditions?	____	____	X
	C. Expose persons to potential aircraft crash hazards?	____	X	____
15.	NOISE. Will the project result in:			
	A. Increases in existing noise levels for adjoining areas?	____	X	____
	B. Exposure of people to existing or ultimate noise levels in excess of town standards?	____	X	____
16.	LIGHT AND GLARE. Will the project:			
	A. Produce light or glare which would be annoying or hazardous?	____	X	____
	B. Prevent sunlight from reaching adjacent properties?	____	____	X
17.	RISK OF UPSET. Will the project result in:			
	A. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset condition?	____	____	X
	B. Possible interference with an emergency response plan or an emergency evacuation plan?	____	____	X
18.	PUBLIC SERVICES AND UTILITIES. Will the project be deficient in the following areas:			
	A. Fire protection?	____	X	____
	B. Police protection?	____	X	____
	C. Schools?	____	X	____
	D. Parks or other recreational facilities?	____	X	____
	E. Maintenance of public facilities, including roads?	____	X	____
	F. Electricity or natural gas?	____	X	____
	G. Communication systems?	____	X	____
	H. Water?	____	X	____
	I. Sewer?	____	X	____
	J. Storm water drainage?	____	X	____

		YES	MAYBE	NO
K.	Solid waste and disposal?	____	X	____
L.	Other services? (list)	____	X	____

9. DOCUMENT, INDEX, AND ATTACH ALL EXISTING AND PROPOSED MITIGATION MEASURES.

10. AGENCIES AND INDIVIDUALS CONTACTED.

SECTION III. MANDATORY FINDINGS OF SIGNIFICANT EFFECT

		YES	MAYBE	NO
1.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	____	X	____
2.	Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)	____	X	____
3.	Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	____	X	____
4.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	____	X	____

SECTION IV. PRELIMINARY DETERMINATION

On the basis of this environmental analysis, and other information contained in the initial study, I find that:*

____ There is no substantial evidence that the project may have a significant effect on the environment. A Draft Negative Declaration shall be prepared.

____ Although the proposed project could have a significant effect on the environment, there will not be a significant effect because the attached mitigation measures have been included in the project. A draft Mitigated Negative Declaration shall be prepared.

____ Pursuant to Section 15153 of the CEQA Guidelines, an EIR (_____-ER-_____) has been prepared earlier which would adequately describe the general environmental setting significant impacts of the project and the alternatives and mitigation measures related to each significant effect. The previously prepared EIR shall be used as the draft for this project.

____ The project involves the construction of housing or neighborhood commercial facilities within an area for which an EIR (_____-ER-_____) or Negative Declaration (_____-ER-_____) on a specific plan (_____) has been prepared which adequately addresses this project. (Sections 15181 or 15182)

____ Pursuant to Section 15164 of the CEQA Guidelines, an EIR (_____-ER-_____) has been prepared earlier and only minor technical changes or additions are necessary to make the previous EIR adequate, and these changes do not raise important new issues about the significant effects on the environment. An addendum to the EIR shall be prepared.

____ Pursuant to Section 15163 of the CEQA Guidelines, an EIR (_____-ER-_____) has been prepared earlier, and only minor additions or changes would be necessary to make the previous EIR adequate for the project as revised. A Supplemental EIR shall be prepared.

X There is substantial evidence that the project may have a significant effect on the environment. An Environmental Impact Report shall be prepared.

*More than one box may apply.

APPROVED BY:

TITLE:

6/27/95
DATE:

TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN

ADDENDUM
TO
ENVIRONMENTAL CHECKLIST FORM

I.b. While the Project will not in and of itself affect soils, development facilitated may have the potential of inducing disruption, displacements compaction or overcovering of soils. These issues should be further addressed.

I.c. While the Project will not in and of itself affect topography or ground surface relief, development facilitated may have the potential of inducing mass grading, alterations to topographic features on some sites, and may otherwise affect surface relief. These issues should be further addressed.

I.e. While the General Plan will not directly increase soils erosion, facilitated development has the potential to have this effect and should be further addressed.

I.f. Continued development in the Town facilitated by the Plan has the potential of increasing siltation and/or deposition and should be further addressed.

I.g. The Town and region are subject to significant seismic and other geologic hazards, which should be further addressed through technical study and development of mitigation measures.

II.a. Development facilitated by the new General Plan may have an adverse impact on existing air quality through disruption of soils, and the generation of pollutants from stationary and mobile sources. These should be evaluated and measures to mitigate developed.

III.a,b. Future development will increase the amount of impervious surfaces and increase stormwater runoff. Local drainage patterns may need to be modified and detention facilities constructed to control runoff. Associated issues should be further addressed.

III.g. While increased growth inducement is not expected from implementation of the proposed General Plan, continued growth will place further demands on limited ground water supplies. The impacts of Plan buildout and the availability of additional resources should be further examined.

June 27, 1995

.h. Specific portions of the Town of Yucca Valley are located within existing flood plains as established by the Federal Emergency Management Agency on the Flood Insurance Rate Maps (FIRMs). The plan itself will not cause exposure of people or property to flooding, but implementation of the plan will influence development patterns throughout the community. The issue needs further attention.

.i. The development of stormwater detention facilities marginally increases the threat of inundation, especially in the unlikely event of concurrent seismic activity. Development within or adjacent to flood plains and other natural drainage areas and courses should also be addressed, as should be development of stormwater detention and/or recharge basins and their potential to cause inundation.

/.a. As buildout of the General Plan occurs, the potential loss of certain plant species within the community is possible. While the proposed plan greatly reduces development impacts over those expected from current County designations, potential impacts should nonetheless be further examined and measures to minimize impacts developed. As buildout of the General Plan occurs, the potential loss of certain animal species within the community is possible. While the proposed plan greatly reduces development impacts over those expected from current County designations, potential impact should nonetheless be further examined and measures to minimize impacts developed.

/.b. The rural character of the community and maintenance of same with General Plan buildout limit these impacts. Nonetheless, even with the limited possibility of occurrence of unique, rare, or endangered plants, additional study should be given to this issue. The rural character of the community and maintenance of same with General Plan buildout limit, but do not appear to eliminate, these impacts. Nonetheless, the likelihood of occurrence of unique, rare, or endangered animals, especially the federally listed desert tortoise and a wide variety of bird species, additional study should be given to this issue.

/.c. Development always brings the threat of exotic and other non-native plant species in the community, and development can result in the development of barriers to the natural revegetation of native plant communities. This issue should be addressed through further analysis. As discussed in IV.c., development always brings the threat of exotic and other non- native animal species in the community, and development can result in the development of barriers to the natural repopulation of native animal species and communities. This issue should be addressed through further analysis.

/.e. Continued development will remove and/or further fragment wildlife habitat. While the greatly reduced development densities and proposed policies and programs will significantly reduce potential impacts, these should still be assessed.

.a,b,c.
Although the General Plan land use plan has been developed to avoid direct impacts to sensitive cultural resources, an increasing population and the tendency to intrude into sensitive areas poses a potentially significant indirect threat to these resources. These issues need further attention.

/I.a. Buildout will increase the overall use of natural resources. However, policies and programs of the Plan are designed to reduce per capita demand and use of these resources. Nonetheless, the impacts of Plan buildout should be assessed.

VII.a.
Development, especially large scale commercial and industrial development have the potential to significantly impact scenic resources of the community. The high value of scenic and open space resources in the community require that a thoughtful assessment of this subject be given.

VIII.a. Continued population and visitor and commercial growth will increase the rate of use of fuels and energy. The relationship between growth and energy consumption and the possible means by which these resources may be conserved should be assessed.

VIII.b. See XV.a. above. New sources of energy are currently being developed in the region, including wind energy, solar power, and the use of natural gas for mass transit. These and similar issues should be discussed in the context of continued growth.

IX.a,b,c,d,e:
The proposed general Plan will result in a significant reduction in the intensities of various land uses in the community. The net effect will be a reduction in impacts in a broad number of areas over those that would result from buildout of the County General Plan.

X.a. The project constitutes a halving of the total number of dwelling units at buildout, compared to implementation of the County General Plan. Therefore, future Town- generated traffic is expected to be greatly reduced by this Plan. However, the buildout of the proposed General Plan will result in potentially significant traffic impacts which must be assessed and mitigated.

Xb. See XIII.a. above. Impacts compared to current land use designations will be substantially less. Inherent problems in circulation system still need to be analyzed and addressed.

X.c. Solutions to congestion on State Highway 62 are proposed by upgrading several arterial parallel to highway, relieving some intra-Town traffic from this roadway.

X.d. Plan encourages greater use of the Yucca Valley Airport, which has substantial unused capacity.

X.e. The inevitable increase in traffic volumes has the potential to increase the incidence of auto accidents, as well as accidents involving bicyclists and pedestrians. Potential impacts and possible mitigation measures should be addressed.

Xf. See X a,b, & e

XI.a. The proposed General Plan will result in an overall lowering of the residential densities and focus future medium and high density development closer to retail and service commercial areas. The growth rate is not expected to be affected by implementation of the General Plan.

XII.a. The distribution of future housing will be largely consistent with current land use patterns, with lower overall densities and provision of affordable and senior housing planned in closer proximity to commercial services.

XIII.a. Continued population growth and the increased number of children in new household formations indicate a growing need for additional recreation facilities. The ability of the community to provide adequate open space and recreation facilities for a growing population needs to be further assessed.

XIV.c. The County of San Bernardino adopted a Comprehensive Airport Land Use Plan (CALUP) in February 1992. The CALUP will be incorporated into the General Plan and appropriate Development Code Sections.

XV.a. Continued development in the community and the region is expected to result in proportionately increases in vehicular traffic, particularly along State Highway 62 and major arterial, the primary noise source in the community. Buildout traffic and resulting noise environment should be assessed further.

XVb. A limited potential exists for people to be exposed to occasionally severe noise levels associated with industrial development, service commercial, aircraft noise and other sources. While the potential appears limited, this issue should be further examined.

XVIa. Expanded commercial and possibly other development, including lighting for ball fields and other recreation areas, can be expected to create additional glare. While this impact is not expected to be significant, it should be further addressed.

XVIII.a,b,c,d,e,f,h,i,j,k,l:
The buildout of the General Plan will require an incremental expansion of a full range of public services, staffing and facilities. Increased traffic will require increased road and other infrastructure maintenance. There should be an evaluation of the quantifiable impacts associated with General Plan buildout. The halving of the ultimate number of dwelling units and residents, and the strength of the commercial sector of the economy should prove a good long-term position for the Town. Nonetheless, the potential impacts to the various governmental services provided by the Town should be assessed. Natural gas service is not provided to all portions of the Town, some areas relying upon propane. The demand for and availability of natural gas to service continued growth should also further addressed. Telecommunications are an essential part of the local infrastructure. As such, it is essential that continued service and its timely extension is made. The availability of this service should be assessed. Water resource issues are major factors in the continued growth in Yucca Valley. Current regulation limits the number of hookups available each year. Current ground water resources, the long-term availability of additional resources and the potential for conservation should all be thoroughly addressed. There is no central sewage system serving the Town. All development is serviced by on- lot septic tanks. The proposed General Plan greatly reduces the ultimate number of residences that will utilize either septic or centralized waste water treatment systems. The Town is affected by several major drainage that originate in the surrounding hills and mountains and converge in the Yucca Creek Wash. Significant local drainage is also generated during high intensity thunder showers. Issues of flooding protection and stormwater management should be assessed and mitigation measures developed. Increased residential and commercial development will result in the increased generation of solid waste. The limited availability of landfill capacity and the need to encourage recycling and use of recycled materials is a continuing challenge. This issue should be further assessed.

Sections III

1. The proposed General Plan constitutes a significant reduction in the intensity of development currently permitted under the San Bernardino County General Plan. Nonetheless, based upon the responses set forth in this checklist and staff review, the Project does have the potential to generally degrade the environment and adversely impact sensitive biological and cultural resources.

2. There may be a risk to the long-term environmental goals of the community by the less than thoughtful implementation of the General Plan. The short-term benefits vs. the long-term impacts of the Plan should be carefully assessed.

3. The buildout of the General Plan is an on-going cumulative impact on the natural and portions of the built environment. Whether these impacts are significant will depend upon the sensitivity with which the Plan is implemented.

4. While the proposed Yucca Valley General Plan takes a major step toward correcting overly intense planning and urbanization represented by buildout of the County General Plan, any development of the scope addressed on a community-wide level has the potential to adversely affect the residents and others who live, work or visit in the community.

A-UNDP GP

June 27, 1995

STATE OF CALIFORNIA

PETE WILSON, Governor

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

JUL 07 1995

DATE: July 5, 1995

TO: Reviewing Agencies

RE: TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN
SCH# 95072080

Attached for your comment is the Notice of Preparation for the TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

SHANE STUECKLE
TOWN OF YUCCA VALLEY
57090 29 PALM HWY
YUCCA VALLEY, CA 92284

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Kristen Derscheid at (916) 445-0613.

Sincerely,

Michael Chiriatti, Jr.
Chief, State Clearinghouse

Attachments

cc: Lead Agency

SCH# 95072080

NOP Distribution List

S = sent by lead agency
X = sent by SCH

Resources Agency
- [X] Nadell Gayou, Resources Agency, Third Floor, Sacramento, CA 95814, 916/653-5727
- [ ] Judy Carpenter, Dept. of Boating & Waterways, 1629 S Street, Sacramento, CA 95814, 916/445-8301
- [ ] Gary L. Mahaney, California Coastal Commission, 45 Fremont Street, Suite 2000, San Francisco, CA 94105-2219, 415/904-5200
- [ ] Brad Mahaffey, State Coastal Conservancy, 1330 Broadway, Suite 1100, Oakland, CA 94612, 510/286-1015
- [X] Deborah Nankervis, Dept. of Conservation, 801 K Street, MS 24-02, Sacramento, CA 95814, 916/445-8733
- [X] Douglas Wheeler, Dept. of Fish and Game, 1416 9th Street, Room 1516-2, Sacramento, CA 95814, 916/653-4551
- [X] Peter Kaufmann, Department of Forestry, P.O. Box 944246, Sacramento, CA 94244-2460, 916/653-7772
- [X] Gary Mekkelson, Office of Historic Preservation, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-8900
- [ ] Sara Mclellan, S.F. Bay Conservation & Dev. Comm., 30 Van Ness Avenue, Room 2011, San Francisco, CA 94102, 415/557-3686
- [ ] Ken Pierce, Dept. of Parks and Recreation, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-6934
- [ ] Wendy Mahoney, Reclamation Board, 1020 Ninth Street, Room 240, Sacramento, CA 95814, 916/327-1531
- [ ] Nadell Gayou, Water Resources, Dept. of Water Resources, 1416 Ninth Street, Third Floor, Sacramento, CA 95814, 916/327-1732

Fish and Game - Regional Offices
- [ ] Richard L. Bloom, Regional Manager, Department of Fish and Game, 4949 Viewridge Avenue, San Diego, CA 92123, 619/467-4201
- [ ] Brad Henderson, Regional Manager, Department of Fish and Game, 1701 Nimbus Road, Suite A, Rancho Cordova, CA 95670, 916/355-0972 (916/358-2900)
- [ ] C. Mehle, Regional Manager, Department of Fish and Game, 330 Golden Shore, Long Beach, CA 90802, 310/590-5113
- [ ] R. Hansen, Regional Manager, Department of Fish and Game, 1234 East Shaw Avenue, Fresno, CA 93710, 209/243-3761 (244-4211)
- [X] Fred A. Worthley, Jr., Reg. Manager, Department of Fish and Game, 330 Golden Shore, Suite 50, Long Beach, CA 90802, 310/590-5133

Independent Commissions
- [ ] Larry Gervais, Colorado River Commission, 555 North Sierra Street, Las Vegas, NV 89155, 702/486-2670
- [ ] Douglas Long, Public Utilities Commission, 505 Van Ness Avenue, San Francisco, CA 94102, 415/703-2011
- [ ] Native American Heritage Commission, 915 Capitol Mall, Room 364, Sacramento, CA 95814, 916/653-4082
- [ ] Gerald R. Zimmerman, Colorado Energy Board, 1580 Logan Street, Suite 10, Denver, CO 80203-1942, 303/894-2100
- [X] Barry Edmonds, Water Resources Control Board, 901 P Street, Sacramento, CA 95814, 916/322-3327
- [ ] Bob Anderson, Tahoe Regional Planning Agency, P.O. Box 1038, Zephyr Cove, NV 89448, 702/588-4547
- [ ] Bob Dietz, Dept. of Minerals, 801 K Street, MS 20-15, Sacramento, CA 95814, 916/445-9686

Boards & Offices
- [ ] Allen Robertson, Energy Commission, 1516 Ninth Street, Sacramento, CA 95814, 916/654-4930
- [ ] Mike Chrisp, Tahoe Regional Planning Agency, P.O. Box 1038, Zephyr Cove, NV 89448, 702/588-4547
- [ ] Wesley Baker, Water Resources Control Board, P.O. Box 2000, Sacramento, CA 95810, 916/657-1301
- [ ] Lisa Ellery, Coastal Commission, 631 Howard Street, 4th Floor, San Francisco, CA 94105, 415/904-5260
- [X] Marcia Sawyer, Coastal Commission, P.O. Box 1450, Ventura, CA 93002, 805/641-0142
- [ ] Clare Berglund, Coastal Commission, P.O. Box 1450, Ventura, CA 93002, 805/641-0142
- [ ] Gary F. Adams, Coastal Commission, P.O. Box 1450, Ventura, CA 93002, 805/641-0142
- [ ] Lawrence Newland, Coastal Commission, P.O. Box 1450, San Luis Obispo, CA 93406, 805/549-3147
- [ ] Judy Lamarque, Coastal Commission, 631 Howard Street, San Francisco, CA 94105, 415/904-5200
- [ ] Stephanie Hadley, Coastal Commission, 631 Howard Street, San Francisco, CA 94105, 415/904-5200
- [ ] Dan Carrillo, Energy Commission, 1516 Ninth Street, Sacramento, CA 95814, 916/654-4930

Department of Transportation
- [ ] Dan Kopulsky, District 7, 120 South Spring Street, Los Angeles, CA 90012, 213/897-3656
- [ ] Stephanie Hadley, Division of Aeronautics, 1120 N Street, Sacramento, CA 95814, 916/654-4959
- [ ] Tom Matson, Caltrans Headquarters, Office of Special Projects, Planning and Analysis Division, P.O. Box 942874, Sacramento, CA 94274-0001, 916/653-7222
- [ ] Ron Hudgens, Caltrans, Planning, P.O. Box 942874, Sacramento, CA 94274-0001, 916/445-3570
- [ ] Bruce Sheppard, Dept. of General Services, 400 R Street, Suite 5100, Sacramento, CA 95814, 916/324-0814
- [ ] (Office of Local Assistance, 1120 N Street, Suite 400, Sacramento, CA 95814, 916/445-3160)

Caltrans Environmental Protection Agency
- [X] Barbara Fry, Air Resources Board, 2020 L Street, Sacramento, CA 95814, 916/322-2367
- [ ] Mark Seiler, Air Quality Management Board, 1010 Gal Creek Drive, Ventura, CA 93003, 805/645-1400
- [ ] Warren Hoobard, Air Resources Board, Stationary Source Division, Emission Inventory Branch, 2020 L Street, Sacramento, CA 95814, 916/322-6333
- [ ] Paul Zimmer, Water Resources Control Board, Water Rights Division, 901 P Street, Sacramento, CA 95814, 916/657-2170
- [ ] Mike Falkenstien, Water Resources Control Board, Water Rights Division, 901 P Street, Sacramento, CA 95814, 916/657-1927 (916/657-1971)
- [ ] Dept. of Toxic Substances Control, 1416 Ninth Street, Room 1320, Sacramento, CA 95814-5503, 916/324-1781

Business, Transportation & Housing
- [ ] Wendy Mahoney, Transportation Projects, Department of Transportation, Division of Aeronautics, 1120 N Street, Sacramento, CA 95814, 916/654-4959
- [ ] Tom Matson, Caltrans Headquarters, Office of Special Projects, Planning and Analysis Division, P.O. Box 942874, Sacramento, CA 94274-0001, 916/653-7222
- [ ] Ron Hudgens, Caltrans, Planning, P.O. Box 942874, Sacramento, CA 94274-0001, 916/445-3570
- [ ] Bruce Sheppard, Dept. of General Services, 400 R Street, Suite 5100, Sacramento, CA 95814, 916/324-0814
- [ ] (Office of Local Assistance, 1120 N Street, Suite 400, Sacramento, CA 95814, 916/445-3160)

Caltrans Environmental Protection Agency
- [X] Barbara Fry, Air Resources Board, 2020 L Street, Sacramento, CA 95814, 916/322-2367
- [ ] Mark Seiler, Air Quality Management Board, 1010 Gal Creek Drive, Ventura, CA 93003, 805/645-1400
- [ ] Warren Hoobard, Air Resources Board, Stationary Source Division, Emission Inventory Branch, 2020 L Street, Sacramento, CA 95814, 916/322-6333
- [ ] Paul Zimmer, Water Resources Control Board, Water Rights Division, 901 P Street, Sacramento, CA 95814, 916/657-2170
- [ ] Mike Falkenstien, Water Resources Control Board, Water Rights Division, 901 P Street, Sacramento, CA 95814, 916/657-1927 (916/657-1971)
- [ ] Dept. of Toxic Substances Control, 1416 Ninth Street, Room 1320, Sacramento, CA 95814-5503, 916/324-1781

Regional Water Quality Control Board
- [ ] NORTH COAST REGION (1), 1440 Harbor Blvd, Suite A, Santa Rosa, CA 95403, 707/576-2220 (576-2400)
- [ ] SAN FRANCISCO BAY REGION (2), 2101 Webster Street, Suite 500, Oakland, CA 94612, 510/286-1255
- [ ] CENTRAL COAST REGION (3), 81 Higuera Street, Suite 200, San Luis Obispo, CA 93401, 805/549-3147 (549-3333)
- [ ] LOS ANGELES REGION (4), 101 Centre Plaza Drive, Monterey Park, CA 91754-2156, 213/266-7500
- [ ] CENTRAL VALLEY REGION (5), 3443 Routier Road, Suite A, Sacramento, CA 95827-3098, 916/255-3000
- [ ] Fresno Branch Office, 3614 East Ashlan Avenue, Fresno, CA 93726, 209/445-5116 (445-6311)
- [ ] Redding Branch Office, 415 Knollcrest Drive, Redding, CA 96002, 916/225-2300 (ATSS 441)
- [ ] LAHONTAN REGION (6), 2092 Lake Tahoe Boulevard, South Lake Tahoe, CA 96150, 916/542-5400
- [ ] Victorville Branch Office, 15428 Civic Drive, Suite 1, Victorville, CA 92392-2359, 619/241-6583
- [ ] COLORADO RIVER BASIN REGION (7), 73720 Fred Waring Drive, #100, Palm Desert, CA 92260-2564, 619/346-7491
- [ ] SANTA ANA REGION (8), 6809 Indiana, Suite 200, Riverside, CA 92501, 714/782-4130 (782-4121)
- [ ] SAN DIEGO REGION (9), 9771 Clairemont Mesa Blvd, Suite A, San Diego, CA 92124-1331, 619/265-5114 (571-6907)

OTHER _____

OTHER _____

Mojave Desert
Air Quality Management District

MDAQMD

15428 Civic Drive, Suite 200, Victorville, CA 92392-2383
(619) 245-1661 Fax No. (619) 245-2699

Charles L. Fryxell
Air Pollution Control Officer

July 3, 1995

Shane R. Stueckle, Town Planner
Town of Yucca Valley
57090 Twentynine Palms Highway
Yucca Valley, CA 92284

JUL 6 1995

Re: Town of Yucca Valley Comprehensive General Plan

Dear Mr. Stueckle:

Thank you for the opportunity to comment on the Notice of Preparation of an Environmental Impact Report (EIR) for the Town of Yucca Valley's first Comprehensive General Plan. The Mojave Desert Air Quality Management District recommends that the following comments be addressed in the EIR:

The MDAQMD has recently (December 21, 1994) adopted a federal ozone attainment plan (the *Post-1996 Attainment Demonstration Plan*, or ADP). The MDAQMD has recently (June 23, 1995) circulated a draft final federal PM_{10} attainment plan (the *Mojave Desert Planning Area PM10 Attainment Plan* or PM_{10} Plan). Under direct impacts, the EIR should identify the General Plan's emissions (vehicle-related and other), and determine whether they are consistent with those used in the ADP and PM_{10} Plan. Under cumulative impacts, the EIR should identify the General Plan's population, housing unit, employment and transportation forecasts, and identify whether they are consistent with those used in the ADP and PM_{10} Plan. Inconsistent projections, especially if they exceed assumptions used in developing these plans, would result in an adverse air quality impact which could negate MDAQMD efforts towards attainment of the National Ambient Air Quality Standards.

Several specific control measures are identified in the PM_{10} Plan. The EIR should identify how these measures will be implemented to reduce PM_{10} emissions resulting from development-related activity.

If you have any questions regarding these comments or need any additional information, please contact Alan De Salvio, Air Quality Specialist, at (619) 245-1661.

Sincerely,

Christian N. Ihenacho
Supervising Air Quality Planner

CNI:ajd

City of Adelanto • Town of Apple Valley City of Barstow City of Hesperia City of Needles
County of San Bernardino • City of Twentynine Palms City of Victorville Town of Yucca Valley

printed on recycled paper

SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
818 West Seventh Street,12th Floor • Los Angeles, California 90017-3435 (213) 236-1800 • FAX (213) 236-1825

July 10, 1995

Mr. Shane B. Stueckle, Town Planner
Town of Yucca Valley
57090 29 Palms Highway
Yucca Valley, CA 92284

RE: Comments on the Notice of Preparation for the Draft EIR for the Proposed Town of Yucca Valley Comprehensive General Plan - SCAG No. I 9500284

Dear Mr. Stueckle:

Thank you for submitting the Notice of Preparation for the Draft EIR for the Proposed Town of Yucca Valley Comprehensive General Plan to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project with the applicable general plans and regional plans (Section 15125 [b]). If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact Glenn Blossom at (213) 236-1876.

Sincerely,

Eric H. Roth

ERIC H. ROTH
Manager, Intergovernmental Review

Stella Mendoza City of Brawley-President, Ed Edelman Los Angeles County-First Vice President, Dick Kelly City of Palmdale-Second Vice President, Gadiel Vazquez Orange County-Past President, Richard Alarcon City of Los Angeles, Richard Alatorre City of Los Angeles, Robert Bartlett City of Monrovia, George Bass City of Bell, Ron Bates City of Los Alamitos, George Bettey, Jr. City of Burbank, Hal Bernson City of Los Angeles, Walter Bowman City of Cypress, Marvin Braude City of Los Angeles, Susan Brooks City of Rancho Palos Verdes, Art Brown City of Buena Park, Yvonne Brathwaite-Burke Los Angeles County, Jim Bushy, Jr. City of Victorville, Bob Buster Riverside County, Laura Chick City of Los Angeles, John Cox City of Newport Beach, Cynthia Crothers City of Moreno Valley, Hal Crouts City of Lomita, Richard Dixon City of Lake Forest, Doug Drummond City of Long Beach, Gilton Eaton City of Yucaipa, Joseph Esquivel City of Lakewood, John Ferraro City of Los Angeles, Karyn Foley City of Calabasas, John Flynn Ventura County, Ruth Galanter City of Los Angeles, Sandra Genis City of Costa Mesa, Jackie Goldberg City of Los Angeles, Candace Haggard City of San Clemente, Garland Hardeman City of Inglewood, Mike Hernandez City of Los Angeles, Nate Holden City of Los Angeles, Robert Jamison City of Azusa, Jeff Kellogg City of Long Beach, Abbe Land City of West Hollywood, John Longville City of Rialto, Ron Loveridge City of Riverside, John Melton City of Santa Paula, Barbara Messina City of Alhambra, Judy Mikels City of Simi Valley, David Myers City of Palmdale, Kathryn Nack City of Pasadena, Bev Perry City of Brea, Gwenn Norton-Perry City of Chino Hills, Ron Parks City of Temecula, Irv Pickler City of Anaheim, Michael Pinsky City of Oxnard, Beatrice Proo City of Pico Rivera, Larry Rhinehart City of Hawthorne, Richard Riordan City of Los Angeles, Mark Ridley-Thomas City of Los Angeles, Albert Robles City of South Gate, Sam Sharp Imperial County, Marilyn Shaw City of Compton, Ruth Snowhook City of Los Angeles, Tom Sykes City of Walnut, Laurie Tully-Payne City of Highland, Joel Wachs City of Los Angeles, Rita Walters City of Los Angeles, Judy Wright City of Clare[illegible] Zev Yaroslavsky City of Los Angeles *

COMMENTS ON A NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN

BACKGROUND AND PROJECT DESCRIPTION

The Town of Yucca Valley incorporated an area encompassing approximately 38 square miles. The incorporated boundaries and the Town's Sphere of Influence are co-terminus. Over the past three-and-a-half years the Town government and a broadly based General Plan Advisory Committee have held extensive public meetings to discuss overall and specific goals for the community, as well as policies and programs for inclusion in the Comprehensive General Plan. A detailed assessment of the San Bernardino County Land Use/Zoning designations was conducted and a new set of land use designations and their assessments have been considered.

In addition to land use, additions to the circulation system have been considered to relieve traffic volumes on State Highways 62 and 247, which serve as the backbones of the Town's transportation system. The Comprehensive General Plan has been developed as twenty six elements enveloped in five major chapters. The Plan includes purpose and intent statements, extensive background and technical information, goals, objectives, policies and programs.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The Growth Management Chapter (GMC) of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the proposed Yucca Valley Comprehensive General Plan[1]:

- *The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phase of implementation and review.*
- *The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.*
- *Encourage patterns of urban development and land use which reduce costs on*

[1] See Endnote.

infrastructure construction and make better use of existing facilities.

- *Encourage subregions to define an economic strategy to maintain the economic vitality of the subregion, including the development and use of marketing programs, and other economic incentives, which support attainment of subregional goals and policies.*
- *Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.*
- *Encourage developments in and around activity centers, transportation node corridors, underutilized infrastructure systems and areas needing recycling and redevelopment.*
- *Encourage planned development in locations least likely to cause adverse environmental impact.*
- *Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*
- *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*
- *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*
- *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage and to develop emergency response and recovery plans.*

The Regional Mobility Element (RME) also has policies pertinent to the proposed Town of Yucca Valley Comprehensive General Plan[2]. This chapter links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy

[2] See Endnote.

consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant policies of this chapter are the following:

- *Promote TDM programs along with transit and ridesharing facilities as a viable and desirable part of the overall mobility program while recognizing the particular needs of individual subregions.*
- *Support the development of public seed funding for new and innovative demonstration programs.*
- *Support the extension of TDM program implementation to non-commute trips for public and private sector activities.*
- *Support the coordination of land-use and transportation decisions with land-use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.*
- *Support the use of market incentives as a mechanism to affect and modify behavior toward the use of alternative modes for both commute and non-commute travel.*
- *Expanded transportation system management by local jurisdictions will be encouraged.*
- *Urban form, land-use and site-design policies should include requirements for safe and convenient non-motorized transportation, including the development of bicycle and pedestrian-friendly environments near transit.*

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the projected growth of the Town of Yucca Valley should be implemented and monitored, as required by CEQA.

ENDNOTE

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. §134(g)-(h), 49 U.S.C. §1607(f)-(g) et seq., 23 C.F.R. §450, and 49 C.F.R. §613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. §7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. §7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans (California Environmental Quality Act Guidelines Sections 15206 and 15125(b)).

Pursuant to 33 U.S.C. §1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 8, P.O. BOX 231
SAN BERNARDINO, CALIFORNIA 92402
TDD (909) 383-5939

August 2, 1995

08-SBd-62-12.4
SCH #95072080

Mr. Shane Stueckle
Town of Yucca Valley
57090 Twentynine Palms Highway
Yucca Valley, CA 92284

Dear Mr. Stueckle:

Notice of Preparation of a Draft
Environmental Impact Report (DEIR) for the
Town of Yucca Valley Comprehensive General Plan

We have reviewed the above-referenced document and request consideration of the following comments:

- A traffic study is needed for the Draft Environmental Impact Report and should include the following from a worst case scenario viewpoint: existing and future average daily traffic (ADT) volumes, traffic generation (including peak hour), traffic distribution, analysis of peak hour demand and capacity using delay methodology for intersections along with current and projected capacities of local roads, state highways and freeways that might be impacted. Special attention should be given to State Route 62 (SR 62) and State Route 247 (SR 247).

- The analysis of the traffic study should identify improvements needed to mitigate the impacts to State transportation facilities and the funding sources of these improvements.

- SR 62 between Interstate 10 (I-10) and the San Bernardino County line is designated as a freeway.

- The proposed signals along SR 247 at Sunnyslope Drive and Buena Vista Drive/Skyline Ranch Road must meet the State warrant guidelines before they are approved by Caltrans. For coordination and permit process on this matter, please contact:

  Mr. Frank Haider
  Permits
  California Department of Transportation
  P.O. Box 231
  San Bernardino, CA 92402

When available, please send the DEIR and traffic study to Diane Keel, Transportation Planning, San Bernardino Coordination Branch, at the above address.

If you have any questions, please contact Diane Keel at (909) 383-6908 or FAX (909) 383-5936.

Sincerely,

for HARVEY J. SAWYER, Chief
Office of San Bernardino
County Transportation
Planning

cc: Frank Haider/Permits
Michael Chiriatti, Jr./State Clearinghouse

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
330 GOLDEN SHORE, SUITE 50
LONG BEACH, CA 90802
(310) 590-5113

July 19, 1995

Mr. Shane R. Stueckle
Town of Yucca Valley
57090 Twenty-nine Palms Highway
Yucca Valley, California 92284

Dear Mr. Stueckle:

Notice of Preparation of Draft Environmental Impact Report
Town of Yucca Valley Comprehensive General Plan
San Bernardino, County

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in the draft Environmental Impact Report:

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

   a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

   b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

   c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, §15380).

   d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

   a. CEQA Guidelines, §15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

   c. A cumulative effects analysis should be developed as described under CEQA Guidelines, §15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

   d. The document should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under §2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program, is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the County ensure that the development of this and other proposed projects does not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines. Additionally, the jurisdictions should quantify and qualify: 1) the amount of coastal sage scrub within their boundaries; 2) the acreage of coastal sage scrub habitat removed by individual projects; and 3) any acreage set aside for mitigation. This information should be kept in an updated ledger

system. These issues must be addressed in an Environmental Impact Report per CEQA Guidelines, §15065 and §15380.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

   c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. If the project has the potential to adversely affect species of plants or animals listed under the California Endangered Species Act (CESA), either during construction or over the life of the project, a CESA-Memorandum of Understanding (CESA-MOU) must be obtained under §2081 of the Fish and Game Code. CESA-MOU's are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA-MOU.

   a. Biological mitigation proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA-MOU.

   b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

   a. The Department has direct authority under Fish and Game Code §1600 et. seq. in regard to any proposed activity which would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any river, stream, or lake. Departmental jurisdiction under §1600 et. seq. applies to all lands within the 100-year floodplain. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

   b. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

The Department holds regularly scheduled pre-project planning/early consultation meetings. To make an appointment, please call our regional office at (310) 590-5137.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Mr. Kevin Brennan, Wildlife Biologist, (909) 659-2641.

Sincerely,

Patricia Wolf
Acting Regional Manager
Region 5

Attachments

cc: see attached page

cc: Mr. Kevin Brennan
Department of Fish and Game
Riverside, California

Mr. Andy Pauli
Department of Fish and Game
San Bernardino, California

Ms. Becky Jones
Department of Fish and Game
Lancaster, California

Mr. Mike Giusti
Department of Fish and Game
Chino, California

Mr. Terry Foreman
Department of Fish and Game
San Diego, California

Ms. Mary Meyer
Department of Fish and Game
Ojai, California

Mr. Marty Muschinske
Department of Fish and Game
San Diego, California

U.S. Fish and Wildlife Service
Carlsbad, California

U.S. Army Corps of Engineers
Los Angeles, California

State Clearinghouse
Sacramento, California

APPENDIX B

CULTURAL RESOURCE ASSESSMENT

FOR

THE TOWN OF YUCCA VALLEY

PREPARED BY:

BRUCE LOVE, CRM TECH.

AUGUST, 1993

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

CULTURAL RESOURCES ELEMENT

YUCCA VALLEY GENERAL PLAN

SAN BERNARDINO COUNTY

Submitted to:

John Criste
Terra Nova Planning and Research
400 S. Farrell, Suite B-205
Palm Springs, CA 92262

Submitted by:

Bruce Love, Owner and Principal Investigator
CRM TECH
126 Barret Road
Riverside, CA 92507

August 19, 1993

CRM TECH Job # 130
Quad sheets: Yucca Valley North, Yucca Valley South, Joshua Tree North, Joshua Tree South, Rimrock, Morongo Valley

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INTRODUCTION

Cultural resources are an integral part of any community. Their identification and protection provides the community with a sense of its own history and heritage. Cultural resources include Indian sites from before the arrival of European-Americans and historical features from early settlement and development of the area. In order to help the Town of Yucca Valley manage its archaeological/historical sites, this report has been prepared to provide an overview of the General Plan Area and to inform, discuss, and make recommendations regarding archaeological and historical resources. As background research, the author performed a records search at the San Bernardino County Musuem Archaeological Information Center, did an historic map search at the Tomás Rivera Map Library at UCR, and performed a drive-through and spot field checks in the various zones within the Study Plan Area.

CULTURAL HISTORY OF YUCCA VALLEY

The Indians that occupied the Yucca Valley region at the time of White contact were called Serranos, a Spanish term meaning people of the mountains. The three basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1976). The following information is taken from these sources.

Historic Period

The Serrano homeland was a large area encompassing the San Bernardino Mountains including Cajon Pass on the west, San Gorgonio Pass on the south, Twentynine Palms on the east, and encompassing Lucerne Valley on the north. True tribal boundaries are impossible to assign but they have been approximated by various anthropologists based on linguistic evidence rather than real political or territorial claims (Figs. 1 and 2).

Serrano, of course, was not the Indian name for these people. In fact, they did not have a single name that referred to an all-inclusive tribal affiliation. Instead, membership was in terms of lineages or clans. The clans, in turn, were grouped into two main divisions of Serrano social organization. These divisions, or moieties, were known as the Wildcat and Coyote moieties. Individual clans did have territories they called their own (Fig. 1). These were lands they considered theirs for purposes of hunting game and gathering food and other necessary resources. They interacted with other clans, often from the other moiety, for purposes of trade, intermarriage, and performing ceremonies.

Population data prior to White contact are almost impossible to obtain, but estimates range from 1500 to 2500 persons. Between 1819 and 1834, most Serranos were moved onto mission lands, essentially bringing to an end any coherent social, political, or religious organization. However, Serrano identification remains strong among the few surviving members today.

Prehistoric Period

In order to understand Indian cultures prior to the period of Spanish contact, archaeologists have devised chronological frameworks based on artifacts and site types that go back some 12,000 years. One of the more frequently used time frames for the Southern California deserts was developed by Claude Warren, professor of archaeology at University of Nevada Las Vegas. It consists of five periods that mark changes in the archaeological record that reflect different ways that Indian people adapted to their surroundings. The periods are only meant to provide a very broad outline, a framework that is continually being revised and refined. The periods are as follows (Warren 1984; Warren and Crabtree 1986):

Lake Mojave Period (12,000 years ago to 7,000 years ago). The Lake Mojave culture incorporates fluted points similar to Clovis points. These are large stone spear points that have a distinctive flute, or longitudinal groove chipped in the sides. These points were used for hunting large game associated with the last Ice Age (the Pleistocene), game similar to the La Brea Tar Pits type of animals. A variety of other points and artifacts from this period tend to be large in size. Many sites are associated with Pleistocene lakes and most are limited to the surface. Core tools, hand-held rocks with several flakes removed, functioned as choppers or hammerstones. Stones for grinding food products, known as millingstones, are rare.

Pinto Period (7,000 years ago to 4,000 years ago). During this period, at the end of the Pleistocene, people were required to adjust to major environmental changes and populations apparently occupied new areas and abondoned others. This culture is named after a particular type of stone projectile point first identified in the Pinto Basin east of Yucca Valley. It is smaller than the fluted points but larger and thicker than the cultures that followed. Like the Lake Mojave sites, millingstones are uncommon.

Gypsum Period (4,000 years ago to 1,500 years ago). This period sees a rise in cultural complexity and variation in artifact types and site types. There was probably a population increase during this period when there were wetter conditions than today. Numerous point types reflect the use of the atlatl, an Aztec name for a hunting weapon that uses a weighted throwing stick to project a large dart shaft with a heavy stone point. Other stone tools include two-edged blades, scrapers for numerous uses, cores and hammerstones for

producing stone flakes, and unlike the previous period, the extensive use of millingstones for food grinding. Millingstones generally appear in two kinds of sets: manos and metates, and mortars and pestles. Manos are hand-held grinding stones used on slab-like stone basins known as metates. Mortars are deep holes, usually in boulders, in which food was pounded with pestles.

Saratoga Springs Period (1,500 years ago to 800 years ago). This period is marked by the introduction of the bow and arrow, and hence a change in food procurement and resource exploitation. The stone point types are smaller, used for smaller game animals. Millingstones continue to be used extensively.

Protohistoric Period (800 years ago to White contact). This period has evidence of extensive contact with Colorado River tribes and the introduction of pottery across the Mojave Desert. Two new arrow point types, called Desert Side-notched and Cottonwood Triangular, are hallmarks of this period. This is the period in which the ethnic affiliation of the Indians is best known because it leads directly into the Historic Period where eye-witness accounts from White explorers and travelers have preserved some information regarding language and lifestyle of the desert inhabitants..

TYPES OF ARCHAEOLOGICAL SITES

This section outlines the variety of types of archaeological sites that are likely to be found in or near the General Plan Area. In broad terms, sites are divided into "historic" versus "prehistoric." Historic sites are the remains of human activities that took place during the period after initial White contact. Prehistoric sites are remains from the period of Indian occupation prior to White contact.

Prehistoric Sites

Village Sites These sites are areas occupied for extended periods of time by prehistoric Indian peoples, leaving deep rich deposits of dark, organic and ashy soil (called midden) filled with artifacts and plant and animal remains that can be used by modern researchers to interpret past lifeways. These are the most significant kinds of sites for many reasons; they are most important to the scientific community for the extensive information contained in the ground, and most important to living Indians because these were places where their ancestors lived and were buried. Unfortunately, they also attract relic hunters and artifact collectors who cause massive damage to sites by their looting activities.

Campsites or Temporary Habitation Sites These sites are similar to village sites in that there is a variety of types of artifacts but these sites are

usually shallower with fewer items. They are the remains of campsites that were used only sporadically or seasonally, sometimes in special collecting areas, like pinyon pine or acorn collecting areas. Typical artifacts include chipping debris, sometimes whole points, scrapers, blades, pottery fragments, fire-affected rock, and burned animal bone from roasting activities.

Food Processing Sites or Milling Stations Milling stations are areas where grinding or pounding was performed on food materials and other plant resources. These can range from a single slick on a boulder to a whole complex of mortars and/or metates. Milling complexes are usually associated with habitation areas, while individual milling slicks or mortars may be isolated features far away from habitation sites.

Rock Art Sites Rock art sites are of three basic types; pictographs, petroglyphs, and cupule boulders. Pictographs are painted Indian designs, petroglyphs are pecked and scratched designs, and cupules are small dimple-like depressions in boulders sometimes forming patterns.

Lithic Reduction Sites or Lithic Workshops Lithics, meaning rocks, are some of the most durable of archaeological artifacts. Lithic reduction refers to the practice of reducing stone material to useful shapes. These workshops are areas where Indian peoples produced stone tools of all kinds and shapes, leaving the chipping waste behind in the soil. By analyzing the chipping waste, archaeologists can reconstruct the types of tools and the activities that were going on at a particular location.

Lithic Quarries Quarries are bedrock outcrops of certain kinds of rock that were particularly valuable to the Indians for their tool-making potential. Quarry sites show evidence of raw material extraction. Stone tools found many miles away can sometimes be traced to the quarry sites from which the raw material was taken.

Sparse Lithic Scatters Sparse lithic scatters are the remains of stone chipping activities that do not indicate any kind of permanent or even temporary habitation. They result from the reworking or sharpening of stone tools.

Pot Drops Sometimes pottery fragments are found that come from the breakage of a single vessel. These can occur at some distance from habitation sites and represent single episodes, not associated with other kinds of sites.

Aboriginal Trails Aboriginal trails are the remains of Indian trails that often represent important travel corridors between areas of occupation.

Historic Sites

Any evidence of human activities older than 45 years of age can technically be called a site. Historic sites range in age from White contact around the end of the 1700s to more or less the end of World War II. Types of sites range from permanent living areas to small-scale remains of single activities.

Homes or Ranches Remains of historic homes or ranches may include remnants of house foundations, out buildings, wells, rock walls, fences, and other features associated with living activities.

Mining Sites Mining sites range from whole districts with mine shafts and milling equipment to minor prospects with only shallow pits.

Trash Dumps or Can Scatters Historic trash scatters are common features that can be accurately dated based on can types and other datable materials.

Roads and Trails Historic roads and trails can often be found near and alongside existing highways and roads. They are important markers of transportation and movement between economic centers.

EXISTING ARCHAEOLOGICAL/HISTORIC SITES

A records search at the Archaeological Information Center at the San Bernardino County Museum provided an inventory of archaeological sites within the General Plan Study Area. Sites include "recorded sites" that have been assigned a tri-nomial and "pending sites" that have not received a tri-nomial designation. A tri-nomial is an official State designation, for example, CA-SBR-1605 stands for "California–San Bernardino County–Site 1605." Site CA-SBR-1605 happens to be a prehistoric campsite near the Bartlett Mountains in the northeast quadrant of the General Plan Area. Pending sites are sites that are known to exist but have not had the official Site Record Form filled out and submitted. Pending sites do not receive tri-nomials until a properly completed form is submitted. An example of a pending site is P1032-1, a campsite on a terrace above Pipes Canyon near Old Woman Springs Road. If the site happens to be historic rather than prehistoric, an "H" is added to the number designation, for example P1032-8H, which has been assigned to Warren's Well. Everyone knows Warren's Well is an historic ranching operation but as yet no one has filled out a Site Record Form to submit to the Information Center, thus the "pending" designation. Undoubtedly, there are dozens if not hundreds of sites, historic and prehistoric, known to the local residents of Yucca Valley and vicinity that have never been officially recorded. The following sites are only those listed at the Information Center.

CA-SBR-743: Habitation Site
CA-SBR-1605: Campsite
CA-SBR-2379: Campsite
CA-SBR-2380: Lithic Scatter
CA-SBR-4852: Lithic Scatter
CA-SBR-4851: Lithic Reduction Site
CA-SBR-4853: Lithic Scatter
CA-SBR-4854: Lithic Reduction Site
CA-SBR-6128: Food Processing Site
CA-SBR-6129: Food Processing Site
CA-SBR-6130: Food Processing Site
CA-SBR-6131: Food Processing Site
CA-SBR-6132: Food Processing Site
CA-SBR-6133: Campsite
CA-SBR-6134: Campsite
CA-SBR-6135: Food Processing Site
CA-SBR-6136: Campsite
CA-SBR-6137: Habitation Site
CA-SBR-6138: Food Processing Site
CA-SBR-6139: Food Processing Site
CA-SBR-6140: Food Processing Site
CA-SBR-6141: Campsite

P1032-8H: Ranching Site
P1033-1H: School Site
P1044-1: Campsite

Discussion

The twenty-two sites and three pending sites listed above provide a sample cross-section of existing sites in the General Plan Study Area, although some major site types are missing. For instance, there are no known village sites or rock art sites recorded; nor have any mining sites been listed. Two major village sites, sites with deep midden associated with permanent habitation for long periods of time, occur just outside the General Plan Area. One is the well-known village and rock art site around Coyote Hole Springs south-east of Joshua Tree. The other one centers around Morongo Lakes at the head of Little Morongo Canyon, just one-half mile outside the western General Plan boundary. Any spring will almost certainly have an associated archaeological site--and probably some historic contructions as well. Chaparrosa Springs, west of Pioneer Town and Rattlesnake Springs, on the border with Joshua Tree Monument, are likely candidates for fairly significant archaeological sites.

EXISTING REPORTS AND SURVEYS

Between fifty and sixty cultural resource surveys have been done in the General Plan Area. Project types range from linear surveys along a water

district improvement right-of-way to a rather large 460-acre survey along Skyline Ranch Road. Most of the surveys were negative for cultural resources. Typically a twenty, forty, or eighty-acre piece was surveyed and nothing was reported by the field archaeologist. However, the San Bernardino County Museum Archaeolgical Information Center has called into question the adequacy of most of these reports. Most of them were performed during the 1970s, many by the Museum itself, but using field methods that today would be called sub-standard. Systematic walking transects in evenly spaced parallel lines were not employed. Surveys were more "intuitive" in those days, with the field people going where there might likely be sites but not investigating the entire property. Historic sites were virtually ignored twenty years ago. Ranches, mining prospects, irrigation ditches--all were ignored. For this reason, the current staff at the Information Center has designated most of these reports "Inadequate CRM Report" (CRM stands for Cultural Resource Management).

One survey deserves particular mention. Performed in 1988, the above-mentioned 460-acre survey along Skyline Ranch Road recorded no less than fourteen sites on the subject property, sites CA-SBR-6128 through 6141 (see Existing Archaeological Sites, above). This one survey has thus accounted for 64% of all recorded sites in the General Plan Area. These sites lie in the resource rich Pinyon-Juniper habitation zone in the high country north of Yucca Valley. No other "modern" surveys have been performed in that country according to the Information Center records.

PROBABILITIES OF ARCHAEOLOGICAL/HISTORIC SITES

This section discusses site prediction, that is, the probability of certain types of sites to exist in the various geographical zones within the General Plan Study Area. These predictions are based on the foregoing review of the existing literature and a "windshield" survey of the General Plan Study Area by the author (archaeological consultant).

Historic sites

Virtually any parcel of land within the General Plan Study Area has the potential to contain historic sites, that is, remains of human alteration of the landscape greater than 45 years old. But the types of sites that can be predicted vary according to the location.

Historic buildings Historic buildings are most likely to be found at the heart of Yucca Valley, especially on either side of the main street. These would be the structures most likely associated with the early development and growth of the community. The 1955 USGS topographic quad sheets (Fig. 3) show hundreds of individual homes and buildings in Yucca Valley. In the

year 2000, these will all be at least 45 years old. It should be remembered that being 45 years old does not make a building a significant historic structure; but it does mean that the building needs to be evaluated.

Remains of buildings In Pipes Wash, near Old Woman Springs Road, there is an old cement and rock foundation associated with a gate, fence posts, and other remains from, apparently, an early ranching or homesteading operation. In the foundation is scratched "Irvine Fecit '35". This is an example of a previouly unrecorded historic site that may or may not be significant, depending on its association with an important person or event or period of history or whether it has unique characteristics such as first, oldest, last remaining example or its kind, unique style, or other features that might put it into a category of significance. Remains like the Fecit home are frequently found in wash and drainage areas where there is shallow groundwater accessible by hand-dug wells.

An example of other potential historic sites is found in Figure 3 from the 1942 General Land Office survey. This figure shows Section 8 in Township 1S, Range 6E. Today this section lies in the south-east quadrant of the General Plan Study Area, between Palomar Avenue on the west and La Contenta Road on the east, and between Joshua Drive on the north and San Andreas Road on the south. Within this section, the 1942 survey recorded three houses and several roads. The houses and roads may or may not exist today, but they are all potential historic sites, deserving of some form of evaluation.

Trash Dumps and Can Scatters Trash dumps and can scatters can occur anywhere within the Study Area. When they occur near historic houses or ranches, they can provide important information regarding lifestyle and economic development. When they occur far from habitations, they are of less significance but can nevertheless provide a partial picture of early occupations.

Roads and Trails Roads and trails also qualify as historic sites. The roads in Section 8 (Fig. 3, see Remains of Buildings, above) were recorded in 1942. Older maps and surveyors' notes make frequent reference to roads, wagon roads, trails, and even Indian trails. The 1893 San Bernardino Forest Reserve Plat (Fig. 4) shows a wagon road in Morongo Valley heading northeast and entering the General Plan Study Area in approximately the same location at present-day Twentynine Palms Highway. Remnants of this wagon road may be visible in portions of the Study Area, in which case proper recording would preserve such information for future historians and the general public alike.

Mining The USGS topographic quad sheets show sereral "prospects" within the Study Area. Most of these are in the rugged mountains and canyons in the eastern part of the Study Area but at least one is in the Bartlett

Mountain vicinity. Whether or not any of these prospects turned into full mining operations has not been determined by this study, although local historians and long-time residents probably have knowledge of this. Prospectors were some of the earliest White settlers or visitors to the Yucca Valley area. Remnants of their activities provide important information regarding the early history of Yucca Valley.

Prehistoric Sites

Clearly, the most significant habitation sites exist near springs. But other sites, also significant may occur far from any water sources. These may be lithic quarry sites, food processing sites, or rock art sites (see Types of Archaeological Sites, above). Literally every vegetation and geologic zone within the Study Area was utilized and exploited at one time or another by the Native peoples of Yucca Valley. The present-day existence of sites exhibiting evidence of those prehistoric activities depends on what types of activities were occuring. In the flat sandy slopes of the northeast quadrant of the Study Area, there are probably no habitation sites, but the wild grasses, creosote bushes, and Joshua trees were surely used as resources. Evidence to that effect may only remain in the occassional grinding stone, milling feature, pot drop, or lithic scatter.

Habitation Sites It may be that within the General Plan Study Area there are no village sites matching the significance of the two village sites previously mentioned just outside of the Study Area (see Existing Archaeological Sites, above). However, lesser habitation sites certainly do exist. These will be found near springs, of which a number exist, especially in the east and south-east mountainous zones. Other habitation sites are known to exist in the Pinyon-Juniper regions also in the eastern and south-eastern area. These sites would most likely be seasonal camps used by Native peoples during harvesting seasons. The known recorded sites along Skyline Ranch Road are prime examples of habitation areas existing within a region that was seasonally, and repeatedly, visited in order to take advantage of nature's produce. These sites are marked by milling features, lithic scatters, roasting areas (marked by ash and burned animal bone), and extensive pottery scatters. Whole arrow points, often found at these sites, are very important because certain styles of points are diagnostic of time periods and cultures. Sites can sometimes be dated by the presence of points alone.

Food Processing Sites or Milling Stations Milling stations, where Native peoples ground and pounded food and other resources, can occur anywhere there are boulders or exposed bedrock. The only places in the Study Area where they are not likely to occur are on steep slopes like the rugged southern face of the Mick's Mountain region or the slopes of Bartlett Mountain. However, at the base of these mountains there are very likely grinding features, especially where a stream channel marks the occassional

presence of running water. The sandy flat areas in the north and east are unlikely to have milling features because of the lack of boulders or bedrock outcrops.

Rock Art Sites Rock art sites are especially likely to occur on basalt outcrops. The particular quality of the patina, or varnish, that develops on basalt, was prized by prehistoric people for producing artwork. Flat Top Mountain and the steep rocky sides of Pipe's Wash are very likely candidates to have ancient figures pecked or scratched into exposed basalt. Pictographs, painted figures, are also likely to have been numerous, but they are subject to erosion and many have probably disappeared since they were first painted.

Lithic Reduction Sites or Lithic Workshops Lithic reduction sites, or workshops, are usually associated either with habitation sites, where stone tool manufacturing and reshaping took place, or near to the lithic quarry areas themselves, where rough stone was reduced and shaped into usable and transportable size.

Lithic Quarries Lithic quarries, by definition, occur only where there are exposed parent rocks of usable and desirable material. The previously mentioned basalt in the northwest quadrant of the Study Area would be highly desirable material for stone tool manufacture. Other quarry areas may occur in any of the mountainous regions, even where very small deposits or veins, or even isolated boulders or "float" material, occur. A local resident has informed me there is a quarry site of granitic material, probably diorite, right off of Avalon Avenue north of the flood control channel.

Sparse Lithic Scatters These unique kinds of archaeological sites, consisting of any number of flakes from three to dozens or even hundreds of pieces of stone debitage, can occur anywhere in the Study Area except probably on very steep slopes. Native peoples often reworked their stone tools and reduced cores into flakes anywhere they happened to be, while hunting in otherwise uninhabitable areas, while collecting food and other materials in various resource zones, or even while traveling along ancient trails.

Pot Drops Scatters of broken pottery, not associated with habitation areas, are, like the sparse lithic scatters, likely to appear anywhere the indigenous peoples traveled. Their significance is comparatively minimal, but nevertheless, like the arrow points mentioned above, the style and form of the pottery is indicative of cultures and time periods. Therefore the information is important, even if the site does not meet other significance criteria.

Aboriginal Trails Ancient trails are important resources for reconstructing transportation and communication routes. They connect areas of high population and help archaeologists reconstruct prehistoric social and

economic systems. Most likely, they have been obliterated by modern roads and highways that follow the same routes, but occassionaly they can be found leading to important gathering areas or remote habitation areas far from modern transportation routes. Their predictability is low because they can exist on rather surprizing landscapes, but generally they follow canyons and arroyos, in the same way that modern roads do.

MANAGEMENT OF CULTURAL RESOURCES

The present study was performed as part of a recognized obligation by governmental lead agencies to locate, identify, and evaluate archaeological, historical, and cultural sites, and to determine if a particular undertaking has the potential to affect those sites that are defined as significant.

Phases of Study

Cultural resource investigations generally follow a phased approach although this varies from agency to agency. Federal guidelines are generally better defined than CEQA, but the overall sequence is similar, namely: identify, evaluate, and mitigate.

Phase I The first phase normally consists of a records search at the appropriate Archaeological Information Center, a review of historic maps and/or documents, and a field inspection of the property. This phase determines the presence or absence of archaeological or historic properties.

Phase II The second phase occurs only if sites are found during Phase I. Archaeological or historic properties found during Phase I are evaluated for significance during Phase II. Evaluations for significance can take the form of archaeological excavations, historical literature and archival research, and interviews with people having cultural and historical ties to the property in question.

Phase III The third phase is called the mitigation phase and is required only when sites are deemed significant as part of Phase II. Mitigation may take the form of complete avoidance of a site, thus preserving it in place, or, in cases where avoidance is not feasible, mitigation may be achieved by full-scale excavations to retrieve as much information, or data, from the site as possible prior to the destruction of the site. Often times, a combination of preservation and data recovery can be agreed on so that the project can proceed while at the same time cultural resources are preserved. CEQA clearly states that preservation in place is the preferred treatment of sites (CEQA Appendix K, Section II).

Site Definition

Phase I, above, seeks to identify the presence or absence of archaeological or historical sites within the study area. The Office of Historic Preservation has defined certain terms for this purpose (California Archaeological Inventory, Handbook for Completing An Archaeological Site Record, DPR 422 A - I [revised 5/86]).

Site For purposes of the California Archaeological Inventory, a "Site" is defined as a location of associated artifacts and features, regardless of temporal placement or complexity. Minimally, a "Site" must meet two criteria:

1. It must consist of at least three associated artifacts or a single feature. "Isolates" (less than three associated artifacts) will not be assigned a Trinomial Designation. If a record as been filled out for an isolate, this will be kept at the appropriate Information Center for future researchers' use.

2. A site must be at least 45 years of age. The age of the site may be determined by artifactual evidence, documentary evidence, or similarity of the site to others which have firm dating.

Structure A structure is a work made up of interdependent and interrelated parts in a definite pattern of organization. Constructed by man, it is often an engineering project large in scale. Examples are: covered bridges, lighthouses, water towers, radio telescopes. (36 CFR Part 60)

Building A building is a structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. Building may refer to a historically related complex such as a courthouse and jail or a house and barn. (36 CFR Part 60)

Object An object is a material thing of functional, aesthetic, cultural, historical or scientific value that may be, by nature or design, movable yet related to a specific setting or environment. (36 CFR Part 60)

Significance Criteria

The California Environmental Quality Act sets out criteria for judging archaeological site significance. The CEQA criteria are found in two places; in the main text of CEQA in Section 21083.2.g, referring to "unique" archaeological resources, and in Appendix K, where the term "important" is used. The criteria are as follows:

A. Is associated with an event or person of:

   1. Recognized significance in California or American history, or

   2. Recognized scientific importance in prehistory.

B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions:

C. Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;

D. Is a least 100 years old and possesses substantial stratigraphic integrity; or

E. Involves important research questions that historical research has shown can be answered only with archaeological methods.

RECOMMENDED TOWN POLICIES

As outlined by CEQA, the lead agency on discretionary projects, i.e., subdivisions, zone changes, conditional use permits, etc., is responsible at the Initial Study phase to identify potential effects on cultural resources. In most cases, the lead agency will be the Community Development Department for the Town of Yucca Valley.

In order to determine potential effects to cultural resources, it is recommended that the Town maintain its currently operating program of agreement with the Archaeological Information Center at San Bernardino County Museum. This program gives the Information Center staff the opportunity to comment on existing or probable resources on a case by case basis, providing Yucca Valley planners the documentation needed to make a determination of effect. Once the determination of potential effect is made, the Community Development Department can then require that certain studies be made following the phases outlined above, beginning with the survey phase, which may in turn lead to the evaluation and mitigation phases. It is recommended that the current agreement with the Information Center be written into policy so that in the event of personnel changes on either side, the policy will be institutionalized and not dependent on the discretion of individuals.

The Town can maintain a list of qualified consultants for cultural resource reports. It may wish to use the list of consultants provided by the Information Center, or it may develop its own list. The Information Center

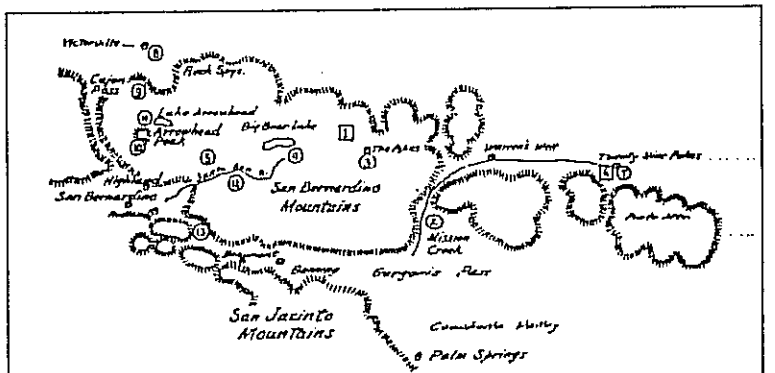
list is limited to archaeologists who have joined SOPA, the Society of Professional Archaeologists. There are qualified archaeologists perfectly capable of performing the necessary tasks, who have chosen not to join SOPA for one reason or another. Therefore, the Town may wish to begin with the Infomation Center list, and then add other names as appropriate.

The Town should be able to review cultural resource reports as they come in. The Information Center does not provide this service. The town may wish to form a review committee of planners and interested citizens, or rely on a single planner who has an understanding of minimum standards for such reports. Interested citizens who have an intimate knowledge of the land and its history are especially suited to review reports as they come in.

The Town may adopt policies or ordinances regarding site protection. Site locations identified in cultural resource studies should be kept confidential and distributed only at the need-to-know level. Site locations should never be published or set out for review at the public level. Persons reviewing cultural resource reports should sign Agreements of Confidentiality. Local law enforcement personnel may be informed and sensitized to the Town's wishes to arrest and prosecute illegal artifact collection from archaeological sites.

CONCLUSION

The Yucca Valley General Plan Study Area contains a rich diversity of archaeological and historic resources. As lead agency, the Community Development Department had the responsibility and opportunity to protect and manage these resources. This report has provided background information on the cultural history of the area, described various kinds of sites, discussed potential findings, outlined the predictablility of certain kinds of sites occurring in different zones within the Study Area, summarized standard procedures for investigating and determining significance of sites, and finally, made recommendations that may assist the Town in managing these resources. With the foregoing information, and the implementation of procedures for CEQA compliance, the Town of Yucca Valley may be justly proud of its ongoing efforts to protect and care for its own heritage.



Map. 1. Serrano Territory. Squares indicate Wildcat, circles Coyote Moiety Clans.

Figure 1. Serrano territory according to Strong (1929). This map illustrates the Serrano division of society into moieties, clans belonging to either the Coyote moiety or the Wildcat moiety. Note Warren's Well on rode from Mission Creek to Twentynine Palms.

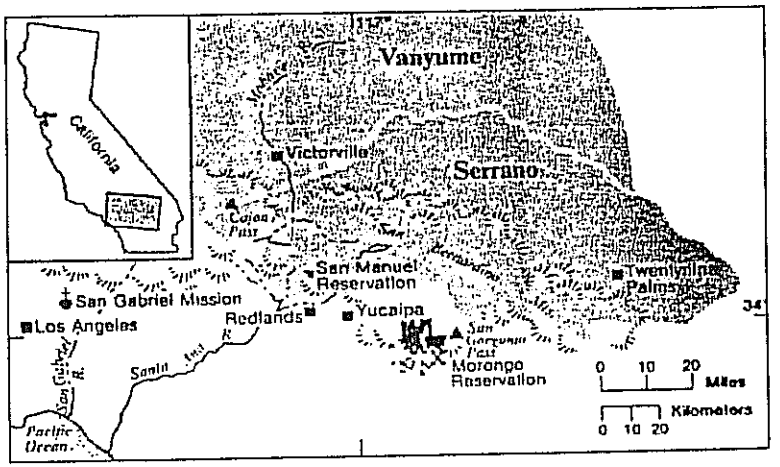


Figure 2. Serrano territory in Bean and Smith (1976).

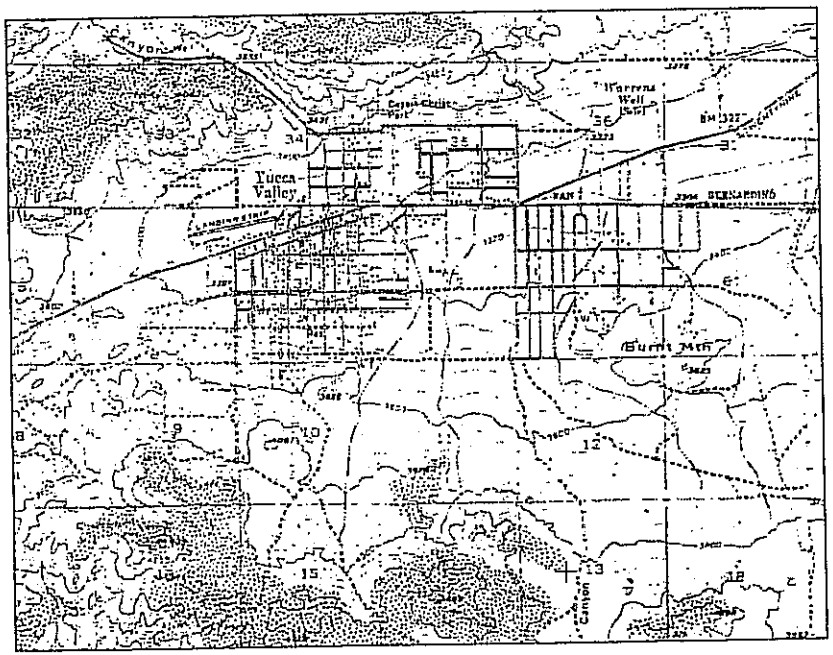


Figure 3. 1955 USGS topographic map showing potential historic structures. Many of the existing structures are more than 45 years old and deserve historic evaluations.

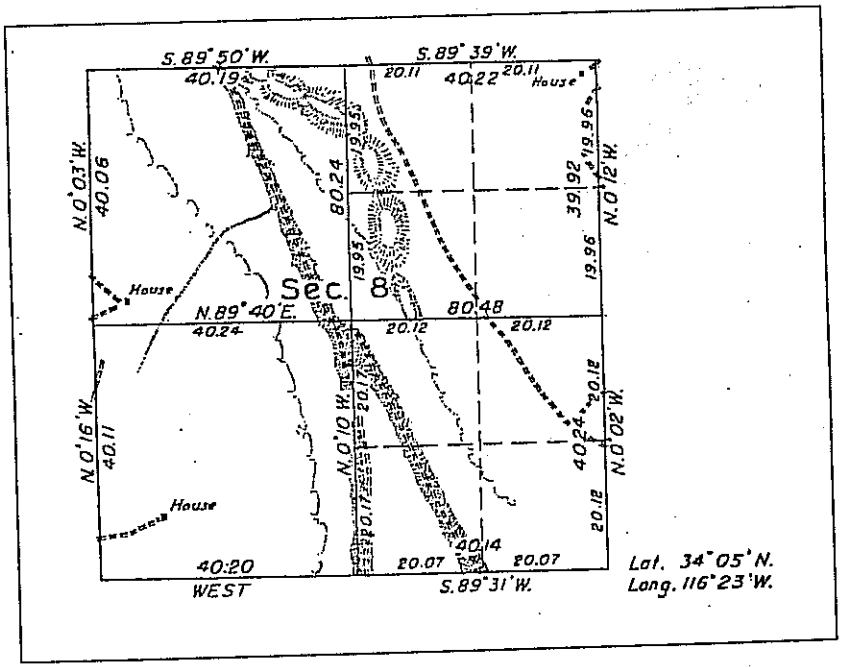


Figure 4. 1942 General Land Office Survey of Section 8 in T.1S, R.6E showing historic houses and roads.

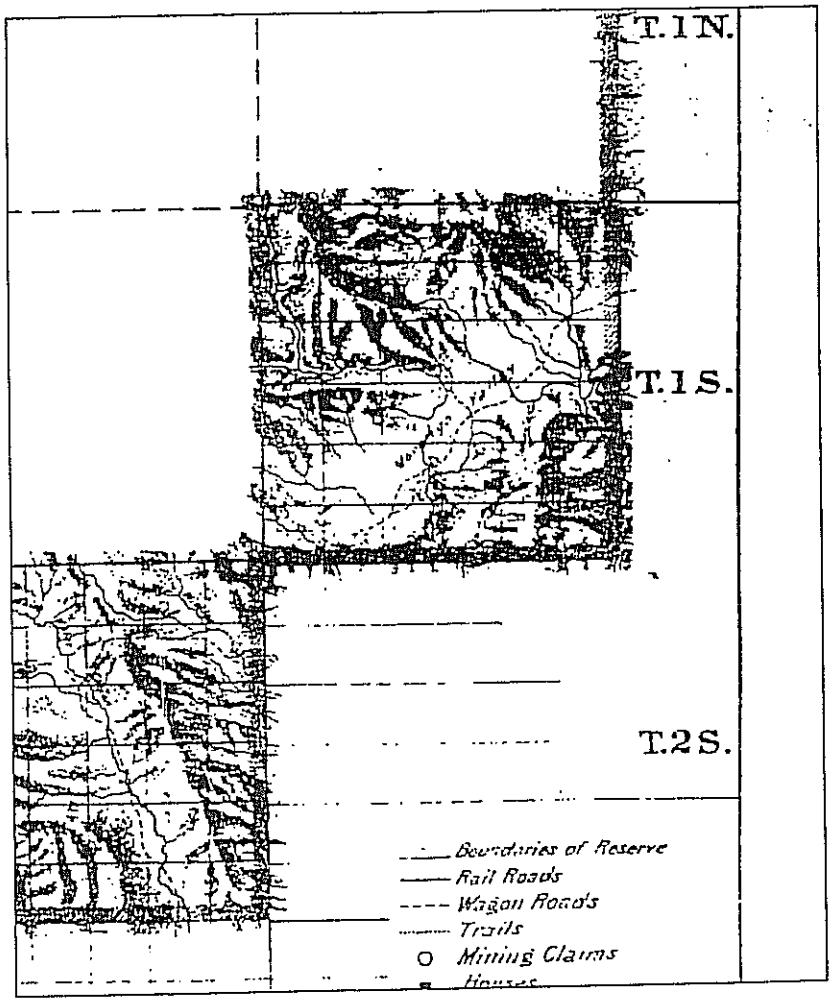


Figure 5. 1893 San Bernardino Forest Reserve Plat Map showing a wagon road through Morongo Valley entering the General Plan Study Area at the northwest corner of the map.

REFERENCES

Bean, Lowell John and Charles R. Smith
1976 Serrano. In California, edited by Robert F. Heizer, pp. 570-574. Handbook of North American Indians, vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Kroeber, Alfred L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Washington, D.C.

Strong, William Duncan
1929 Aboriginal Society in Southern California. University of California Publications in American Archaeology and Ethnology 26(1):1-358. Berkeley.

Warren, Claude N.
1984 The Desert Region. .In California Archaeology. Michael J. Moratto, editor. Orlando: Academic Press

Warren, Claude N. and Robert H. Crabtree
1986 Prehistory of the Southwestern Area. In Handbook of North American Indians. Volume 11, Great Basin. William C. Sturtevant, general editor, Warren L. d'Azevedo, volume editor. Washington D.C.: Smithsonian Institution.

APPENDIX C

TECHNICAL BACKGROUND REPORT FOR THE SAFETY ELEMENT

FOR

THE TOWN OF YUCCA VALLEY

PREPARED BY:

LEIGHTON AND ASSOCIATES, INC.

DECEMBER, 1993

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

TECHNICAL BACKGROUND REPORT FOR THE SAFETY ELEMENT OF THE TOWN OF YUCCA VALLEY GENERAL PLAN

December 9, 1993

Prepared By:

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Project No. 2920997-02

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CHAPTER 1: SEISMIC HAZARDS

1.1 Introduction

The Town of Yucca Valley is located at the juncture of the east-trending Pinto Mountain fault and the Eastern California or Mojave Shear Zone. The Eastern California Shear Zone (ECSZ), proposed by Dokka and Travis (1990a; 1990b), is a broad belt, or zone, of faults in the Mojave Desert which transfers motion from the San Andreas fault in the Imperial Valley to the Basin and Range Province (Death Valley region) in eastern California, Nevada, and Utah (Savage et al., 1990; The Working Group, 1992). Approximately 15 to 20 percent of the motion between the North American and Pacific plates is being accommodated by the ECSZ, making this area part of one of the most seismically-active regions in the United States. Almost all of the remaining motion between the two plates is occurring along the San Andreas and its related faults, located to the west and southwest of the ECSZ.

Although the Landers earthquake was not centered in the Town of Yucca Valley, this M,7.5 earthquake is the largest seismic event to affect the area in historical times. The June 28, 1992 earthquake occurred on a series of interconnected faults within the ECSZ, rupturing the ground for approximately 49 miles from Yucca Valley northward to the Rodman Mountains. Specifically, the ground ruptured from the epicenter on the Johnson Valley fault, in the community of Flamingo Heights, northerly along the Johnson Valley, Kickapoo, Homestead Valley, and the Camp Rock-Emerson faults. To the south of the epicenter, the earthquake ruptured the ground from the southern portion of the Johnson Valley fault, and onto the (previously unknown) Burnt Mountain, and Eureka Peak faults that are partly located in the General Plan study area. Small sympathetic breaks were observed along the Pinto Mountain fault which traverses the center of the Town of Yucca Valley (Treiman, 1993). A maximum of approximately 21 feet of horizontal ground displacement was measured along the Camp Rock-Emerson fault north of Landers. However, most horizontal and vertical ground displacements measured were on the order of approximately nine feet and one foot, respectively, diminishing to less than one foot along the Burnt Mountain and Eureka Peak faults in Yucca Valley.

The Landers earthquake sequence began on April 22, 1992 with the Joshua Tree quake (M, 6.3) and included about 6,000 foreshocks over the next two months (Toppozada and Wilson, 1992). In the first 90 days following the Landers mainshock, approximately 15,000 aftershocks were detected. The largest of these struck the Big Bear area (M, 6.6) two hours after the mainshock (Hauksson et al., 1992). Aftershocks of the Landers earthquake will probably continue to occur in the Yucca Valley area for years (The Working Group, 1992).

Stress changes in the ECSZ caused by the Landers earthquake and aftershock sequence have been modelled by Stein (et al., 1992), Harris and Simpson (1992), and Jaume and Sykes (1992). They found that the Landers earthquake resulted in a dramatic increase in the stress fields of the ECSZ, south of the Landers earthquake epicenter, and on the southern San Andreas fault. Their models indicate an increase in the likelihood of a large earthquake occurring in these areas (The Working Group, 1992). The Working Group (1992) has suggested that the time until the next earthquake has moved closer by 10 to 20 years.

As evidenced by the Landers earthquake and other seismic activity occurring in the ECSZ, the General Plan study area may be particularly susceptible to strong ground shaking and significant earthquake damage. This is especially true if a moderate to large earthquake were to occur along one of the faults located within the study area. However, although an earthquake on the San Andreas fault, to the

southwest of Town, is most likely to occur in the future, its impact on the Town of Yucca Valley would possibly be less than the damage caused by the M,7.5 Landers earthquake.

Strong shaking from an earthquake can result in landslides, ground lurching, structural damage, and liquefaction. Strong ground motion can also set into motion other hazards such as fire, disruption of essential facilities and systems (water, sewer, gas, electricity, transportation, communication, irrigation and drainage systems), releases of hazardous materials, or flood inundation as a result of dam or water tank failure. Given that another major earthquake in this part of southern California is likely to occur in the future, the local government, residents and emergency relief organizations are well advised to develop and implement policies and programs designed to reduce the risk posed by seismic hazards.

Earthquake Size and Impact: Earthquakes are normally classified as to severity according to their magnitude (as measured from seismographs), or their seismic intensity. The destructiveness of an earthquake at a particular location is commonly reported using a seismic intensity scale. Because the amount of destruction generally decreases with increasing distance away from the epicenter, earthquakes are assigned several intensities, but only one magnitude. Seismic intensities are subjective classifications based on observations of damage caused by past earthquakes. The Modified Mercalli Intensity (MM) scale, which is presented on Table 1-1, has 12 levels of damage, the higher the number, the greater the damage. The intensity of seismic ground shaking at any given location is a function of several factors, but primarily the magnitude of the earthquake, the distance from the epicenter to the planning area, and the local geologic and topographic conditions. The amount of damage is also controlled to a certain extent by the size, shape, age, and engineering characteristics of the affected structures. The Working Group (1992) calculated that the Landers earthquake caused a MM intensity of VIII for Yucca Valley.

Planning and Design Earthquakes: The largest earthquake a fault can produce is considered the maximum credible earthquake (Mce). Depending on the planned use, lifetime, or importance of a facility, a maximum probable earthquake (Mpe) is the earthquake most likely to occur in a specified time period (such as 30 to 500 years). The more critical the project, the longer the time period chosen and the larger the design earthquake. Maximum credible and maximum probable earthquakes are often used together for seismic design purposes. Maximum seismic design parameter values (including peak ground or bedrock acceleration (PGA), duration of strong ground shaking, and period of ground motion) are derived from maximum credible earthquakes to establish safety margins. Maximum credible earthquakes are also useful as worst-case scenarios for emergency planning purposes.

Several factors control how ground motion interacts with structures, making the hazard of ground shaking difficult to predict. In general, however, long-period seismic waves, characteristic of earthquakes that occur about 10 miles (15 kilometers) or more from the area of concern, interact with and damage preferentially long-period structures such as high-rise buildings and bridges. Likewise, short-period seismic waves, characteristic of earthquakes that occur less than 10 miles (15 kilometers) from the area of concern, have the potential for damaging preferentially short-period structures, such as one- and two-story buildings.

Fault Activity: The State of California, under the guidelines of the Alquist-Priolo Special Studies Act of 1972 (Hart, 1992), classifies faults according to the following criteria:

- Active: faults showing proven displacement of the ground surface within about the last 11,000 years (Holocene Epoch); and
- Potentially Active: faults showing evidence of movement within the last 1.6 million years (modified to 750,000 years by U. S. Geological Survey).

TABLE 1-1

Modified Mercalli Intensity Scale*

I. Tremor not felt.

II. Tremor felt by persons at rest or in upper floors of a building. (2)

III. Tremor felt indoors. Vibrations feel like a light truck passing by; may not be recognized as an earthquake. Hanging objects swing. (3)

IV. Hanging objects swing. Vibrations feel like a heavy truck passing by, and the jolt feels like a heavy ball striking the walls. Standing cars rock. Windows, dishes and doors rattle. Glasses clink and crockery clashes. Wooden walls and frames crack in the upper range of scale. (4)

V. Earthquake felt outdoors, and its direction can be estimated. Sleepers are awakened. Liquids are disturbed, some spilled. Small unstable objects are displaced or upset. Doors swing, closing and opening. Shutters and pictures move. Pendulum clocks stop, start or change rate. (4+)

VI. Earthquake felt by everybody. Many are frightened and run outdoors. Persons walk unsteadily. Windows, dishes and glassware are broken. Knick-knacks and books fall off shelves; pictures fall off walls. Furniture moves or is overturned. Weak plaster and masonry D are cracked. Small bells in churches and schools ring. Trees and bushes are shaken. (5)

VII. Difficult to stand. Earthquake noticed by drivers of motor cars. Hanging objects quiver. Furniture is broken. Damage to masonry D, including fallen plaster, loose bricks and stones, cracks in tiles and cornices. Weak chimneys break at roof line. Some cracks in masonry C. Waves form in ponds, disturbing mud at the bottom. Slides and caving in sand and gravel banks. Large bells ring. Concrete irrigation ditches are damaged. (5+)

VIII. Steering of motor cars is affected. Partial collapse of masonry C structures. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting and falling of chimneys, factory stacks, monuments, towers and elevated tanks. Frame structures, if not bolted to foundations, shift. Loose panel walls are thrown out; decayed pilings break off. Branches break off trees. Changes in flow or in temperature of springs or wells. Cracks in wet ground and on steep slopes. (6)

IX. General panic. Masonry D structures destroyed; masonry C heavily damaged, sometimes completely collapsed. General damage to foundations. Frame structures, if not bolted, shift off their foundations. Serious damage to reservoirs. Underground pipes are broken. Conspicuous cracks in the ground. In alluvial areas, sand and mud are ejected, forming sand craters.

X. Most masonry and frame structures are destroyed. Most foundations destroyed. Some well-built wooden structures and bridges are destroyed. Serious damage to dams, dikes, and embankments. Underground pipelines are seriously damaged. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shift horizontally on beaches and in flatlands. Rails bend slightly. (7)

XI. Rails bend greatly. Underground pipelines completely out of service. Many and widespread disturbances of the ground, including broad fissures, earth slumps and land slips in soft, wet ground. Sand- and mud-charged water ejected from fissures in the ground. Sea-waves (tidal waves or tsunami) of significant magnitude. Severe damage to wood-frame structures, especially if near to the shock center. Severe damage to dams, dikes and embankments. Few, if any, masonry structures remain standing. Large, well-constructed bridges destroyed due to damage to their supporting piers or pillars. Wooden bridges are affected less. (8+)

XII. Damage is nearly total. Lines of sight and level are distorted. Objects are thrown into the air. Great and varied disturbances of the ground, including numerous shearing cracks, landslides, large rock-falls, and numerous and widespread slumping of river banks. Fault slips in firm rock with notable horizontal and vertical offset. Water channels, both at the surface and underground are disturbed and modified. Lakes are dammed, rivers are deflected, waterfalls occur. The rolling effect of the seismic waves is actually seen at the ground surface.

Masonry A: Good workmanship, mortar and design. Reinforced, especially laterally, and bound together with steel, concrete, etc. Designed to resist lateral forces.

Masonry B: Good workmanship and mortar. Reinforced, but not designed to resist lateral forces.

Masonry C: Ordinary workmanship and mortar. Not reinforced or designed to resist horizontal forces.

Masonry D: Weak materials, such as adobe; poor mortar. Low standards of workmanship; weak horizontally.

These masonry types should not to be confused with the conventional Class A, B, and C construction types.

* Modified and rewritten after Richter (1958) and Toppozada and others (1988) using Rossi-Forel's Intensity Scale. Bold numbers in parentheses ( ) indicate approximate equivalent in Richter Magnitude Scale. This comparison assumes the intensity is determined on a bedrock site near the earthquake epicenter.

A fault that has not moved in the last 11,000 years, as determined from direct geologic evidence, is presumed to be inactive for residential subdivisions. However, the evidence necessary to prove that a fault has not moved within the Holocene is sometimes difficult to obtain (Hart, 1992). Active and potentially active faults in southern California, including in the Yucca Valley region, are shown on Figure 1-1. The State definition of an active fault is designed to gauge the surface rupture potential of a fault, and is used to prevent development from being sited directly on the trace of an active fault. In general, potentially active faults are, relative to active faults, less likely to be the origin of a damaging earthquake. In reality, however, most potentially active faults have been insufficiently studied to be determine whether they are active or not.

The Alquist-Priolo Special Studies Act was signed into law in 1972 with its primary purpose to mitigate the hazard of fault-rupture by prohibiting the location of structures for human occupancy across the trace of an active fault (Hart, 1992). The Act requires the State Geologist (Chief of the Division of Mines and Geology) to delineate "Special Studies Zones" (SSZs) along faults which are "sufficiently active" and "well-defined". These faults show evidence of Holocene surface displacement along one or more of their segments (sufficiently active) and are clearly detectable by a trained geologist as a physical feature at or just below the ground surface (well-defined). The boundary of a SSZ is generally positioned about 500 feet away from major active faults, and 200 to 300 feet away from well-defined minor faults. The Act dictates that cities and counties withhold development permits for sites within the SSZs within their jurisdiction until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting (Hart, 1992). Pertinent sections of the Alquist-Priolo Special Studies Act are reproduced in Appendix B.

1.2 Seismic Ground Shaking

Ground shaking during an earthquake is the most significant seismic hazard that will impact the General Plan study area. This is primarily because earthquake-induced strong ground shaking affects a much broader area than other seismic hazards (eg., fault rupture, liquefaction, settlement, landslides, etc.). Table 1-2 lists those faults that, given their distance to the Town, have the potential for causing strong ground motions in Yucca Valley. Table 1-2 also shows the Mce each one of these faults is estimated capable of generating, the peak ground motion that could be experienced in Yucca Valley if the Mce occurs on one of these faults, and the seismic intensity (MM) values calculated for Yucca Valley. The San Andreas fault is located nine miles southwest of the Town; the remaining faults listed on Table 1-2 are located within the boundaries of the study area.

From a design standpoint for the Town of Yucca Valley, the Pinto Mountain, Johnson Valley, Burnt Mountain, and the Eureka Peak faults are all significant and should be treated as such, equally. These faults are described further below. All of the faults are considered active. Figures 1-2 through 1-6 show the predicted strong ground motions, represented as peak ground accelerations, that would occur in the General Plan study area, as a result of the maximum credible earthquake each one of these faults is estimated capable of generating. The ground shaking maps show how peak ground accelerations decrease with increasing distance away from the causative fault. These scenarios assume that localized amplification of the seismic waves will not occur. Amplification of seismic waves can occur along ridges or in valleys filled with deep alluvium (Bolt, 1988; Bullen and Bolt, 1985), but dependent on how several factors interact. These factors include wavelength amplitude and direction of the incoming seismic waves, topography, geology, thickness of the alluvium (200 feet or greater is considered deep), lithologic composition of the alluvium, the distinctiveness of the bedrock and alluvium contact, and geometry of

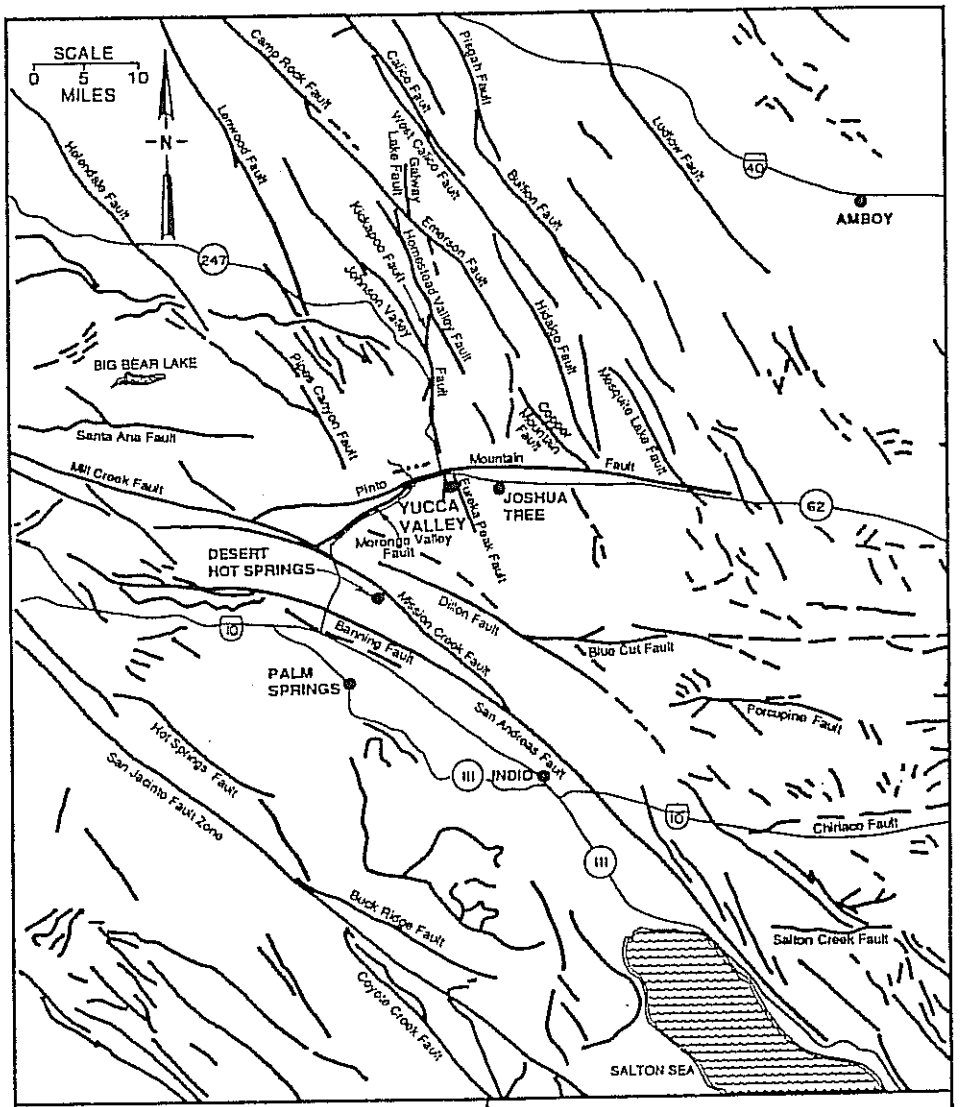
the valley. Presently, these factors are not well defined for the study area, therefore, although ground amplification could occur in the region, we cannot forecast where and when amplification would occur.

The ground shaking maps, if used together with inventories of potentially hazardous buildings, can help identify areas most likely to be damaged during an earthquake as a result of strong ground motion. Relief organizations, such as the fire department, can use these maps to prioritize areas where response capability operations, such as heavy rescue, may be vital in the event of an earthquake. These maps should be used only for general planning purposes, and should not be used for specific building design requirements. Boundaries between the stippled patterns on these figures are purposely not shown to prevent giving the false impression that spatial changes in predicted accelerations are abrupt, rather than gradual. These maps can also be used in site-selection studies for critical facilities.

The Pinto Mountain fault is one of the major east-trending, high angle strike-slip faults exhibiting left-lateral movement that have been associated with the San Andreas fault in southern California. The fault is traceable for approximately 47 miles from the San Andreas fault to just east of Twentynine Palms. It extends through the study area as a zone of fault traces that occur near the base of the Sawtooth Mountains, and along State Highway 62. Holocene movement on some of these fault traces has been documented by Bryant (1986). Sympathetic ground ruptures associated with the Landers earthquake were also reported by Treiman (1993). In addition to left-slip movement, the fault has displayed significant uplift, as evidenced by the presence of the Sawtooth and San Bernardino Mountains to its north.

Although the Pinto Mountain fault is considered active, historically it has not produced a well-defined zone of seismicity, but rather a cluster of epicenters at depth (Bryant, 1986). The fault is estimated to be capable of producing a maximum credible earthquake of 7.4. Such an event could produce peak horizontal ground accelerations (PGA) in Yucca Valley of about 0.60g (g is the acceleration of gravity, equal to 32 feet/second^2), with an estimated duration of strong ground shaking of 31 seconds. The horizontal ground accelerations will generally decay as the distance from the earthquake epicenter increases. This drop of ground motion with distance is shown on Figure 1-2. The Modified Mercalli (MM) seismic intensity predicted in Yucca Valley from such an event would be in the IX-X range.

The Johnson Valley fault is a northwest-trending fault which extends from just south of Pipes Canyon Wash (along Old Woman Springs Road) to Soggy Lake (near the Fry Mountains). About 3.5 miles of the southern portion of this 34-mile long fault have been mapped within the study area. The epicenter for the Landers earthquake is located on the Johnson Valley fault, about 3 miles north of the Yucca Valley area. Ground rupture caused by the Landers earthquake and along the Johnson Valley fault extended from north of Landers to just south of Pipes Canyon Wash (Bryant, 1993). The southernmost one mile of mapped surface rupture occurred along a previously unmapped segment of the fault located within the General Plan Area. To the north of the study area, the earthquake generated horizontal displacements along the fault of about six to nine feet. In the study area, displacements generally were a foot or less.



TOWN OF YUCCA VALLEY

REGIONAL FAULTS MAP

Adapted from Jennings, 1992

Project No.	2920997-02
Scale	As Shown
Geologists	TKG/REL
Drafted by	lah
Date	12/9/93

Figure No. 1-1

TABLE 1-2

Estimated Horizontal Peak Ground Accelerations Seismic Intensities

Fault Name	Mce*	PGA(g)**	MM Intensity in Yucca Valley	Impact in Yucca Valley
Pinto Mountain	7.4	0.60	IX-X	Most Severe
Johnson Valley	7.3	0.60	IX-X	↑
Burnt Mountain	6.4	0.55	VIII-X	
Eureka Peak	6.7	0.57	VIII-X	
San Andreas (Mojave, San Bernardino & Coachella Valley segments combined)	8.0	0.43	VII-IX	↓ Least Severe

Table 1-2 lists the faults in the Yucca Valley area which would have the greatest seismic impact on the Town. The faults are ranked based on the calculated Modified Mercalli Intensity value (MM) that an earthquake on each fault would have in the Town. The Modified Mercalli Intensity value is estimated from the fault's Mce (Båth, 1979). The MM intensities were estimated based on the assumption that geologic conditions are uniform throughout the General Plan area.

* The Maximum Credible Earthquake (Mce) values represent estimated M_s or surface magnitude values. Much higher accelerations could occur if local site conditions, such as at the top of ridges, amplify the seismic waves generated by the earthquake.

** The horizontal peak ground acceleration (PGA) is a measurement of the ground motion generated by an earthquake and expressed as a fraction of the acceleration of gravity (g) (g is the acceleration of gravity, equal to 32 ft/sec^2). The PGA values presented herein are based on the maximum credible earthquake each fault is estimated capable of generating, and an interpretation of the methods developed by Idriss (1987). The ground acceleration values decrease as the distance from the causative fault increases.

Prior to the Landers earthquake, no damaging historic earthquakes associated with the Johnson Valley fault had been documented. However, the increase in stress field that has been modelled for this region, and the concentrated zone of seismicity extending south into the study area suggest that a future large earthquake may occur on this fault in the Yucca Valley area. The Johnson Valley fault is capable of producing a Mce of 7.3. This earthquake would produce horizontal peak ground accelerations of about 0.60g and ground shaking lasting about 26 seconds in the Town, with Modified Mercalli (MM) seismic intensity values of IX-X. Figure 1-3 shows the attenuation of horizontal ground acceleration in the area.

The Burnt Mountain fault and the Eureka Peak fault are two "new" faults discovered as a result of the Landers earthquake (Treiman, 1992). These two faults are located in the Town of Yucca Valley and extend south into Joshua Tree National Monument. The Burnt Mountain fault is approximately four miles long as delineated by ground rupture. The fault trends southward from near State Highway 62 along the east side of Burnt Mountain (for which it is named) and into the Monument. However, a concentrated zone of seismicity suggests that the Burnt Mountain fault is a segment of a fault linking, in the subsurface, the Johnson Valley fault with the Eastwide Canyon fault (Sieh et al., 1993; Treiman, 1993). This implies that, in the subsurface, the Johnson Valley fault extends to almost Desert Hot Springs.

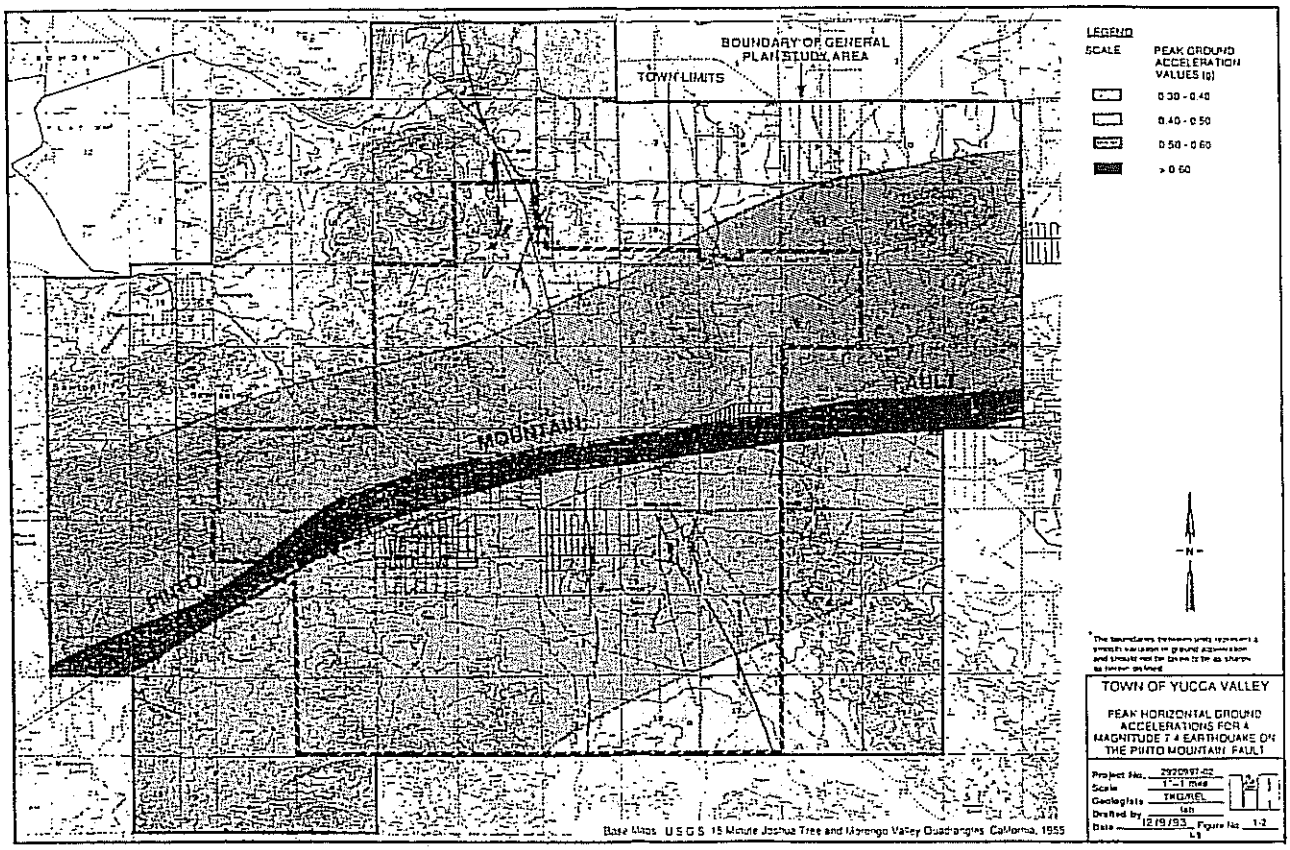
The Burnt Mountain fault, if it breaks independently of the Johnson Valley fault, is estimated capable of producing a Mce of 6.4. This earthquake, if located within the Town of Yucca Valley, would produce a horizontal peak ground acceleration of about 0.55g and ground shaking lasting about 16 seconds in the area (Figure 1-4). Modified Mercalli (MM) seismic intensity values of VIII-X could be experienced. If, as suggested by the seismicity record, the Burnt Mountain fault is part of a longer fault system that includes the Johnson Valley fault, and this whole system ruptured, the estimated Mce would be similar to that estimated for the Johnson Valley fault by itself. Refer to the earthquake parameters postulated for the Johnson Valley fault, as presented in Table 1-2 and Figure 1-3.

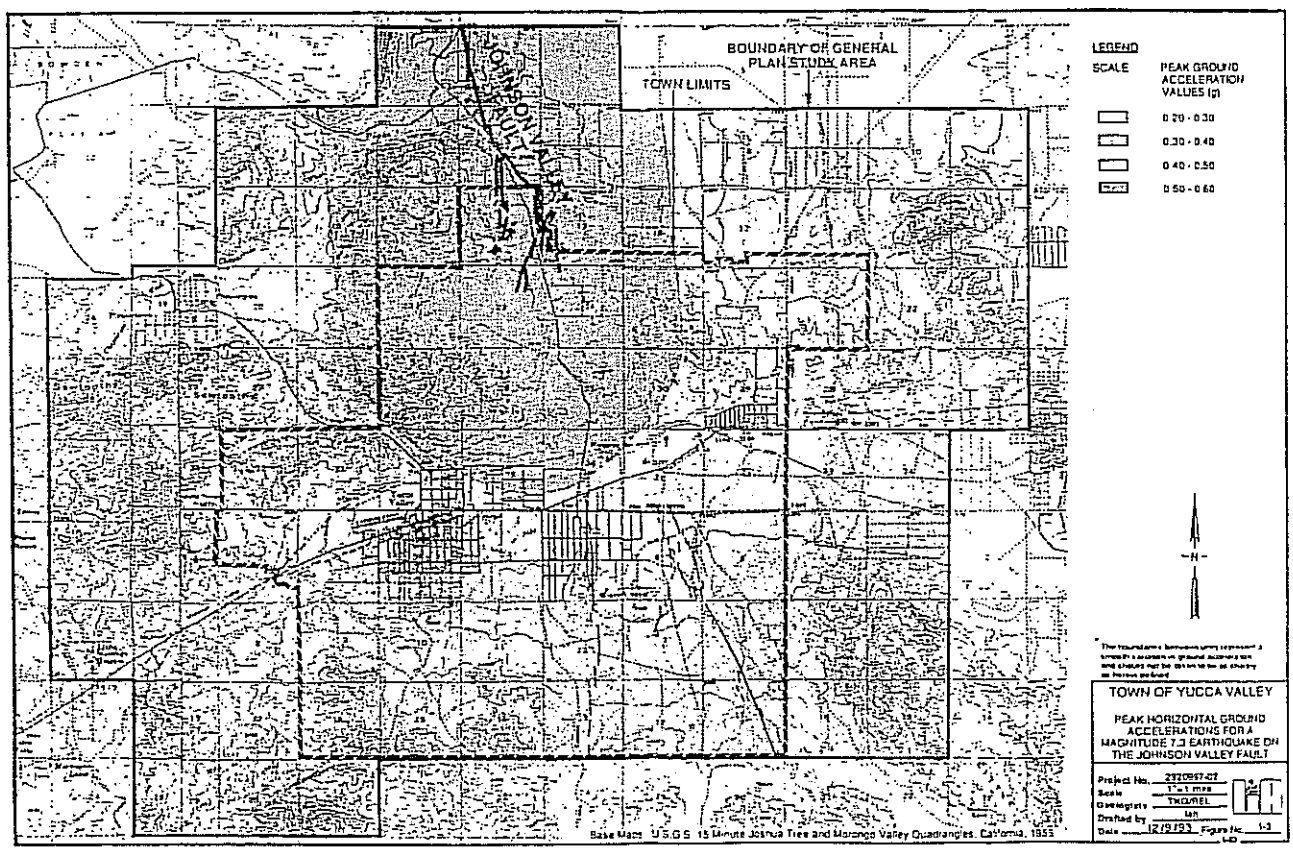
The Eureka Peak fault extends to the southeast from near State Highway 62 into Joshua Tree National Monument, following the Lower Covington Flat Wash area along much of its trace. The Landers earthquake ruptured the ground along this fault with maximum horizontal displacements of approximately eight inches (Treiman, 1993). Investigations by Rasmussen and Associates (1992a; 1992b) indicate this "new" fault is in fact the reactivation of a pre-existing, unrecognized fault. Rasmussen and Associates (1992a; 1992b) found subsurface evidence for previous faulting along the Eureka Peak fault and estimated (based on the degree of in-situ weathering of alluvial materials) that the last pre-Landers offset on this fault occurred more than 11,000 years ago. This interpretation may change as further investigations in the area are completed. A small (0.25 miles long) cross-fault located immediately southeast of Burnt Mountain is also considered part of the Eureka Peak fault. Offsets of less than one inch associated with the Landers earthquake were measured along this splay of the Eureka Peak fault (Rasmussen and Associates, 1992b; Treiman, 1993).

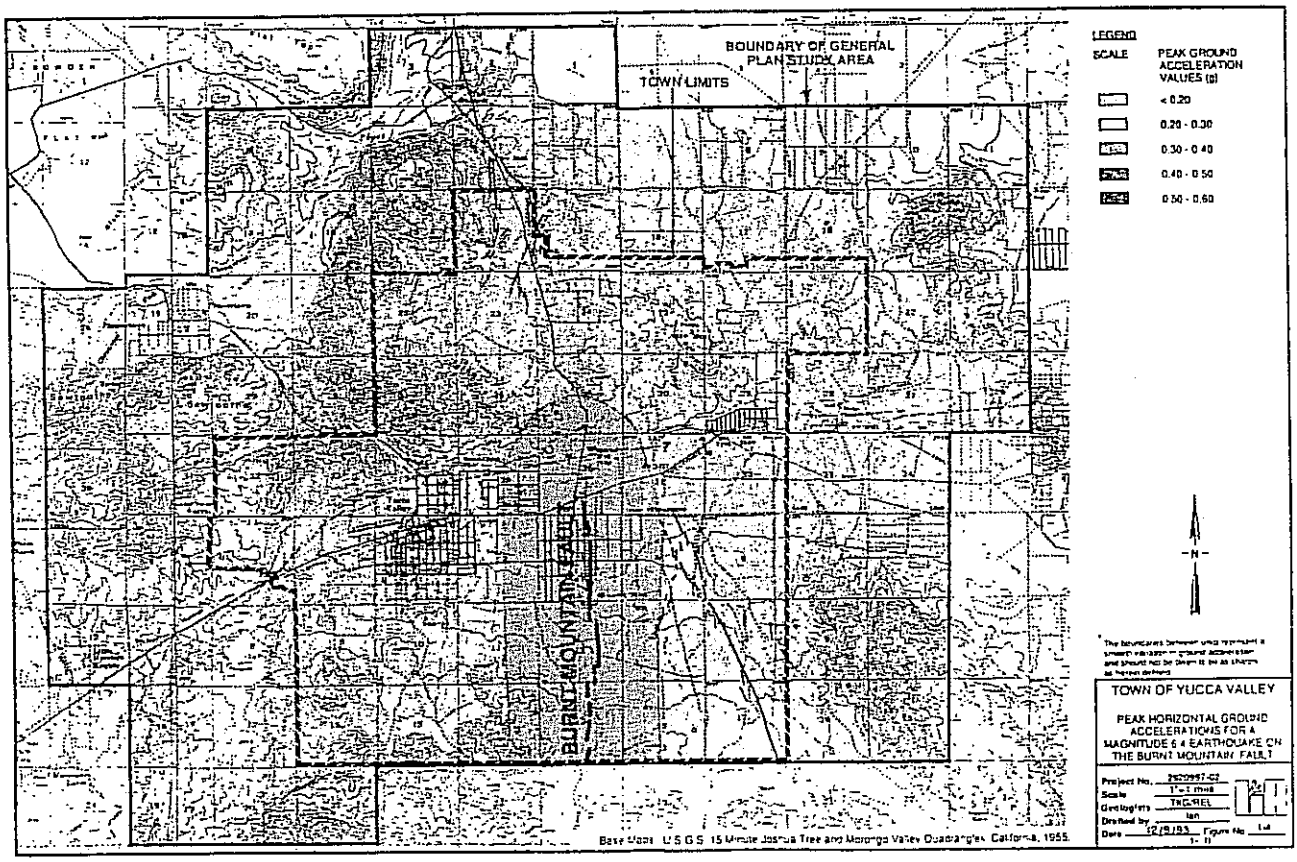
The Eureka Peak fault is estimated capable of producing a Mce of 6.7. This earthquake, if located within the Town of Yucca Valley, would produce a horizontal peak ground acceleration of approximately 0.57g and ground shaking lasting about 18 seconds in the area. Figure 1-5 shows the decrease in ground motion with distance away from the fault. Modified Mercalli (MM) seismic intensity values of VIII-X could be experienced in the area.

The portion of the San Andreas Fault System that extends through southern California has been subdivided into three segments. From north to south, these are the Mojave, San Bernardino Mountain, and Coachella Valley (or Indio) segments. The Town of Yucca Valley is located approximately 9 miles from the junction of the San Bernardino Mountain and the Coachella Valley segments. Unlike the other two segments, the San Bernardino Mountain segment has not produced any large earthquakes in historic times and studies show that this fault segment may be the source of a large earthquake in the near future (The Working Group, 1988; 1992). The aftershocks of the Landers and Big Bear earthquakes increased the strain on this portion the San Andreas located between the two aftershock zones (Stein et al., 1992; Harris and Simpson, 1992; Jaume and Sykes, 1992). Seismologists from the California Institute of Technology in Pasadena, and from the U.S. Geological Survey have been keeping a close watch on the activity of the San Bernardino segment because if small and moderately-sized earthquakes continue to occur in this area, the likelihood of the San Bernardino segment rupturing during a larger earthquake could increase.

Seismic field studies indicate that several segments of the San Andreas fault may break simultaneously during large earthquakes. If all three segments (the Mojave, San Bernardino Mountain and Coachella Valley segments) of the southern San Andreas Fault Zone rupture in one event, the "big one" of magnitude 8.0, peak horizontal peak ground accelerations of about 0.43g could be experienced in Yucca Valley, with MM intensities in the VII-IX range. Figure 1-6 shows this earthquake's decay of ground motion. Strong ground shaking would last about 50 seconds.


BOUNDARY OF GENERAL PLAN STUDY AREA
TOWN LIMITS
MOUNTAIN
FAULT
LEGEND
SCALE
PEAK GROUND ACCELERATION VALUES (g)
0.30 - 0.40
0.40 - 0.50
0.50 - 0.60
> 0.60
N
TOWN OF YUCCA VALLEY
PEAK HORIZONTAL GROUND ACCELERATIONS FOR A MAGNITUDE 7.4 EARTHQUAKE ON THE PUNTO MOUNTAIN FAULT
Project No. 2920697-02
Scale 1" = 1 mile
Geologists THG/REL
Drafted by lah
Date 12/9/93 Figure No. 1-2
Base Maps: U.S.G.S. 15 Minute Joshua Tree and Morongo Valley Quadrangles, California, 1955


BOUNDARY OF GENERAL PLAN STUDY AREA
TOWN LIMITS
JOHNSON VALLEY FAULT
LEGEND
SCALE
PEAK GROUND ACCELERATION VALUES (g)
0.20 - 0.30
0.30 - 0.40
0.40 - 0.50
0.50 - 0.60
N
TOWN OF YUCCA VALLEY
PEAK HORIZONTAL GROUND ACCELERATIONS FOR A MAGNITUDE 7.3 EARTHQUAKE ON THE JOHNSON VALLEY FAULT
Project No. 2920697-02
Scale 1" = 1 mile
Geologists THG/REL
Drafted by lah
Date 12/9/93 Figure No. 1-3
Base Maps: U.S.G.S. 15 Minute Joshua Tree and Morongo Valley Quadrangles, California, 1955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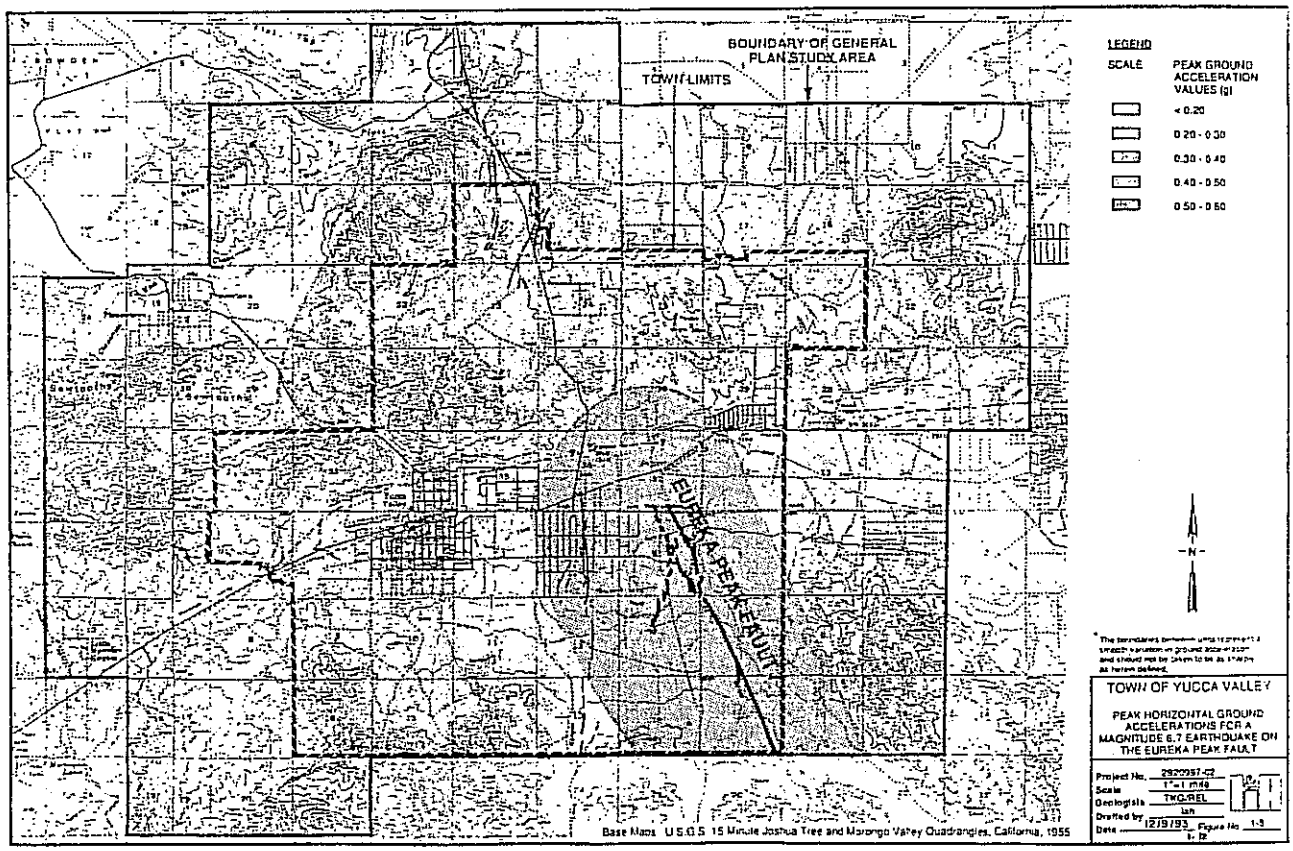
TOWN LIMITS
BURNT MOUNTAIN FAULT
LEGEND
SCALE
PEAK GROUND ACCELERATION VALUES (g)
< 0.20
0.20 - 0.30
0.30 - 0.40
0.40 - 0.50
0.50 - 0.60
N
TOWN OF YUCCA VALLEY
PEAK HORIZONTAL GROUND ACCELERATIONS FOR A MAGNITUDE 6.4 EARTHQUAKE ON THE BURNT MOUNTAIN FAULT
Project No. 2920997-02
Scale 1" = 1 mile
Geologists TKG/REL
Drafted by lah
Date 12/9/93
Figure No 1-4
Base Maps U.S.G.S. 15 Minute Joshua Tree and Morongo Valley Quadrangles, California, 1955.


BOUNDARY OF GENERAL PLAN STUDY AREA
TOWN LIMITS
EUREKA PEAK FAULT
LEGEND
SCALE
PEAK GROUND ACCELERATION VALUES (g)
< 0.20
0.20 - 0.30
0.30 - 0.40
0.40 - 0.50
0.50 - 0.60
N
TOWN OF YUCCA VALLEY
PEAK HORIZONTAL GROUND ACCELERATIONS FOR A MAGNITUDE 6.7 EARTHQUAKE ON THE EUREKA PEAK FAULT
Project No. 2920997-02
Scale 1" = 1 mile
Geologists TKG/REL
Drafted by lah
Date 12/9/93
Figure No 1-5
Base Maps U.S.G.S. 15 Minute Joshua Tree and Morongo Valley Quadrangles, California, 1955

1.3 Fault Rupture

Fault rupture hazards are gauged by the youngest geologic layer a fault offsets. The hazard of surface fault rupture, with consequent damage to structures directly overlying the trace of an active fault, led to the enactment of the Alquist-Priolo Special Studies Zone Act (APSSZ) of 1972 (Hart, 1992). Evidence of fault-displaced sediments that are less than 11,000 years old is used as a yardstick to gauge the surface rupture potential of faults. The objective of fault investigations within an APSSZ is to locate the trace of the fault so that setbacks away from the fault can be prescribed. Presented on Figure 1-7 are the Alquist-Priolo Special Studies Zones that have been designated for the study area (California Division of Mines and Geology, 1974; 1993a; 1993b; 1993c; 1993d).

With the exception of the Morongo Valley fault, all of the faults shown in Figure 1-7 experienced ground rupture during the Landers earthquake. The Pinto Mountain fault had only minor secondary rupture, but the Johnson Valley, Burnt Mountain, and Eureka Peak faults had extensive, damaging rupture. Future earthquakes along these faults could have additional associated ground rupture with displacements equalling or exceeding those from the Landers quake. Evidence for previous faulting and past Landers-type seismic events have been recently documented by geologists studying the Eureka Peak, Kickapoo and Homestead Valley faults (Rasmussen and Associates, 1992a; 1992b; Lindvall and Rockwell, 1993; Cinti et al., 1993). A Landers-type earthquake is one with similar seismic and geologic parameters (i.e., magnitude, ground displacement, rupturing involving more than one fault, etc). Lindvall and Rockwell (1993), and Cinti and others (1993) indicated that, including the 1992 earthquake, two Landers-type seismic events have occurred in the Holocene. Cinti and others (1993) have reported subsurface data from trenching that suggest an older event ruptured this fault in the late Pleistocene. These data resolve into a recurrence interval of approximately 5,000 to 6,000 years for Landers-type earthquakes on this fault. Earthquakes with return periods of this length are generally more catastrophic than ones with shorter recurrence intervals.

1.4 Liquefaction and Other Secondary Ground Failure

Liquefaction may occur when loose, unconsolidated, saturated, sandy soils are subjected to ground vibrations during a seismic event. This occurs in areas where the ground water table is within 50 feet of the ground surface, and usually when Modified Mercalli intensity values are VII and greater. When these sediments are shaken, a sudden increase in pore water pressure causes the soils to lose strength and behave as a liquid. Excess water pressure is vented upward through fissures and soil cracks causing a water-soil slurry to bubble onto the ground surface. The resulting features are called sand boils, sand blows or "sand volcanoes." Liquefaction-related effects include loss of bearing strength, ground oscillations, lateral spreading, and flow failures or slumping. Structures built on soils that liquefy may sink or topple over as the soil loses its bearing strength. The hazard from liquefaction is considered to be low in the Yucca Valley area because the water table is about 400 feet below the ground surface (M. Stockdale, 1993 personal communication). However, if saturated soil conditions within 50 feet of the ground surface develop in the area where the ground water recharge basins have been proposed, liquefaction of the underlying soils could occur locally during an earthquake (M. Stockdale, 1993 personal communication).

Other types of secondary ground failure that can occur during an earthquake include dynamic settlement, ground cracking or fissuring, lateral spreads, slumps, landslides, and earth or rock falls. Dynamic settlement of a soil occurs when a subsurface soil layer is densified by the ground motion of an

earthquake, resulting in vertical displacement of the ground surface. Ground fissuring and lateral spreads are the result of liquefaction of relatively flat areas. Slumps, landslides and earth or rock falls can occur along road embankments or mountain slopes as a result of seismically induced ground motion.

Numerous cases of secondary ground failure, including all the types discussed above, have been documented in the Yucca Valley and Landers area as a result of the Landers earthquake. These included:

- Abundant and wide-spread ground fracturing throughout the Landers earthquake rupture area;
- Small slope failures along Lower Covington Flat and Pipes Canyon Wash; and
- Numerous rockfalls in the mountain areas along the Homestead Valley and Camp Rock-Emerson faults.

1.5 Issues and Opportunities

1. The most significant seismic hazard that could impact the Town of Yucca Valley is strong ground shaking. Strong ground shaking will result if a Mce were to occur in the study area along the Pinto Mountain, Johnson Valley, Burnt Mountain or Eureka Peak faults. A Mce on the San Andreas fault, if the epicenter occurs on that section of the fault closest to Town, can also cause strong ground shaking in Yucca Valley, particularly if all three segments of the San Andreas rupture in one event. Peak ground accelerations of 0.43g and greater can be expected in Yucca Valley from a Mce occurring on any of these faults (see Table 1-2). This expected ground motion could be damaging to low- to mid-rise buildings. Although it is not possible to prevent earthquakes from occurring, their destructive effects can be minimized by enforcing building and fire codes, and retrofitting or rehabilitating weak structures.

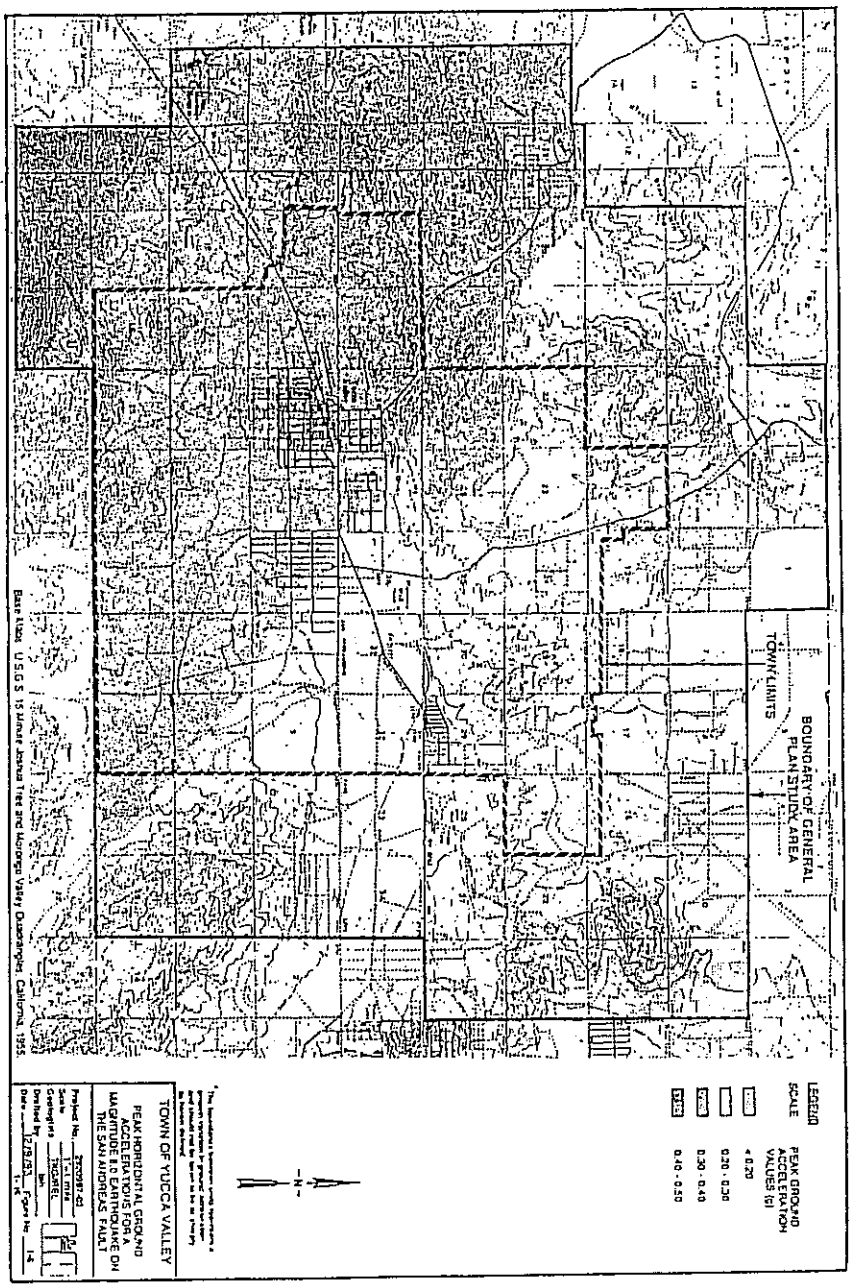
2. Four faults, or fault segments located within the General Plan study area are designated as Alquist-Priolo Special Studies Zones. The Johnson Valley, Burnt Mountain, and Eureka Peak faults were designated Special Study Zones after rupturing during the Landers earthquake. The Pinto Mountain fault, which had been zoned prior to the Landers earthquake, experienced minor secondary movement during the Landers event (Bryant, 1986). All development planned within the Special Studies Zones will have to meet the guidelines recommended in the Alquist-Priolo Act. For structures designed for human occupancy proposed within a Special Studies Zone, a geologic investigation (which may include fault trenching) should be performed to evaluate whether the fault has experienced Holocene movement, and if so, the extent of deformation of the underlying soil materials. Based on the results of these studies, appropriate development setbacks from the faults may be prescribed.

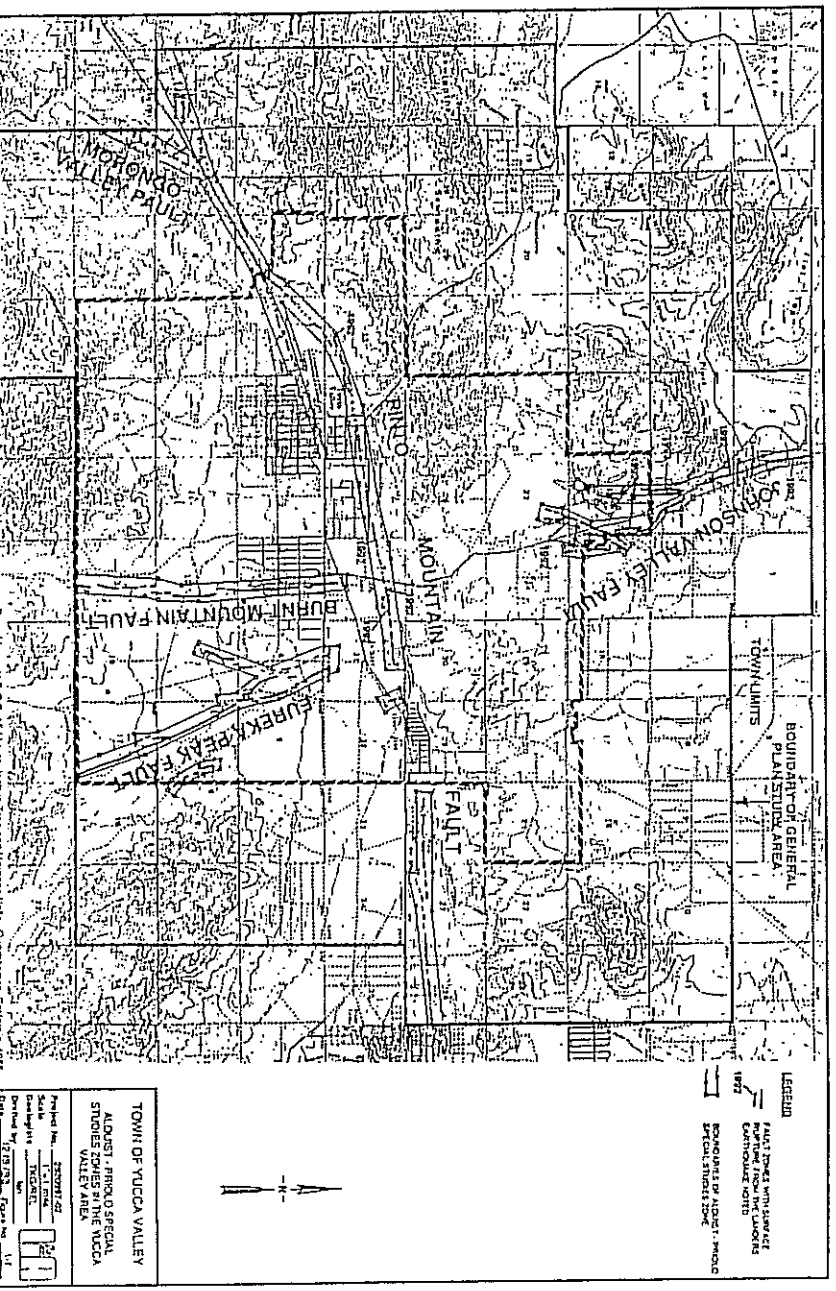
3. The Town may want to define a Fault Hazard Management Zone in the area where the Johnson Valley fault presumably connects in the subsurface with the Burnt Mountain fault, as evidenced by a concentrated zone of seismicity (Sieh et al., 1993; Treiman, 1993). Although surface rupture was not documented in this area during the Landers earthquake, Holocene offsets may have occurred in this area previously. Fault investigations following the Alquist-Priolo Special Studies Zones guidelines could be required by the Town prior to development in this area.

4. Site-specific geotechnical investigations are the only reliable method of determining liquefaction. Although the liquefaction susceptibility is considered low within the General Plan study area, isolated areas could liquefy during an earthquake if the soil and ground water conditions are conducive to failure

(eg., loose, unconsolidated, saturated sandy soil). These conditions could develop locally near the proposed water retention, or ground water recharge basins.

5. The Town of Yucca Valley is located within Seismic Zone 4 as specified in the Uniform Building Code (ICBO, 1991). The City should review all projects to ensure compliance with the existing and regularly amended seismic design provisions of the Building Code.





CHAPTER 2: GEOLOGIC HAZARDS

2.1 Geologic Setting

The Town of Yucca Valley is located at the a boundary of the Transverse Ranges and the Mojave Desert Geomorphic Provinces. The Transverse Ranges Geomorphic Province includes several ranges trending generally in an east-west direction, from the Pinto and Eagle Mountains to the east, to the Santa Monica and Santa Ynez Mountains to the west. The San Gabriel, San Bernardino and Little San Bernardino Mountains are located within the Transverse Ranges. The Transverse Ranges Geomorphic Province in the Yucca Valley area is bounded on the north by the Pinto Mountain fault and on the southwest by the San Andreas fault.

The Mojave Desert Geomorphic Province is a large, wedge-shaped tectonic block situated between the San Andreas fault and the Transverse Ranges on the southwest, the Garlock fault and the Tehachapi Mountains on the north and northwest, and the Salton Trough Geomorphic Province and the Colorado Desert on the south and southeast (Norris and Webb, 1976). Eastward, the Mojave Desert extends into Arizona and southern Nevada. The Mojave Desert is dominated by broad basins filled with river-lain deposits and eroded remnants of granitic and metamorphic mountains.

Yucca Valley is located in an east-west trending valley bounded by the Little San Bernardino Mountains on the south, and the Sawtooth Mountains on the north. The Sawtooth Mountains, which extend eastward through the middle of the Yucca Valley area, are highest in the western portion of the area, and die out near Paxton Mountain to the east. The remnants of the Bartlett Mountains occur near the eastern boundary. Overall, area relief is gentler in the south than in the north.

2.2 Geologic Units

Geologic hazards and geotechnical constraints in the Yucca Valley area are controlled by the engineering characteristics of the rocks and sediments that underlie this area. The earth materials underlying the area are comprised of Quaternary (i.e., deposited within the last 1.6 million years) surficial sediments that rest on a thick sequence of Tertiary to Precambrian (about 1.6 million years old and older) rocks (Dibblee, 1967a; 1967b). Figure 2-1 depicts the areal extent of the geologic units exposed in the study area.

Recently deposited alluvial sediments (deposited in the last 11,000 years - Map Symbol Qal) occur in the area along the bottoms of the canyons draining the mountains. Most of these canyons drain towards the middle of Town and State Highway 62. Much of the Town's development along the highway is underlain by these recent alluvial deposits. These alluvial soils consist primarily of porous, unconsolidated sand and gravel with minor amounts of clay and silt. The thickness of these soils is estimated to be 100 feet or less (Dibblee, 1967a).

Other surficial sediments that occur in the region include older Quaternary alluvium (Map Symbol - Qoal) and fanglomerates (Map Symbol - Qof). The older alluvium consists of coarse-grained sediments, including cobbles, pebbles and coarse sand. These sediments derived from the mountains in the area and have been uplifted above the presently-active floodplain. Continual stream erosion has dissected these older deposits. This alluvium may be greater than 500 feet thick in the Yucca Valley area, where it occurs north and east of the Little San Bernardino and Sawtooth Mountains.

Erosional remnants of fanglomerate deposits occur along State Highway 62, and the Pinto Mountain fault, in the southwestern portion of the study area. Fanglomerates also form the top of Burnt Mountain. These deposits consist of subrounded boulders (some as large as five feet across) and cobbles in a weakly-consolidated sandy matrix. The fanglomerates comprising Burnt Mountain were derived from the mountains to the south, and those present along Highway 62 were derived from the mountains to the

northwest and transported along the Pinto Mountain fault to their present location. The fanglomerate deposits are estimated to be 300 feet thick (Dibble, 1967a).

Beneath the surficial sediments and exposed in the mountains in the area are basement rocks ranging in age from 1.6 to 570 million years old. The basement rocks include Quaternary/Tertiary (1.6 to 5.3 million years old) basalt (Map Symbol - Qtb); Tertiary (5.3 to 66 million years old) Old Woman Sandstone (Map Symbol - To); Mesozoic (66 to 245 million years old) granitic rocks (Map Symbol - qm); and Precambrian (greater than 570 million years old) gneissic rocks (Map Symbol - gn).

The basalt is black, hard, and massive, and consists of several flows that total over 400 feet thick. The basalt occurs in the northern part of the area, capping Black Hill and Alters Peak, and resting conformably on the Old Woman Sandstone. These are also the only exposures of the Old Woman Sandstone within the General Plan study area. The sandstone is a light buff, massive, friable, fine- to medium-grained arkosic deposit with scattered gravel lenses (Dibblee, 1967a). The unit is approximately 400 feet thick and rests unconformably on rocks of Mesozoic age.

The Mesozoic rocks are massive, fine- to coarse-grained granitic rocks of various mineral compositions. Quartz veins and intrusive dikes are also present. These rocks comprise the Sawtooth Mountains and most of the Bartlett Mountains, and are also exposed east of Lower Covington Flat, in the southeastern corner of the Yucca Valley area.

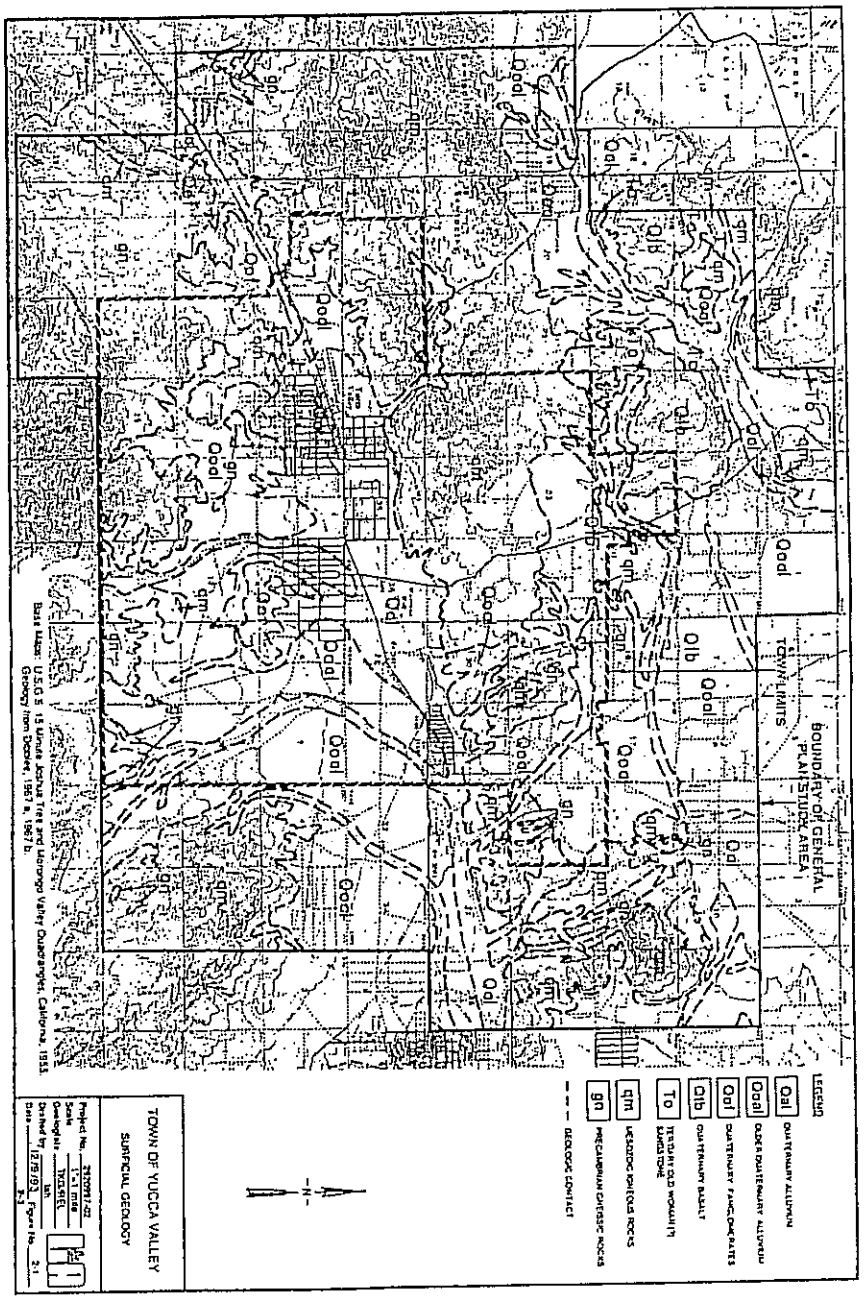
The Precambrian gneissic rocks are massive, medium to coarsely crystalline rocks. These rocks comprise the Little San Bernardino Mountains in the south, and occur as small exposures in the Bartlett Mountains and Paxton Peak.

2.3 Rockfalls/Landslides and Slope Instability

There are no landslides documented within the General Plan study area. This is generally due to the lack of geologic conditions (adverse bedding, weak rock layers, etc.) necessary for landsliding. However, earthquake-related slope failures and rockfalls/landslides commonly occur in steep, rocky terrain. Wilson and Keefer (1985) have reported that a ground acceleration of at least 0.10g in steep terrain is necessary to induce earthquake-related rockfalls, although this does not guarantee that rockfalls will occur if this acceleration value is exceeded. For example, ground accelerations of 0.29g were reported in the Yucca Valley area during the Landers earthquake, but no rockfalls/landslides or slope failures were documented within the Town limits. However, rockfalls were observed west of the Town along the slopes bordering Morongo Valley and in the Little San Bernardino Mountains and the Monument (Barrows, 1993). A maximum credible earthquake occurring along the San Andreas fault (San Bernardino segment) or in the Study Area along either the Pinto Mountain, Burnt Mountain, Eureka Peak, or Johnson Valley faults would generate at least 0.10g within the study area. Therefore, the potential for seismically-induced rockfalls to occur in this area cannot be dismissed.

Figure 2-2 shows the distribution of areas susceptible to rockfall and/or landslide problems in the vicinity of the Town. These areas are generally located in the mountain and hilly areas, including the slopes of Burnt Mountain.

Storm-Induced Landsliding and Erosion: Heavy rainfall often triggers surficial sliding (debris flows and mud flows) on bluff faces and on steep slopes. The bluff faces along drainage channels, such as Pipes Canyon and Lower Covington Flat, especially if not vegetated, are extremely susceptible to storm-induced erosion.



2.4 Ground Subsidence

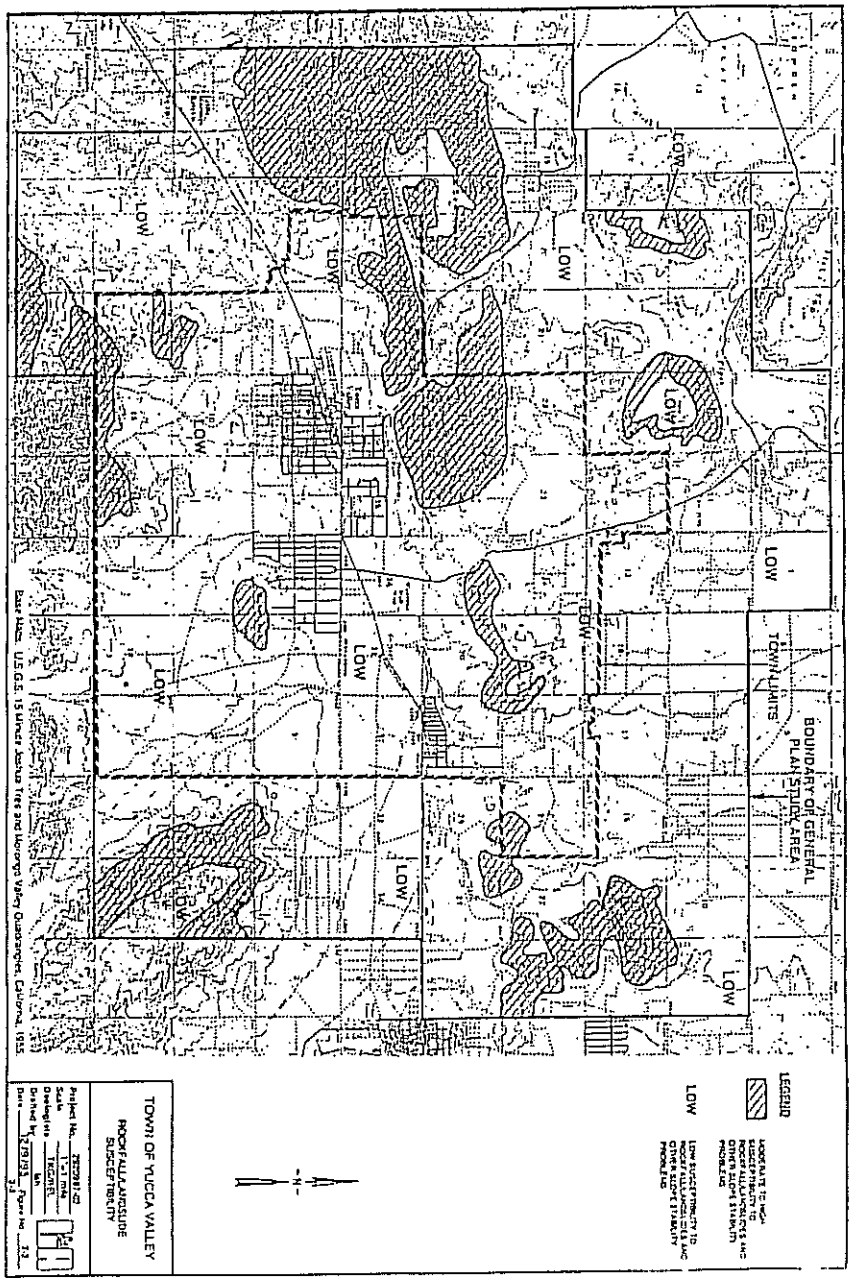
Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. In the areas of southern California where ground subsidence has been reported, this phenomenon is usually associated with the extraction of oil, gas or ground water from below the ground surface. Ground subsidence can also occur as a response to natural forces such as earthquake movements, the folding and subsiding activity of sedimentary basins, or hydrocompaction, which occurs when poorly consolidated or compressible soils are wetted and collapse.

Ground surface effects related to subsidence are generally restricted to structures sensitive to slight changes in elevations such as canals, sewers and drainages. Ground subsidence can disrupt canal or drainage systems and cause localized flooding. The Town of Yucca Valley currently extracts ground water for domestic use from the valley sediments at depth. Static ground water levels have dropped from about 290 feet below ground surface in the 1950s, as reported by Bader and Moyle (1960), to a present-day average depth of approximately 400 feet (M. Stockdale, 1993 personal communication). Although ground subsidence as a result of ground water withdrawal has not been documented in the study area (M. Stockdale, 1993 personal communication), continued ground water extraction of the underlying aquifer could result in ground subsidence unless efforts are made to stop overdrafting of the basin, and the water supply of the basin is replenished. Construction of the two proposed recharge basins is expected to increase the water levels in the basin.

Ground-level changes as a result of earthquake movement can also cause the ground to subside. Earthquakes have caused abrupt elevation changes in excess of one foot across faults. The Imperial Valley earthquake of 1979 (M6.8), for example, resulted in ground subsidence of approximately 15 inches on the east side of the Imperial fault (Sharp and Lienkaemper, 1982). An earthquake occurring along one of the faults in the area, and centered in the Yucca Valley, could cause abrupt changes in ground elevation across the fault, resulting in ground subsidence.

2.5 Collapsible and Expansive Soils

Low density soils may collapse and settle as a results of static or seismic loading and hydrocompaction. Hydrocompaction of near-surface, poorly consolidated soils is a common problem in arid regions. This phenomenon is typically associated with granular, sandy soils deposited by wind or river processes. Hydrocompaction occurs when significant amounts of water infiltrate into the soil, softening, weakening and/or dissolving the clay, salts, or other cementing agent binding the sand grains together, causing a general collapse of the soil. Most documented cases of hydrocompaction have been associated to landscaping or crop irrigation, leaking septic tanks, and grading activities that result in poor drainage of the land.



Sediments in the Yucca Valley area that could be susceptible to hydrocompaction include the recent and older alluvial deposits and fanglomerates. Increased development in the area, with resultant increase in landscaping and/or over-irrigation could result in hydrocompaction in localized areas. Soil collapse can result in significant damage to foundations and structures.

Expansive soils are soils with a significant amount of clay particles that have the ability to give up water (shrink) or take on water (swell). When these soils swell, the change in volume exerts tremendous pressures on loads (such as buildings) that are placed on them. In the Yucca Valley area, expansive soils are not considered a hazard because of the relatively minor amount of clay present in the soils.

2.6 Issues and Opportunities

1. Areas in the General Plan study area that have a moderate to high susceptibility to rockfall/landsliding and other slope instability problems are generally limited to mountainous regions north and south of Highway 62 (see Figure 2-5). Slides and/or falls may occur in these areas during an earthquake. To help reduce this hazard, a geotechnical evaluation of steep slopes prior to development could be conducted. Failure of bluff faces along drainage channels (i.e., Lower Covington Flats) could occur during periods of heavy rainfall. Geotechnical evaluation of the bluff faces could pinpoint potential problem sites.

2. Deposits of alluvium within the Town of Yucca Valley may be susceptible to consolidation and hydrocompaction. In areas proposed for development, site-specific studies need to be conducted to evaluate the settlement potential of these soils.

CHAPTER 3: FLOOD AND INUNDATION HAZARDS

3.1 Introduction

Safety Elements must assess the impact of flooding from storm activity such as from 100- and 500-year floods. A 100-year flood event is a flood that has a 1/100 chance of occurring in any one year. Smaller-scale flooding generally associated with overburdened storm drain and canal systems can damage property and hinder emergency activities such as fire department access or evacuation. Consequently, the potential for more frequently occurring, small-scale flooding is also assessed herein. In addition, Government Code Section 65302 (g) requires local governments to assess the potential flooding hazard that failure of dams and other water retention structures may pose to the community.

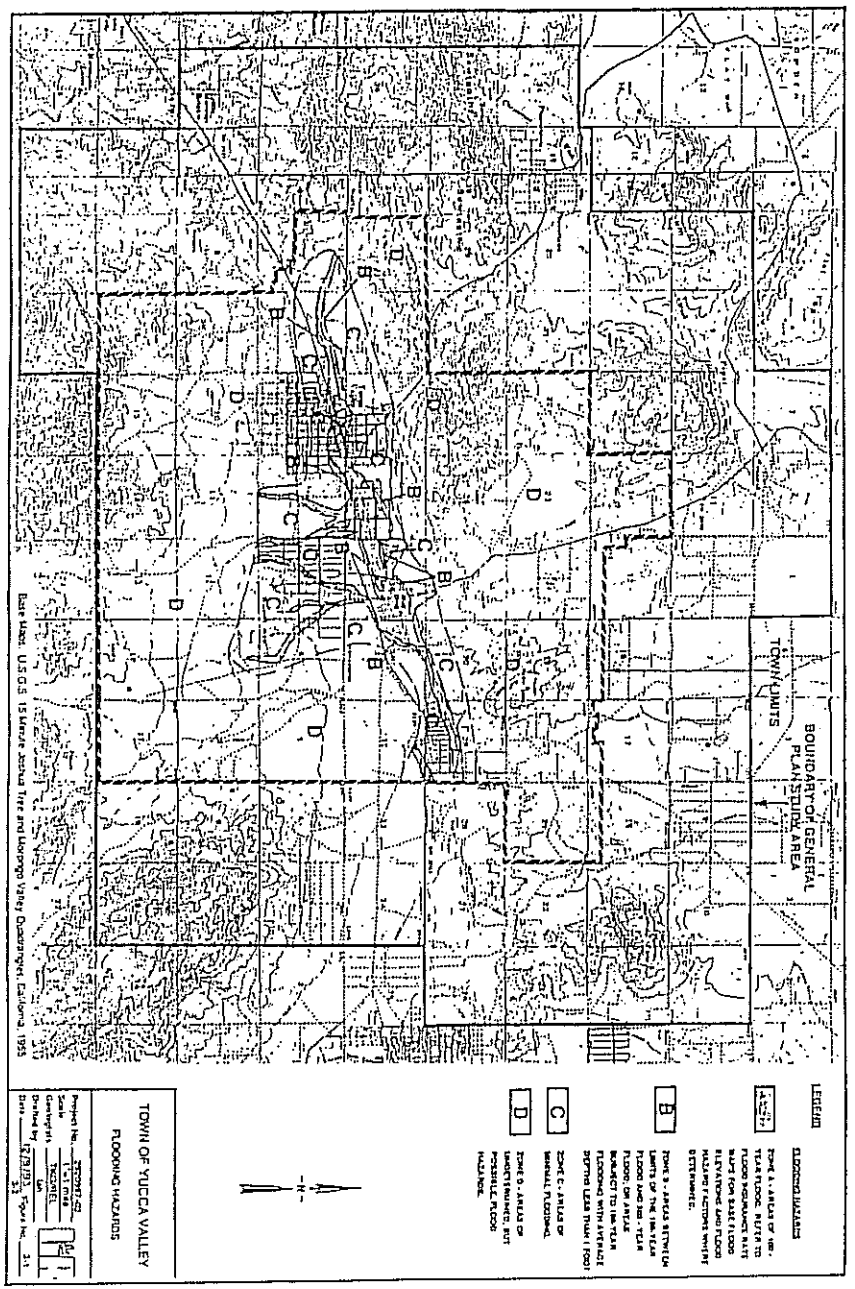
3.2 Storm Flooding

The Yucca Valley area is flanked by the Transverse Ranges province on the west and by the Mojave Desert province on the east. The eastern extension of the Transverse Ranges include the San Bernardino and Little San Bernardino Mountains. These mountains act as a rain shadow, limiting how much it rains to the east of them, in Yucca Valley. As a result, the climate in Yucca Valley is arid, with rainfall amounts of less than ten inches annually. Most precipitation in this part of southern California occurs in the winter months between December and March.

During the winter months, Yucca Valley is subject to various degrees of storm flooding, including flash floods and slow floods caused by heavy precipitation. Flash flooding in the desert is not uncommon, but is generally limited to low-lying drainages or washes that extend outward from the flanks of the mountains and into the valleys or flatlands. Storm flooding can also occur in floodways or floodplains adjacent to rivers, in low-lying areas adjacent to water sources (such as irrigation canals) and adjacent to storm drain ditches or other low-lying areas where storm water may collect.

Most of the storm runoff in the Sphere of Influence is out of the mountains and hills bordering the valley, and towards the Town of Yucca Valley. The storm waters converge near the center of town and flow along a man-made drainage channel that extends east-west through town and north of Highway 62. A minor amount of storm runoff flows along Pipes Canyon, away from the Yucca Valley area and towards Landers.

Flood Insurance Rate Maps (FIRMs) prepared by the Federal Emergency Management Agency (FEMA) showing potential flood zones within the town limits were used to construct a Flood Hazard Zones map (Figure 3-1). Figure 3-1 is a compilation of the data presented in Community Panels 060270 8120C, and 060270 8140C (dated September 28, 1990), and 060270 8860B, 060270 8855B, and 060270 8115B (dated June 23, 1981).



3.3 Seismically-Induced Inundation

Seismically-induced inundation refers to flooding as a result of water retention structures (such as reservoirs) failing during an earthquake. There are no reservoirs in the Town or upstream of the Town that may be subject to failure. However, canals, culverts, levees, retention and recharge basins, and other irrigation control works may crack and suffer some structural damage during an earthquake, especially in areas prone to ground failure. These facilities could pose an inundation hazard if they contain water at the time of the seismic event, or if they are not repaired soon after an earthquake and prior to the next wet season.

Earthquake-induced shock waves can cause significant structural damage to above-ground water tanks if not adequately braced and baffled. Sloshing water can lift a water tank off its foundation, and buckle the bottom of the tank. Pipes connected to the tank can be sheared off. Sloshing water destroyed two water tanks in Landers during the earthquake of June 28, 1992. There are several above-ground water tanks in the Yucca Valley area. If these water tanks are damaged during an earthquake, whether as a result of surficial rupture or strong ground motions, efforts to suppress earthquake-induced fires in the Town could be hindered. Damaged tanks and water mains can also limit the amount of potable water available to residents.

3.4 Issues and Opportunities

1. Flood Insurance Rate Maps for the Town of Yucca Valley, dated June 1981, delineate an 100-year flood zone along the flood control channel extending east-west through the middle of Town. The remainder of the study area is depicted as a zone with minimal or undetermined flood hazard. Structures for human occupancy and critical facilities should not be constructed within the 100-year flood zone. Relocation of structures presently located in the flood plain is also advisable.

2. The hazard of earthquake-induced dam inundation in the Yucca Valley area is considered nil. However, smaller flood, irrigation control structures and/or ground water recharge basins in the area can be damaged during an earthquake, and could pose a limited flood hazard to adjacent areas if these structures contain water at the time of an earthquake. If a fault with surface rupture potential occurs in the area where the proposed water recharge basins are constructed, and the fault ruptures during a future earthquake, areas downslope of the basins may be inundated.

3. Above-ground water storage tanks can be severely damaged during an earthquake if not properly braced and baffled. If the water storage tanks in the City are damaged, fire suppression efforts could be seriously hindered.

APPENDIX A

REFERENCES

APPENDIX A

References

Bader, J. S., and Moyle, W. R., 1960, Data on Water Wells and Springs in the Yucca Valley-Twentynine Palms Area, San Bernardino and Riverside Counties, California: California Department of Water Resources Bulletin 91-2.

Barrows, A. G., 1993, Rockfalls and Surface Effects Other Than Faulting: Landers and Big Bear Earthquakes: California Geology, Vol. 46, No. 1, pp. 17-22.

Båth, M., 1979, Introduction to Seismology: Birkhäuser Verlag, pp. 117-137.

Bolt, B. A., 1988, Earthquakes: W.H. Freeman and Company, pp. 28-33.

Bryant, W. A., 1986, Pinto Mountain, Mesquite Lake, Copper Mountain, and Related Faults, Southern San Bernardino County, California: California Division of Mines and Geology, Fault Evaluation Report FER-181, 16p.

Bryant, W. A., 1993, Surface Fault Rupture Along the Johnson Valley, Homestead Valley, and Related Faults Associated with the M, 7.5, 28 June 1992, Landers Earthquake: California Division of Mines and Geology, Fault Evaluation Report FER-234, 11p.

Bullen, K. E., and Bolt, B. A., 1985, Introduction to the Theory of Seismology: Cambridge University Press, pp. 446-451.

Cinti, F. R., Fumal, T. E., Garvin, C. D., Hamilton, J. C., Powers, T. J., and Schwarz, D. P., 1993, Earthquake Recurrence and Fault Behavior on the Homestead Valley Fault-Central Segment of the 1992 Landers Surface Rupture Sequence, Geological Society America Abstracts with Programs, Vol. 25, No. 5, Cordilleran and Rocky Mountain Section Meeting, May 19-21, 1993, pp. 21.

Dibblee, T. W., 1967a, Geologic Map of the Joshua Tree Quadrangle, San Bernardino and Riverside Counties, California: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-516, 1:62,500.

Dibblee, T. W., 1967b, Geologic Map of the Morongo Valley Quadrangle, San Bernardino and Riverside Counties, California: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-517, 1:62,500.

Dokka, R. K., and Travis, C. J., 1990a, Late Cenozoic Strike-Slip Faulting in the Mojave Desert, California: Tectonics, Vol. 9, No. 2, pp. 311-340.

Dokka, R. K., and Travis, C. J., 1990b, Role of the Eastern California Shear Zone in Accommodating Pacific-North American Plate Motion: Geophysical Research Letters, Vol. 17, pp. 1323-1326.

Hauksson, E., Hutton K., and Jones, L. M., 1992, Preliminary Report on the 1992 Landers Earthquake Sequence in Southern California, *in* Ehersold, D.B., ed., Landers Earthquake of June 28, 1992 San Bernardino County, California, Field Trip Guidebook: Southern California Section of the Association of Engineering Geologists, Annual Field Trip, October 10, 1992, pp. 23-32.

Harris, R. A., and Simpson, R. W., 1992, Changes in Static Stress on Southern California Faults After the 1992 Landers Earthquake: Nature, Vol. 360, pp. 251-254.

APPENDIX A

References (Cont'd.)

Hart, E. W., 1992 (revised), Fault Rupture Hazard Zones in California: Alquist-Priolo Special Studies Zones Act of 1972 with Index to Special Studies Zones Maps: California Department of Conservation, Division of Mines and Geology Special Publication 42, 32p.

Hill, R.L., Pechman, J.C., Treiman, J.A., McMillan, J.R., Given, J.W., and Ebel, J.E., 1980, Geologic Study of the Homestead Valley Earthquake Swarm of March 15, 1975: California Geology, Vol. 33, No. 3, pp. 60-67.

Idriss, I. M., 1987, Earthquake Ground Motions, Lecture Notes, Course of Strong Ground Motion, Earthquake Engineering Research Institute, Pasadena, California, April 10-11, 1987.

Jaume, S. C., and Sykes, L. R., 1992, Changes in State of Stress on the Southern San Andreas Fault Resulting from the California Earthquake Sequence of April to June 1992: Science, Vol. 258, pp. 1325-1328.

Lindvall, S. C., and Rockwell, T. K., 1993, Recurrent Holocene Faulting Along the Johnson Valley Portion of the 1992 Landers Earthquake Surface Rupture, Geological Society America Abstracts with Programs, Vol. 25, No. 5, Cordilleran and Rocky Mountain Section Meeting, May 19-21, 1993, pp. 70.

Norris, R. M., and Webb, R. W., 1979, Geology of California: John Wiley & Sons, Inc., pp. 123-244.

Rasmussen, G. A., and Associates, 1992a, The June 28, 1992, M7.5 Landers Earthquake, *in* Ebersold, D. B., ed., Landers Earthquake of June 28, 1992 San Bernardino County, California, Field Trip Guidebook: Southern California Section of the Association of Engineering Geologists, Annual Field Trip, October 10, 1992, pp. 11-14.

Rasmussen, G. A., and Associates, 1992b, Subsurface Engineering Geology Investigation of Tract No. 10682-1 and -2, Lots 1-76, Immediately South of Onaga Trail, West of Palomar Avenue, Yucca Valley, California, Project No. 3141, dated December 3, 1992, 28p.

Richter, C. F., 1958, Elementary Seismology: W. H. Freeman and Company, San Francisco, 768p.

Rymer, M. J., 1992, The 1992 Joshua Tree, California, Earthquake: Tectonic Setting and Triggered Slip: EOS Transactions, American Geophysical Union, Vol. 73, No. 43, Fall Meeting Supplement, p. 363.

Savage, J. C., Lisowski, M., and Prescott, W. H., 1990, An Apparent Shear Zone Trending North-Northwest Across the Mojave Desert into Owens Valley, Eastern California: Geophysical Research Letters, Vol. 17, pp. 2113-2116.

Shakal, A., Huang, M., Cao, T., Sheburne, R., Syndor, R., Fung, P., Malhorta, P., Cramer, C., Su, F., Darragh, R., and Wampole, J., 1992, CSMIP Strong-Motion Records from the Landers, California Earthquake of 28 June, 1992: California Division of Mines and Geology OSMS No. 92-09.

Sharp, R. V., and Lienkaemper, J. J., 1982, Preearthquake and Postearthquake Near-Field Leveling Across the Imperial Fault and the Brawley Fault Zone in the Imperial Valley, California Earthquake of October 15, 1979: U.S. Geological Survey, Professional Paper, 1254, pp. 169-182.

TOWN OF YUCCA VALLEY

APPENDIX A

References (Cont'd.)

Sieh, K., Jones, L., Hauksson, E., Hudnut, K., Eberhart-Phillips, D., Heaton, T., Hough, S., Hutton, K., Kanamori, H., Lilje, A., Lindvall, S., McGill, S. F., Mori, J., Rubin, C., Spotila, J. A., Stock, J., Thio, H. K., Treiman, J., Wernicke, B., and Zachariasen, J., 1993, Near-Field Investigations of the Landers Earthquake Sequence, April to July 1992: Science, Vol. 260, No. 5105, pp. 171-176.

Stein, R. S., King, G. C. P., and Lin, J., 1992, Change in Failure Stress on the Southern San Andreas Fault System Caused by the 1992 M=7.4 Landers Earthquake: Science, Vol. 258, pp. 1328-1332.

Stockdale, Marty, 1993, Hi-Desert Water District, personal communication on November 3, 1993.

Toppozada, T. R., Real, C. R., and Parke, D. L., 1986, Earthquake History of California: California Geology, Vol. 39, No. 2, pp. 27-33.

Toppozada, T. R. and Wilson, R. I., 1992, April 22 Joshua Tree, and June 28 Landers and Big Bear Earthquakes, 1992: California Geology, Vol 45, No. 4, pp. 118-120.

Treiman, J. A., 1992, Eureka Peak and Burnt Mountain Faults, Two "New" Faults in Yucca Valley, San Bernardino County, California, *in* Ebersold, D. B., ed., Landers Earthquake of June 28, 1992 San Bernardino County, California, Field Trip Guidebook: Southern California Section of the Association of Engineering Geologists, Annual Field Trip, October 10, 1992, pp. 19-22.

Treiman, J. A., 1993 Eureka Peak and Related Faults, Joshua Tree South and Yucca Valley South Quadrangles, San Bernardino and Riverside Counties, California: California Division of Mines and Geology, Fault Evaluation Report FER-230, 12p.

Wilson, R. C. and Keefer, D. K., 1985, Predicting Aerial Limits of Earthquake-Induced Landsliding, in Ziony, J. I., ed., Evaluating Earthquake Hazards in the Los Angeles Region - An Earth Science Perspective, U.S. Geological Survey, Professional Paper 1360, pp. 317-345.

The Working Group on California Earthquake Probabilities, 1988, Probabilities of Large Earthquakes Occurring in California on the San Andreas Fault, U.S. Geological Survey Open-File Report 88-398.

Working Group on the Probabilities of Future Large Earthquakes in Southern California, 1992, Future Seismic Hazards in Southern California, Phase I: Implications of the 1992 Landers Earthquake Sequence, 42p.

MAPS

California Division of Mines and Geology, 1993a, Alquist-Priolo Special Studies Zone, Joshua Tree North Quadrangle, California, Scale 1:24,000.

California Division of Mines and Geology, 1993b, Alquist-Priolo Special Studies Zone, Joshua Tree South Quadrangle, California, Scale 1:24,000.

California Division of Mines and Geology, 1993c, Alquist-Priolo Special Studies Zone, Yucca Valley North Quadrangle, California, Scale 1:24,000.

TECHNICAL BACKGROUND REPORT - APPENDIX A

California Division of Mines and Geology, 1993d, Alquist-Priolo Special Studies Zone, Yucca Valley South Quadrangle, California, Scale 1:24,000.

California Division of Mines and Geology, 1974, Alquist-Priolo Special Studies Zone, Morongo Valley Quadrangle, California, Scale 1:24,000.

Federal Emergency Management Agency (FEMA), 1981, Flood Insurance Rate Map, San Bernardino County, California, Scale 1:2,000, Panels 8115, 8120, 8855, and 8860 of 9375, Community Panels Numbers 060270-8115B, 060270-8120B, 060270-8855B, and 060270-8860B, Effective Date June 23, 1981.

Jennings, C.W., 1992, Preliminary Fault Activity Map of California, Scale 1:750,000: California Division of Mines and Geology, Open-File Report 92-03, with Appendix, 77p.

U.S. Geological Survey, 1955a, Joshua Tree Quadrangle, California, 15 Minute Series (Topographic), Scale 1:62,500.

U.S. Geological Survey, 1955b, Morongo Valley Quadrangle, California, 15 Minute Series (Topographic), Scale 1:62,500.

APPENDIX B

PERTINENT SECTIONS OF THE ALQUIST-PRIOLO SPECIAL STUDIES ACT (1992 Edition)

FAULT-RUPTURE HAZARD ZONES IN CALIFORNIA

Alquist-Priolo Special Studies Zones Act of 1972
with Index to Special Studies Zones Maps

REVISED 1992

by

EARL W. HART
Geologist

1992

California Department of Conservation
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PREFACE

The purpose of the Alquist-Priolo Special Studies Zones Act is to regulate development near active faults so as to mitigate the hazard of surface fault-rupture.

The report summarizes the various responsibilities under the Act and details the actions taken by the State Geologist and his staff to implement the Act.

This is the eighth revision of Special Publication 42, which was first issued in December 1973 as an "Index to Maps of Special Studies Zones." A text was added in 1975 and subsequent revisions were made in 1976, 1977, 1980, 1985, 1988, and 1990. The latest edition has been updated to reflect changes in the index map, the Division's Fault Evaluation and Zoning Program, and amendments to the Act.

Two appendices have been added to this report to 1) provide general guidelines in the review of geologic reports and 2) identify the publications and other products of the Fault Evaluation and Zoning Program.

Information on new and revised Special Studies Zones Maps will be provided as supplements until the next revision of this report.

FAULT-RUPTURE HAZARD ZONES IN CALIFORNIA

By

Earl W. Hart

INTRODUCTION

The Alquist-Priolo Special Studies Zones Act was signed into law December 22, 1972, and went into effect March 7, 1973. The Act, codified in the Public Resources Code as Division 2, Chapter 7.5, has been amended seven times. A complete text of the Act is provided in Appendix A. The purpose of this Act is to prohibit the location of most structures for human occupancy across the traces of active faults and to mitigate thereby the hazard of fault-rupture (Section 2621.5).

Under the Act, the State Geologist (Chief of the Division of Mines and Geology) is required to delineate "special studies zones" (SSZs) along known active faults in California. Cities and counties affected by the zones must regulate certain development "projects" within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. The State Mining and Geology Board provides additional regulations (Policies and Criteria) to guide cities and counties in their implementation of the law (California Administrative Code, Title 14, Div. 2, Chap. 6, Subchap. 1, Art. 3). A summary of principal responsibilities and functions required by the Alquist-Priolo Act is given in Table 1. The Policies and Criteria are summarized in Table 2, and the complete text is provided in Appendix B.

This publication identifies and describes (1) actions taken by the State Geologist to delineate Special Studies Zones, (2) policies used to make zoning decisions, and (3) Official Maps of Special Studies Zones issued to date. A continuing program to evaluate faults for future zoning or zone revision also is summarized. Other aspects of the Alquist-Priolo Special Studies Zones Act and its implementation are discussed by Hart (1978 and 1986).

Information presented here is based on various in-house documents and publications of this author and others of the Division (see Appendix E). The assistance of Perry Wong (compilation of faults on Figure 4 and proofing), Richard R. Moar (drafting), Dinah Maldonado (layout and design), and other technical and clerical staff of the Division in revising this report is gratefully acknowledged.

Table 1. Summary of responsibilities and functions under the Alquist-Priolo Special Studies Zones Act (see Appendix A for full Text of Act).

State Mining and Geology Board
1. Formulates policies and criteria to guide cities and counties (Sec. 2621.5 and 2623). (See Appendix B.)
2. Serves as Appeals Board (Sec. 673).
State Geologist
1. Delineates Special Studies Zones; compiles and issues maps to cities, counties, and state agencies (Sec. 2622). a. Preliminary Review Maps. b. Official Maps.
2. Reviews new data (Sec. 2622). a. Revises existing maps. b. Compiles new maps.
3. Approves requests for waivers initiated by cities and counties (Sec. 2623).
Cities and Counties
1. Must adopt zoning laws, ordinances, rules, and regulations; primary responsibility for implementing Act (Sec. 2621.5).
2. Must post notices of new Special Studies Zones Maps (Sec. 2621.9 and 2622).
3. Regulates specified "projects" within Special Studies Zones (Sec. 2623). a. Determines need for geologic reports prior to project development. b. Approves geologic reports prior to issuing development permits. c. May initiate waiver procedures. (See Appendix F.)
Other
1. *Seismic Safety Commission*–advises State Geologist and State Mining and Geology Board (Sec. 2630).
2. *State Agencies*–prohibited from siting structures for human occupancy across active fault traces (Sec. 2621.5).
3. *Disclosure*–prospective buyers of any real property located within a Special Studies Zone must be notified of that fact (Sec. 2621.9).

Table 2. Summary of policies and criteria adopted by the State Mining and Geology Board in California Administrative Code (see Appendix B for full text).

Policies
1. Defines active fault (equals potential hazard) as a fault that has had surface displacement during Holocene time (last 11,000 years) (Sec. 3601).
2. Defines "structure for human occupancy" and other terms (Sec. 3601).
3. Provides opportunity for public to comment on Preliminary Review Maps of Special Studies Zones (Sec. 3602).
4. Provides for comments and recommendations to State Geologist regarding Preliminary Review Maps (Sec. 3602).

Specific Criteria for Lead Agencies (Sec. 3603)

1. No structure for human occupancy defined as a "project" is permitted on the trace of an active fault. Unless proven otherwise, the area within 50 feet of an active fault is presumed to be underlain by active branches of the fault.
2. Requires disclosure of Special Studies Zones to the public.
3. Requires that buildings converted to structures for human occupancy comply with provisions of the Act.
4. Requires geologic reports directed at the problem of potential surface faulting for all projects defined by the Act.
5. Requires cities and counties to review geologic reports for adequacy.
6. Requires that geologic reports be submitted to the State Geologist for open-file.

PROGRAM FOR ZONING AND EVALUATING FAULTS

Requirements of the Act

Section 2622 of the Alquist-Priolo Special Studies Zones Act (Appendix A) requires the State Geologist to:

1. "Delineate...appropriately wide special studies zones to encompass all potentially and recently active traces of the San Andreas, Calaveras, Hayward, and San Jacinto faults, and such other faults or segments thereof, as he deems sufficiently active and well-defined as to constitute a potential hazard to structures from surface faulting or fault creep."

2. Compile maps of Special Studies Zones and submit such maps to affected cities, counties, and state agencies for their review and comment. Following appropriate reviews, the State Geologist must provide Official Maps to the affected cities, counties, and state agencies.

3. Continually review new geologic and seismic data to revise the Special Studies Zones or delineate additional zones.

These requirements constitute the basis for the State Geologist's fault-zoning program and for many of the policies devised to implement the program.

Program for Zoning Faults

As required under the Act, the State Geologist initiated a program early in 1973 to delineate Special Studies Zones to encompass potentially and recently active traces of the San Andreas, Calaveras, Hayward, and San Jacinto faults, and to compile and distribute maps of these zones. A project team was established within the Division to develop and conduct a program for delineation of the zones.

Initially, 175 maps of Special Studies Zones were delineated for the four named faults. These zone maps, issued as Preliminary Review Maps, were distributed for review by local and state government agencies on December 31, 1973. Following prescribed 90-day review and revision periods, Official Maps were issued on July 1, 1974. At that time, the Special Studies Zones became effective, and the affected cities and counties were required to implement programs to regulate development within the mapped zones. A second set of Official Maps–81 maps of new zones and five maps of revised zones–was issued on January 1, 1976 to delineate new and revised zones. Additional Official Maps of new and revised zones were issued in succeeding years, as summarized in Table 3.

All of the Special Studies Zones Maps issued prior to January 1, 1977 were based almost solely on the mapping of others. Later maps are based extensively on interpretations of the Fault Evaluation Program staff.

Table 3. Official Maps of Special Studies Zones issued 1974 through 1991.

DATE OF ISSUE	NEW MAPS	REVISED MAPS	WITHDRAWN MAPS
July 1, 1974	175	-	-
January 1, 1976	81	5	-
January 1, 1977	4	3	-
January 1, 1978	1	-	-
July 25, 1978	2	-	-
January 1, 1979	4	7	-
January 1, 1980	21	9	-
January 1, 1982	13	27	2
July 1, 1983	18	12	-
January 1, 1985	33	10	-
July 1, 1986	10	14	-
March 1, 1988	58	4	-
January 1, 1990	60	25	-
November 1, 1991	46	6	-
Totals	534	124	2

As of January 1, 1992, 534 Official Maps of Special Studies Zones have been issued. Of these, 124 have been revised since their initial issue and two have been withdrawn. The maps are identified by quadrangle map name and the date of issue or revision on the Index to Maps of Special Studies Zones (Figure 4).

The maps delineated regulatory zones for the faults generally identified in Figure 1. Additional faults will be zoned in the future, and some zones will be revised. Thirty-six counties and 92 cities are affected by the existing Special Studies Zones. These jurisdictions are listed in Table 4.

Definitions, Policies, Rationale

For the State Geologist to carry out his mandate to establish regulatory zones, certain terms identified in Section 2622 of the Act had to be defined and policies had to be developed to provide a consistent and reasonable approach to zoning. After the zoning program was underway and the surface fault-rupture process was better understood, other terms were defined and some zoning policies were modified.

*Table 4. Cities and counties affected by Special Studies Zones as of January 1, 1992**

CITIES (91)			COUNTIES (36)	
American Canyon	Hemet	Rosemead	Alameda	Solano
Antioch	Highland	San Bernardino	Alpine	Sonoma
Arcadia	Hollister	San Bruno	Butte	Stanislaus
Arcata	Huntington Beach	San Diego	Contra Costa	Ventura
Bakersfield	Indio	San Fernando	Fresno	Yolo
Banning	Inglewood	San Jacinto	Humboldt	
Barstow	La Habra	San Jose	Imperial	
Benicia	La Habra Heights	San Juan Bautista	Inyo	
Berkeley	Lake Elsinore	San Leandro	Kern	
Bishop	Livermore	San Luis Obispo	Lake	
Brea	Loma Linda	San Marino	Lassen	
Carson	Long Beach	San Pablo	Los Angeles	
Cathedral City	Los Angeles	San Ramon	Marin	
Coachella	Mammoth Lakes	Santa Clarita	Mendocino	
Colton	Milpitas	Santa Rosa	Merced	
Compton	Monrovia	Seal Beach	Modoc	
Concord	Moreno Valley	Signal Hill	Mono	
Corona	Morgan Hill	South Pasadena	Monterey	
Culver City	Murrieta	South San Francisco	Napa	
Daly City	Oakland	Temecula	Orange	
Danville	Pacifica	Trinidad	Riverside	
Desert Hot Springs	Palmdale	Twentynine Palms	San Benito	
Dublin	Palo Alto	Union City	San Bernardino	
El Cerrito	Pasadena	Ventura (San Buenaventura)	San Diego	
Fairfield	Pleasanton	Walnut Creek	San Luis Obispo	
Fontana	Portola Valley	Whittier	San Mateo	
Fortuna	Rancho Cucamonga	Willits	Santa Barbara	
Fremont	Redlands	Woodside	Santa Clara	
Gardena	Rialto	Yorba Linda	Santa Cruz	
Glendale	Richmond	Yucca Valley	Shasta	
Hayward	Ridgecrest		Siskiyou	

*To inquire about local government policies and regulations or to consult (obtain) copies of specific Special Studies Zones maps, address the Planning Director of each county or city. Some jurisdictions have replotted the SSZ boundaries on large-scale parcel maps.

Fault and Fault Zone

A *fault* is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. Most faults are the result of repeated displacement that may have taken place suddenly and/or by slow creep. A *fault zone* is a zone of related faults that commonly are braided and subparallel, but may be branching and divergent. A fault zone has significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles.

Fault Trace

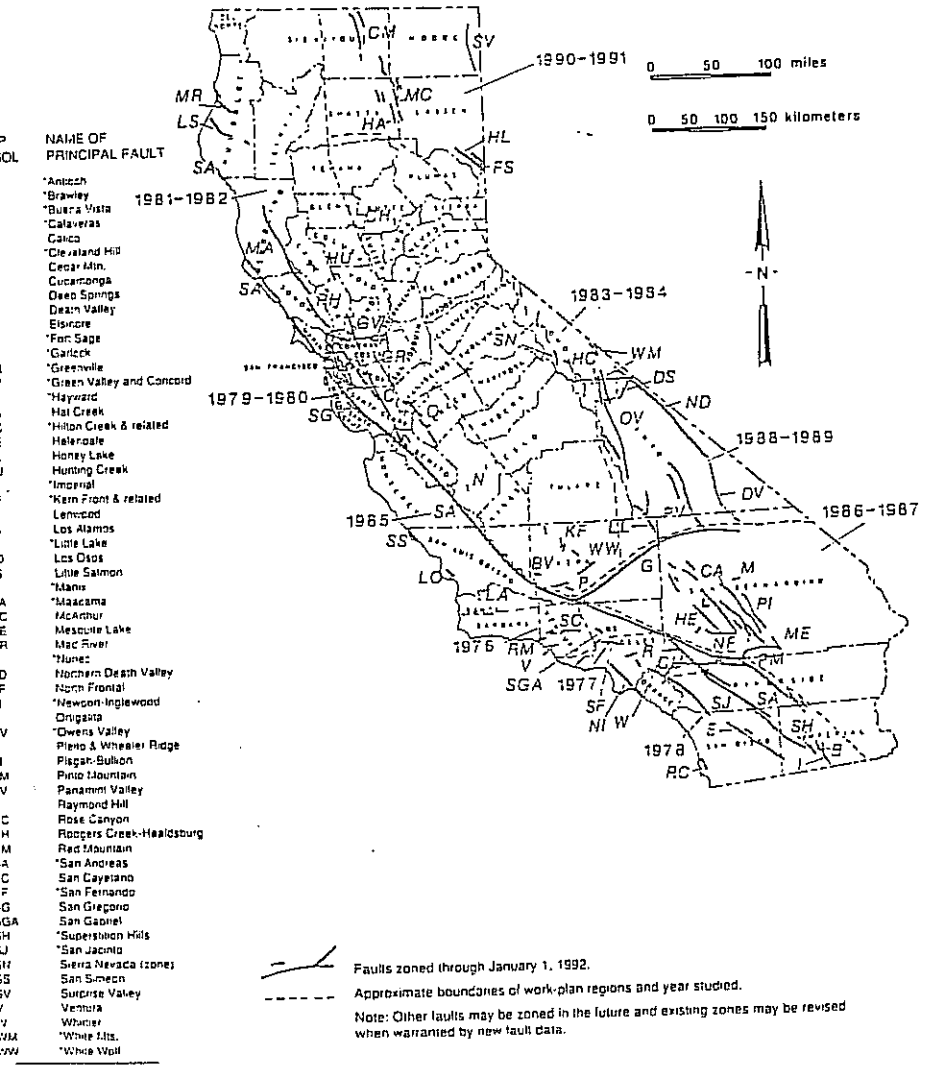
A *fault trace* is the line formed by the intersection of a fault and the earth's surface. It is the representation of a fault as depicted on a map, including maps of the special studies zones.

Active Fault

For the purposes of this Act, an *active fault* is defined by the State Mining and Geology Board as one which has "had surface displacement within Holocene time (about the last 11,000 years)" (see Appendix B, Section 3601). This definition does not, of course, mean that faults having no evidence for surface displacement within Holocene time are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and locally may not exist.

Potentially Active Fault

Because the Alquist-Priolo Act requires the State Geologist to establish Special Studies Zones to encompass all "potentially and recently active" traces of the San Andreas, Calaveras, Hayward, and San Jacinto faults, additional definitions were needed (Section 2622). Faults were defined as *potentially active*, and were zoned, if they showed evidence of surface displacement during Quaternary time (last 1.6 million years, Figure 2). Exceptions were made for certain Quaternary (i.e., Pleistocene) faults that were presumed to be inactive based on direct geologic evidence of inactivity during all of Holocene time or longer. The term "recently active" was not defined, as it was considered to be covered by the term "potentially active." Beginning in 1977, evidence of Quaternary surface displacement was no longer



NAME OF PRINCIPAL FAULT

*Antioch
*Brawley
*Buena Vista
*Calaveras
Casco
*Cleveland Hill
Cedar Mtn.
Cucamonga
Deep Springs
Death Valley
Elsinore
*Fort Sage
*Garlock
*Greenville
*Green Valley and Concord
*Hayward
Hat Creek
*Hilton Creek & related
Helendale
Honey Lake
Hunting Creek
*Imperial
*Kern Front & related
Lenwood
Los Alamos
*Little Lake
Los Osos
Little Salmon
*Manix
*Maacama
McArthur
Mesquite Lake
Mad River
*Nunez
Northern Death Valley
North Frontal
*Newport-Inglewood
Origuita
*Owens Valley
Pleito & Wheeler Ridge
Pisgah-Bullion
Pinto Mountain
Panamint Valley
Raymond Hill
Rose Canyon
Rodgers Creek-Healdsburg
Red Mountain
*San Andreas
San Cayetano
*San Fernando
San Gregorio
San Gabriel
*Superstition Hills
*San Jacinto
Sierra Nevada (zone)
San Simeon
Surprise Valley
Ventura
Whittier
*White Mts.
*White Wolf

*Faults with historic surface rupture

Faults zoned through January 1, 1992.

Approximate boundaries of work-plan regions and year studied.

Note: Other faults may be zoned in the future and existing zones may be revised when warranted by new fault data.

Figure 1. Principal active faults in California zoned for special studies under the Alquist-Priolo Special Studies Zones Act of 1972. Dashed lines and dates identify recently completed work-plan for 10 regions and when studies

used as a criterion for zoning. However, the term "potentially active" continued to be used as a descriptive term on map explanations used on zone maps.

Sufficiently Active and Well-defined

A major objective of the Division's continuing fault zoning and evaluation program is to evaluate the hundreds of remaining potentially active faults in California for zoning consideration. However, it became apparent as the program progressed that there are so many potentially active (i.e., Quaternary) faults in the State (Jennings, 1975) that it would be meaningless to zone all of them. In late 1975, the State Geologist made a policy decision to zone only those potentially active faults that have a relatively high potential for ground rupture. To facilitate this, the terms "sufficiently active" and "well-defined," from Section 2622 of the Act, were defined for application in zoning faults other than the four named in the Act. These two terms constitute the present criteria used by the State Geologist in determining if a given fault should be zoned under the Alquist-Priolo Act.

Sufficiently active. A fault is deemed sufficiently active if there is evidence of Holocene surface displacement along one or more of its segments or branches. Holocene surface displacement may be directly observable or inferred; it need not be present everywhere along a fault to qualify that fault for zoning.

Well-defined. A fault is considered well-defined if its trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The fault may be identified by direct observation or by indirect methods (e.g., geomorphic evidence; Appendix C). The critical consideration is that the fault, or some part of it, can be located in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

Determining if a fault is sufficiently active and well-defined is a matter of judgment. However, these definitions provide standard, workable guidelines for establishing Special Studies Zones under the Act. More precise meanings of these terms should develop as more is learned about the techniques of evaluating the hazard of surface faulting.

The evaluation of faults for zoning purposes is done with the realization that not all active faults can be identified. Furthermore, certain faults considered to be active at depth, because of known seismic activity, are so poorly defined at the surface that zoning is impractical. Although the map explanation (Figure 3) indicates that "potentially active" (i.e., Quaternary) faults are identified and zoned (with exceptions) on the Official Maps of Special Studies Zones, this is basically true only for those maps issued July 1, 1974 and January 1, 1976. Even so, all of the principal faults zoned in 1974 and 1976 were active during Holocene time, if not historically. Beginning with the maps of January 1, 1977, all faults zoned meet the criteria of "sufficiently active and well-defined."

Delineating the Special Studies Zones

Special Studies Zones are delineated on U.S. Geological Survey topographic base maps at a scale of 1:24,000 (1 inch equals 2,000 feet). The zone boundaries are straight-line segments defined by turning points (Figure 3). Most of the turning points are intended to coincide with locatable features on the ground (e.g., bench marks, roads, streams). Neither the turning points nor the connecting zone boundaries have been surveyed to verify their mapped locations.

Locations of Special Studies Zone boundaries are controlled by the position of fault traces shown on the Official Maps of Special Studies Zones. With few exceptions, the faults shown on the 1974 and 1976 Special Studies Zones maps were not field-checked during the compilation of these maps. However, nearly all faults zoned since January 1, 1977, have been field-checked to verify that they do meet the criteria of being sufficiently active and well-defined.

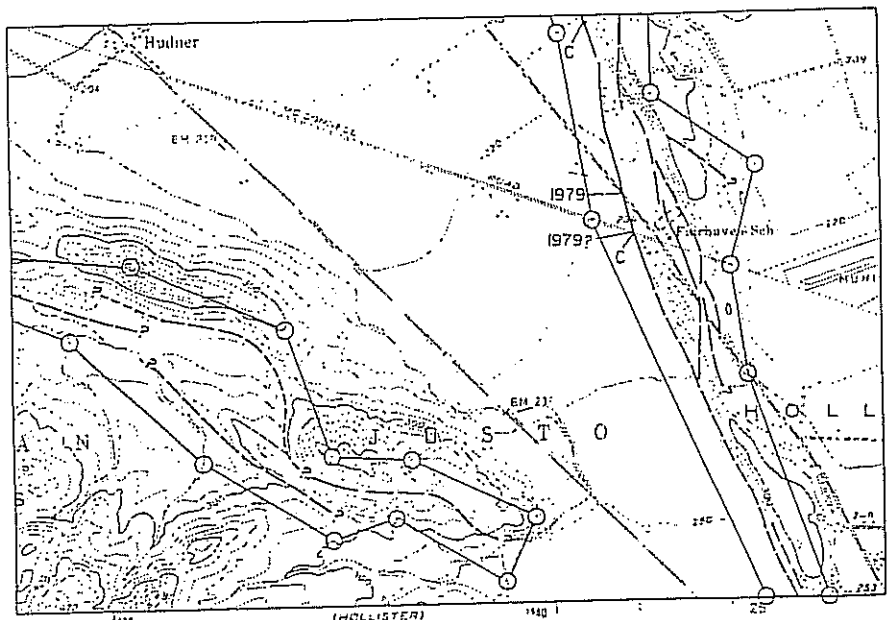
Zone boundaries on early maps were positioned about 660 feet (200 meters) away from the fault traces to accommodate imprecise locations of the faults and possible existence

GEOLOGIC AGE			YEARS BEFORE PRESENT (estimated)
Era	Period	Epoch	
CENOZOIC	QUATERNARY	Historic	200
		Holocene	11,000
		Pleistocene	1,600,000
	TERTIARY	Pliocene	5,000,000
		pre-Pliocene	66,000,000
pre-CENOZOIC time			4,600,000,000
Beginning of geologic time			

Faults along which movement has occurred during this interval and defined as *active* by Policies and Criteria of the State Mining and Geology Board.

Faults defined as *potentially active* for the purpose of evaluation for possible zonation.

Figure 2. Geologic time scale.



MAP EXPLANATION

Active Faults

1906 C — Faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

Special Studies Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Seaward projection of zone boundary.

Figure 3 Example of Special Studies Zones map and explanation of map symbols.

of active branches. The policy since 1977 is to position the SSZ boundary about 500 feet away from major active faults and about 200 to 300 feet away from well-defined, minor faults. Exceptions to this policy exist where faults are locally complex or where faults are not vertical.

Fault Evaluation Program

The Fault Evaluation Program was initiated in early 1976 for the purpose of evaluating those "other faults" identified in the Act as "sufficiently active and well-defined" (see definition above) after it was recognized that effective future zoning could not rely solely on the limited fault data of others. Justification of this program is discussed in more detail in Special Publication 47 of the California Division of Mines and Geology (1976; also see Hart, 1976).

The program was originally scheduled over a 10-year period. The state was divided into 10 regions or work areas (Figure 1), with one region scheduled for evaluation each year. However, the work in some regions was extended due to heavy work loads. The fault evaluation work includes limited field mapping and the interpretation of aerial photographs, as well as the use of other geologists' work. A list of faults to be evaluated in a target region is prepared and priorities assigned. The list included potentially active faults not yet zoned, as well as previously zoned faults or fault-segments that warranted zone revisions (change or deletion). Faults also were evaluated in areas outside of scheduled regions, as the need arose (e.g., to map fault rupture immediately after an earthquake). The fault evaluation work was completed in early 1991. The work is summarized for each region in Open-File Reports (OFR) 77-6, 78-10, 79-10, 81-3, 83-10, 84-52, 86-3, 88-1, 89-16, and 91-9 (see Appendix E).

For each fault evaluated, a Fault Evaluation Report (FER) was prepared, summarizing data on the location, recency of activity, and sense and magnitude of displacement. Each FER contains recommendations for or against zoning. These in-house reports are filed at the Division's Bay Area Regional Office at 1145 Market Street, 3rd Floor, San Francisco 94103-1513, where they are available for reference. Reference copies of the FERs are filed in the Division's Los Angeles office. An index to FERs prepared 1976 to April 1989 is available as OFR 90-9 (see Appendix E). This list and an index map identify the faults that have been evaluated. Microfiche copies of all FERs prepared through April 1989 are available in five regional sets as Open-File Reports OFR 90-10 to 90-14 (see Appendix E).

Under the AP Act (Sec. 2622), the State Geologist has an on-going responsibility to review "new geologic and seismic data" in order to revise the special studies zones and to delineate new zones "when warranted by new information."

Beginning July 1991 a new five-year plan to evaluate faults was initiated and will be carried out in three phases--each about 20 months long. Efforts will be directed at evaluating or re-evaluating faults in the more populated or developing areas of the state.

As a result of the fault evaluations made since 1976 under the 10-region program, 275 new and 119 revised Special Studies Zones Maps have been issued and two maps have been withdrawn (Table 3). The faults zoned are considered to meet the criteria of "sufficiently active and well-defined" (see Definitions above). Many other faults did not appear to meet the criteria and were not zoned. It is important to note that it is sometimes difficult to distinguish between slightly active faults and inactive ones, because the surface features formed as a result of minor, infrequent rupture are easily obliterated by geologic processes (erosion, sedimentation, mass wasting) or the activities of man. Even large scale fault-rupture can be obscured in complex geologic terranes or high-energy environments. Recent fault-rupture also is difficult to detect where it is distributed as numerous breaks or warps in broad zones of deformation. As a consequence of these problems, it is not possible to identify and zone all active faults in California. For the most part, rupture on faults not identified as active is expected to be minor.

During the last 17 years, there have been 19 earthquakes or earthquake sequences associated with surface faulting in various parts of California (Table 5). This is an average of 1.2 fault-rupture events per year. Most of the recent surface faulting has been relatively minor, either in terms of amount of displacement or length of surface rupture (Table 5). However, 30 cm (one foot) or more displacement occurred during five events in 17 years. Past records (incomplete) suggest that displacements of a meter (3 feet) or more occurs at least once every 15 to 20 years in California (Bonilla, 1970; Grantz and Bartow, 1977). Many of the recent coseismic events occurred on faults that were not yet zoned for special studies, and a few were on faults not considered to be potentially active or not even mapped. However, coseismic rupture also occurred on faults within the Special Studies Zones. In addition, aseismic fault creep has occurred on many zoned faults in the last 17 years (see footnote, Table 5). Most fault creep is tectonically induced, although some is induced by man (mainly by fluid withdrawal).

In addition to evaluating and zoning faults, program staff also performs other functions necessary to the implementation of the APSSZ Act. Regulations (Section 3603, Appendix B) require that cities and counties file geologic reports for "project" sites in Special Studies Zones with the State Geologist. By the end of 1991, 2,613 site-geologic reports had been filed for public reference (available at the Division's Bay Area Regional Office). Index maps and a directory of these reports have been prepared to make others aware of this resource (see OFRs 84-31, 89-5, and 90-15 in Appendix E). Appendix E is a complete list of publications and products of the Fault Evaluation and Zoning Program.

In order to improve the quality of site investigations and reports, guidelines were prepared in 1975 to assist others in evaluating faults. These guidelines have been slightly revised and appear as Appendix C.

General guidelines for reviewing geologic reports for adequacy, required by Section 3603 of the regulations, are provided in Appendix D.

If a city or county considers that a geologic investigation of a proposed "project" is unnecessary, it may request a waiver from the State Geologist (Section 2623, Appendix A). A waiver form detailing the procedures used is provided in Appendix F. Through 1991, 75 waiver requests have been processed by program staff.

Another important activity is to provide information on the APSSZ Act, the Division's Fault Evaluation and Zoning Program, and fault-rupture hazards to both the public and private sectors. Program staff responds to about 3,000 inquiries each year from geologists, planners, building officials, developers, realtors, financial institutions, and others.

Uses and Limitations of Special Studies Zones Maps

The Special Studies Zones are delineated to define those areas within which special studies are required prior to building structures for human occupancy. Traces of faults are shown on the maps mainly to justify the locations of zone boundaries. These fault traces are plotted as accurately as the sources of data permit; yet the plots are not sufficiently accurate to be used as the basis for building set-back requirements, and they should not be so used.

The fault information shown on the maps is not sufficient to meet the requirement for special studies. Local governmental units must require the developer to evaluate specific sites within the special studies zones to determine if a potential hazard from any fault, whether heretofore recognized or not, exists with regard to proposed structures and their occupants.

The surface fault-ruptures associated with historic earthquake and creep events are identified where known. However, no degree of relative potential for future surface displacement or degree of hazard is implied for the faults shown. Surface ruptures resulting from the secondary effects of seismic shaking (e.g., landsliding, differential settlement, liquefaction) are omitted from the map and do not serve as a basis for zoning.

Active faults may exist outside the Special Studies Zones on any zone map. Therefore, fault investigations are recommended for all critical and important developments proposed outside the Special Studies Zones.

INDEX TO MAPS OF SPECIAL STUDIES ZONES

The following pages (Figures 4A to 4J) indicate the names and locations of the Official Maps of Special Studies Zones delineated by the California Division of Mines and Geology under the Alquist-Priolo Special Studies Zones Act of 1972 (Appendix A). These index pages identify all Official Maps of Special Studies Zones released by the State Geologist through November 1, 1991. The official maps are compiled on U.S. Geological Survey 7.5-minute topographic quadrangle maps at a scale of 1 inch equals 2,000 feet (Figure 3). Cities and counties affected by these maps are listed in Table 4.

Because Special Studies Zones maps are issued every year or two to delineate revised and additional zones, users of these maps should check with the Division of Mines and Geology for up-to-date information on new and revised Special Studies Zones maps. A change in zones also may affect different local governments. This index to Official Maps of Special Studies Zones (Figures 4A to 4J) will be revised in future years as new maps are issued.

The Special Studies Zones maps are available for purchase as indicated under Availability of Special Studies Zones Maps. Also, they may be consulted at any office of the Division of Mines and Geology and at the planning departments of all cities and counties affected locally by Special Studies Zones (Table 4).

Availability of Special Studies Zones Maps

Reproducible masters, from which copies of local Special Studies Zones maps (scale 1:24,000) can be made, have been provided to each of the cities and counties affected by the zones. Requests for copies of particular Special Studies Zones maps of local areas should be directed to the Planning Director of the appropriate city or county. Refer to the index of special studies zones maps for the quadrangle names of the maps needed.

Arrangements also have been made with Blue Print Service Company, San Francisco, to provide blue line copies of the Special Studies Zones maps to those who cannot get them conveniently from the cities and counties.

Blue Print Service Company
1147 Mission Street
San Francisco, CA 94103
Telephone: (415) 512-6550

Each map must be ordered by quadrangle name as shown on the index map. The cost of the maps is nominal; handling and C.O.D. charges are extra. These maps are not sold by the Division of Mines and Geology.

REFERENCES

(See Appendix E for Complete list of AP Products)

Bonilla, M.G., 1970, Surface faulting and related effects in R.L. Wiegel, editor, Earthquake Engineering: Prentice-Hall, Inc., Englewood Cliffs, N.J., p. 47-74.

California Division of Mines and Geology, 1976, Active fault mapping and evaluation program—10-year program to implement Alquist-Priolo Special Studies Zones Act: California Division of Mines and Geology Special Publication 47, 42 p.

Grantz, A., and Barrow, A., 1977, Active faults of California: U.S. Geological Survey pamphlet, 15 p.

Hart, E.W., 1978, Zoning for the hazard of surface fault rupture in California: International Conference on Microzonation, 2nd, San Francisco, 1978, Proceedings, v. 2, p. 635-646.

Hart, E.W., 1986, Zoning for the hazard of surface faulting in California [in Proceedings Conference XXXII—Workshop on future directions in evaluating earthquake hazards in southern California, Nov. 12-13, 1985: U.S. Geological Survey Open-file Report 86-401, p.74-83.

Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs, and thermal wells: California Division of Mines and Geology Data Map No. 1.

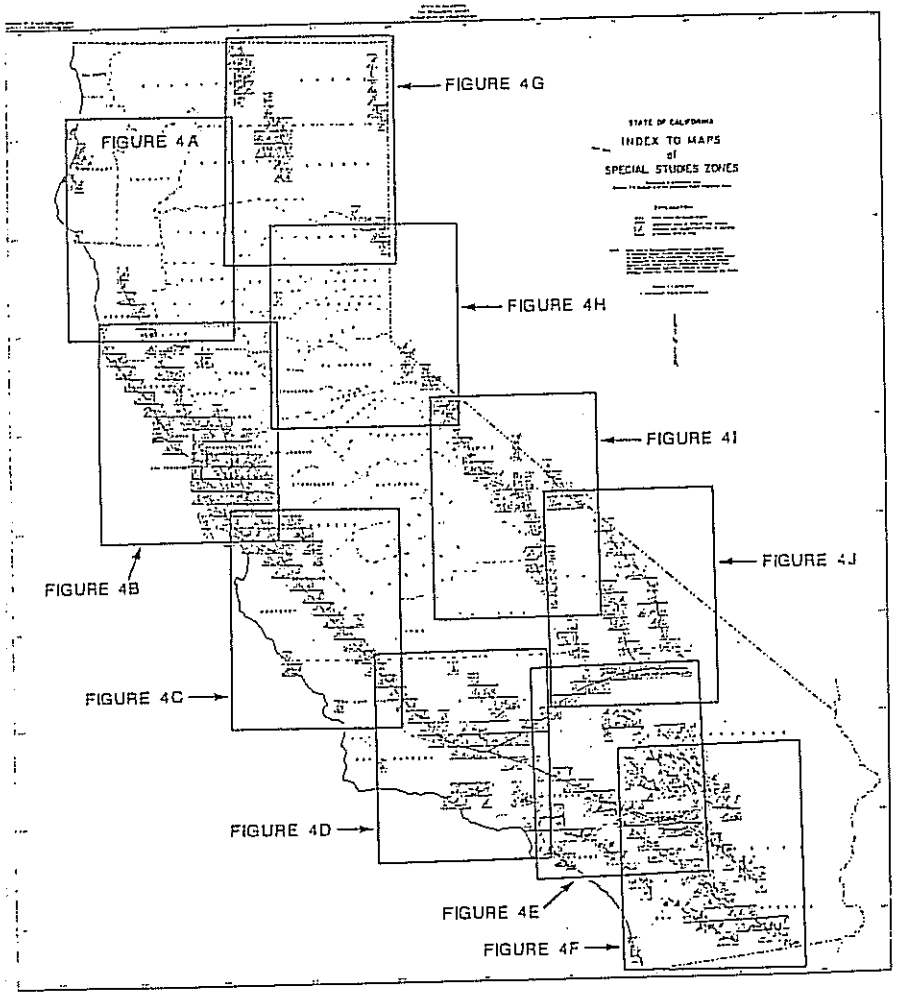
Jennings, C.W., 1985, An explanatory text to accompany the 1:750,000 scale Fault and Geologic Maps of California: Division of Mines and Geology Bulletin 201, 197 p., 2 plates.

Table 5. Known surface faulting associated with earthquakes in California, 1975-1991.[1] All faults except 10 and 12 are zoned. See Bonilla (1970), Jennings (1985), and Grantz and Barlow (1977) for earlier faulting events

Fault (County where located)	Year of rupture	Magnitude (Richter) of associated earthquake	Surface rupture[2] Maximum displacement (cm)	Total length[2] (km)	Main Sense of displacement[3]	Comments
1. Brawley (Imperial)	1975	4.7	20	10.4	N	Also ruptured in 1940 and 1979, fault creep in part.
2. Galway Lake (Kern)	1975	5.3	1.5	6.0	RL	Fault previously unknown.
3. Cleveland Hill (Butte)	1975	5.7	5	5.7	N	Fault not previously known to be Holocene-active.
4. Stephens Pass (Siskiyou)	1976	4.3	30	2+	N	Fault previously unknown.
5. Homestead Valley (San Bernardino)	1979	5.2	8	3.3	RL	Also, minor rupture on Johnson Valley fault.
6. Calaveras (San Benito, Santa Clara)	1979	5.9	1	39(?)	RL	Minor, discontinuous rupture mostly in creep-active segment.
7. Imperial	1979	6.6	55	30	RL	Creep triggered on San Andreas and Superstition Hills faults; also ruptured in 1940. Rico fault not previously known.
Brawley (Imperial)			15	13	N	
Rico			10	1	N	
8. Greenville (Alameda)	1980	5.6	3	6.5	RL	Minor left-lateral slip also occurred on Las Positas fault
9. Hilton Creek-Mammoth Lakes (Mono)	1980	6.0-6.5	30	20	N	Rupture on many minor faults, may relate to volcanic activity.
10. "Lompoc quarry" (Santa Barbara)	1981	2.5	25	0.6	R	Flexural slip on flank of syncline triggered by quarrying; do not plan to zone.
11. Little Lake (Kern)	1982	5.2	8+	10	RL/N	Fracture zones on monoclines.
12. "Coalinga Nose" (Fresno)	1983	6.7	5	.005	R	Secondary fault(?) associated with 40cm of anticlinal uplift; too minor to zone.
13. Nunez (Fresno)	1983	5.2-5.9	60	3.3	R	Aftershocks associated with (12) above.
14. Calaveras (Santa Clara)	1984	6.1	20(?)	1.2	RL	Questionable faulting; aftership in 15-km long creep-zone to south.
15. Banning (Riverside)	1986	5.9	17	9	RL	Minor rupture also on Garnet Hill and Desert Hot Springs(?) faults.
16. White Mountains (Mono)	1986	6.2	11	13	RL/N	Also extensional cracks on faults in Volcanic Tableland in 40km x 12km area.
17. Elmore Ranch (Imperial)	1987	6.2	12	12	LL	Also lesser left-lateral rupture on nearby faults.
18. Superstition Hills (Imperial)	1987	6.6	80	28	RL	Much of rupture occurred as aftership; associated with event 17.
19. San Andreas (Santa Cruz)	1989	7.1	2.5	17	RL	Surface rupture possibly triggered slip; slip also triggered on nearby Calaveras and San Andreas faults outside of aftershock zone. Secondary faulting may have occurred with ridgetop spreading fissures with as much as 79 cm net slip—mostly extensional with vertical and LL components.

[1] Tectonic (seismic) fault creep has been reported since 1975 along various segments of the San Andreas, Hayward, Calaveras, Concord, Imperial, Superstition Hills, Maacama, Garlock, and other faults. Man induced fault-creep has been reported on 12 other faults due to withdrawal of groundwater or oilfield fluids.

[2] Includes some aftership. [3] Rupture length measured from distal ends of rupture, which often is discontinuous



Data used to delineate Special Studies Zones are subject to continual review. Future revisions and additions may be made by the State Geologist. Future supplements to this report should be consulted for information on the availability of Special Studies Zones maps.
These Special Studies Zones maps are delineated in compliance with Chapter 7.5, Division 2 of the California Public Resources Code.

Figure 4. Index to maps of Special Studies Zones.

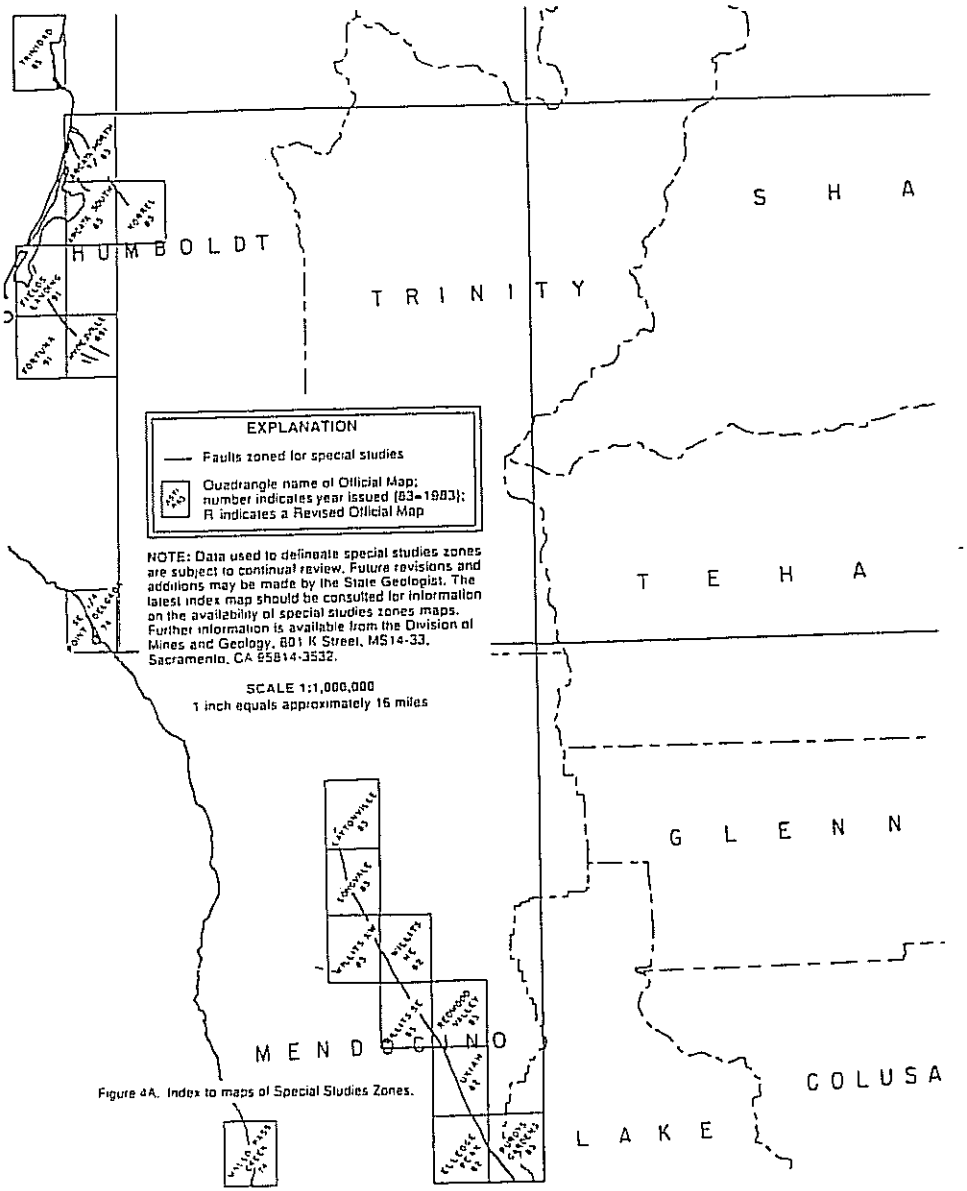


Figure 4A. Index to maps of Special Studies Zones.

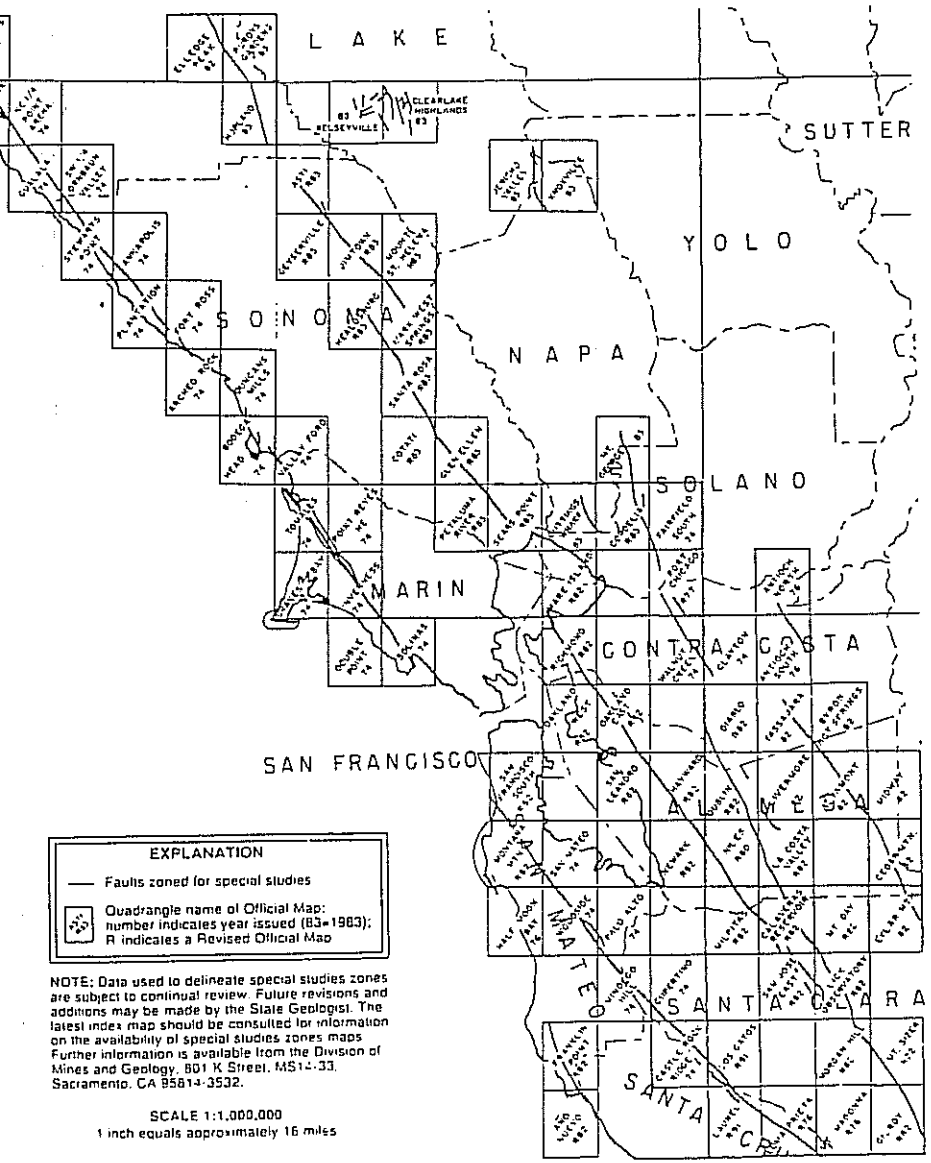


Figure 4B. Index to maps of Special Studies Zones.

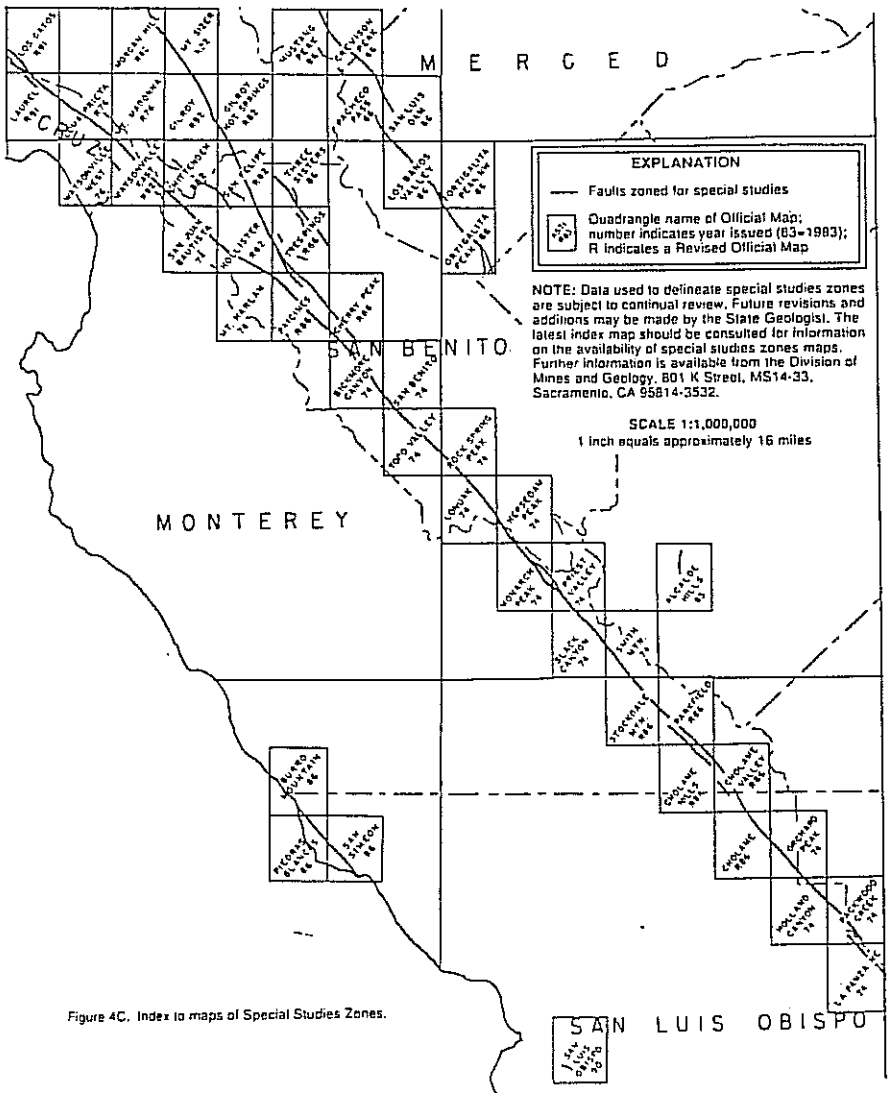


Figure 4C. Index to maps of Special Studies Zones.

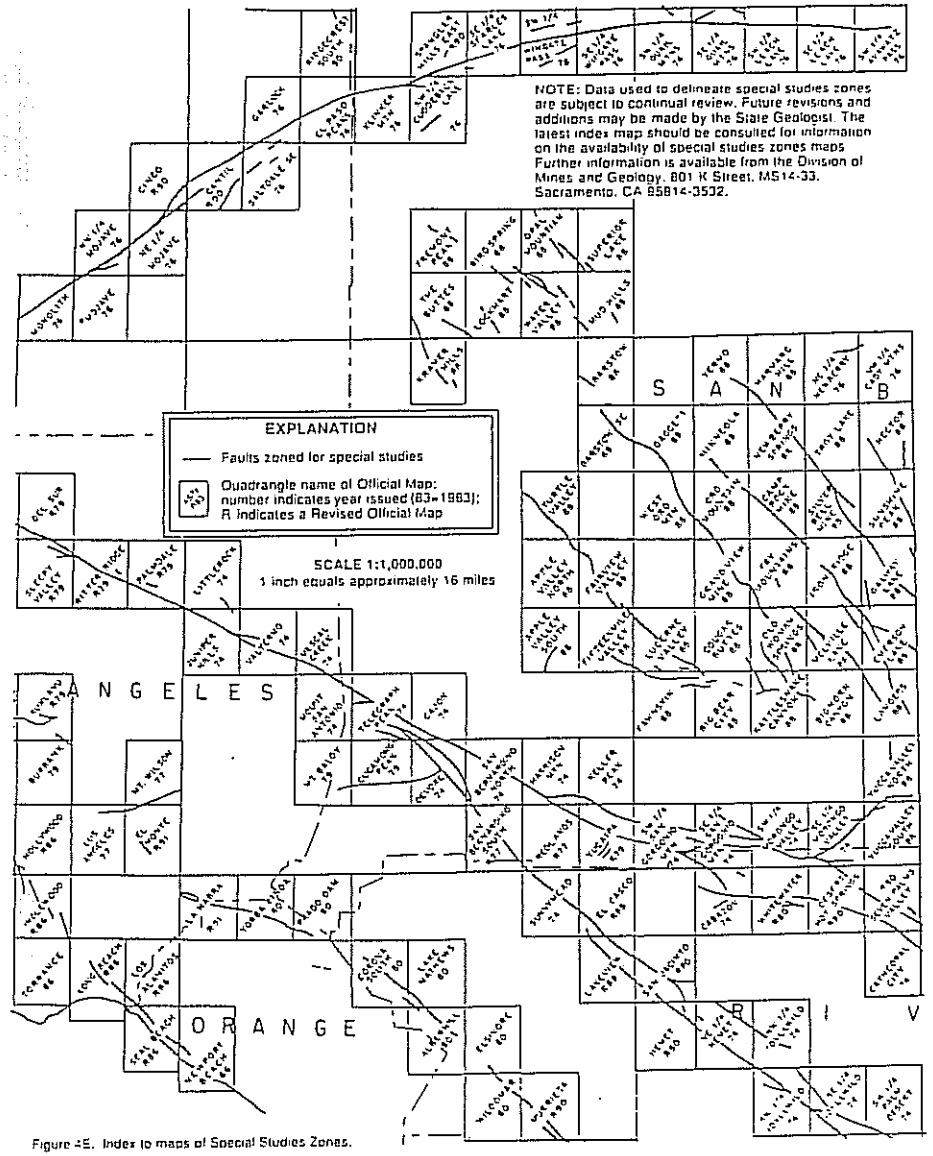


Figure 4E. Index to maps of Special Studies Zones.

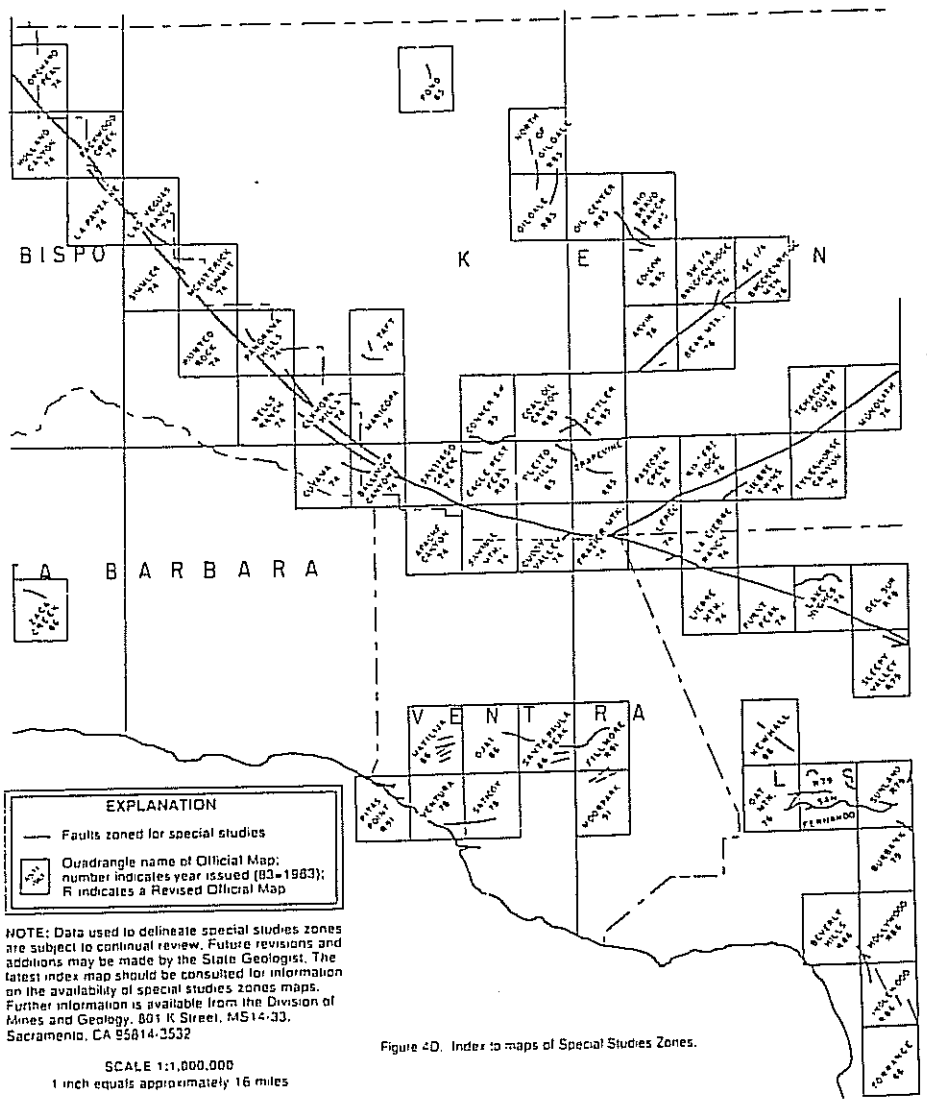


Figure 4D. Index to maps of Special Studies Zones.

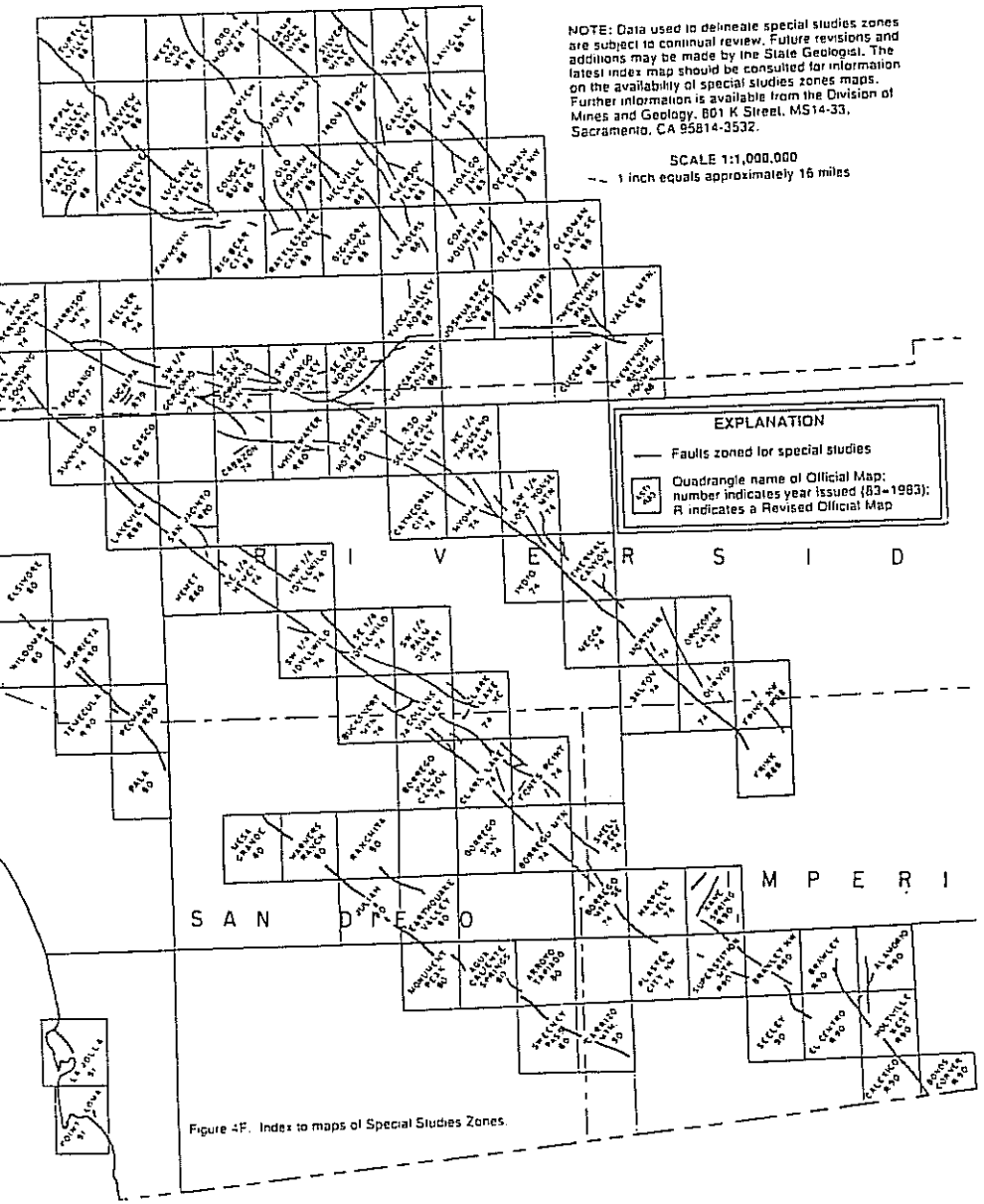


Figure 4F. Index to maps of Special Studies Zones.

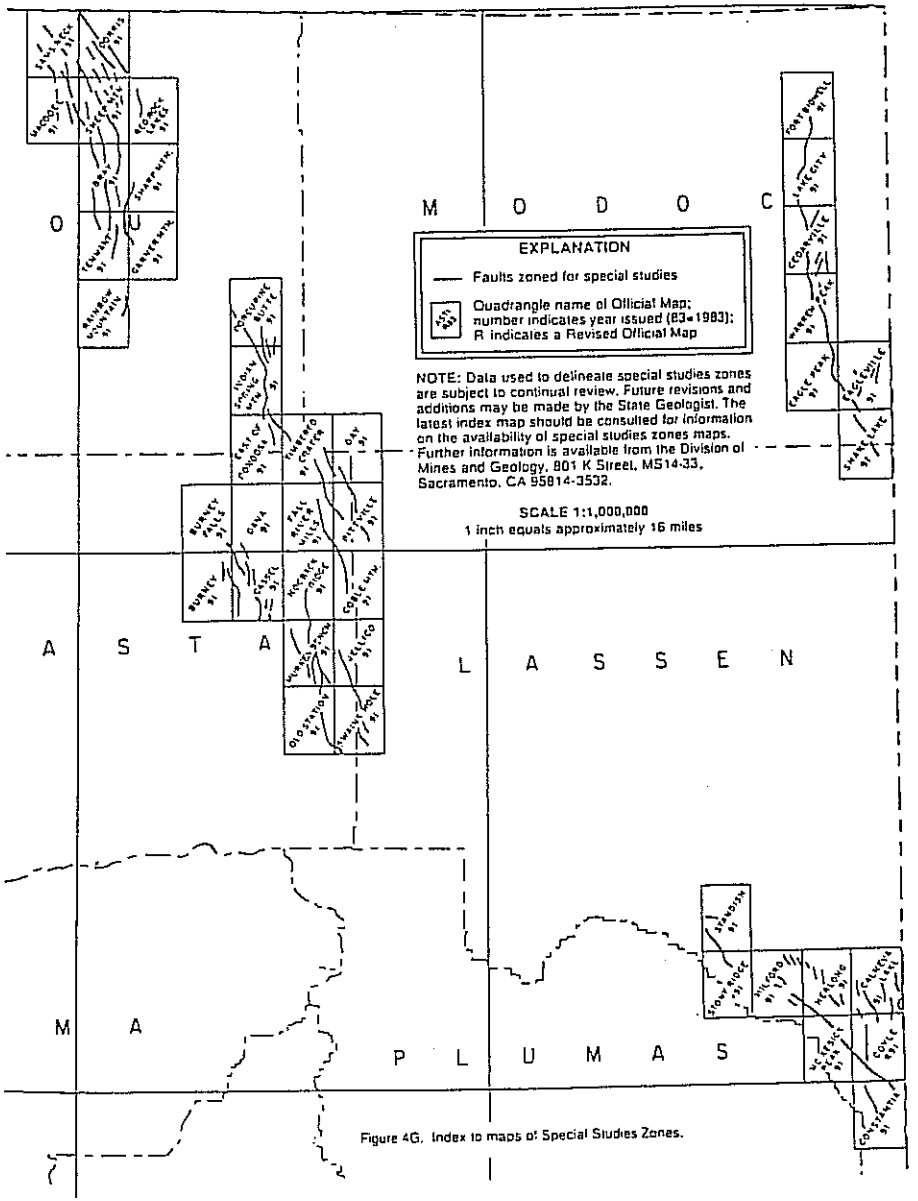


Figure 4G. Index to maps of Special Studies Zones.

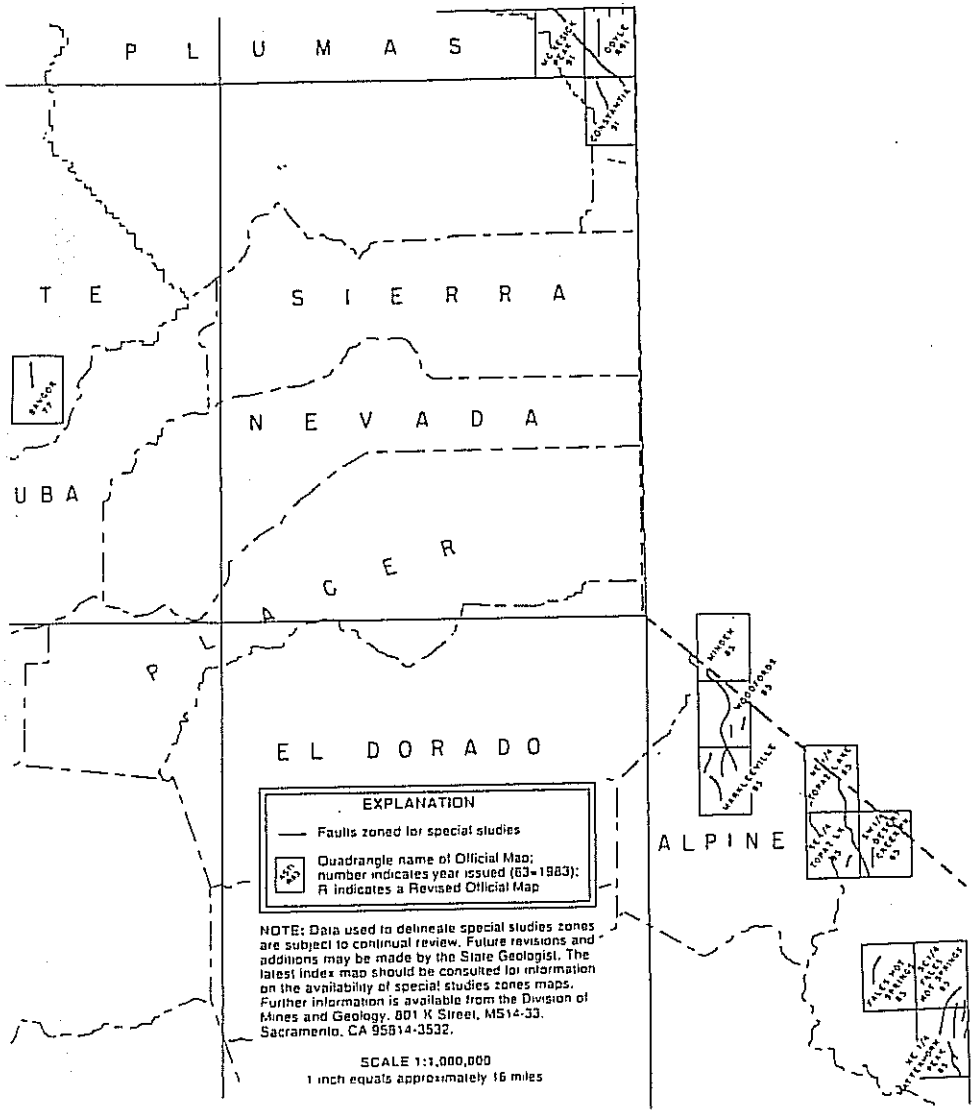


Figure 4H. Index to maps of Special Studies Zones.

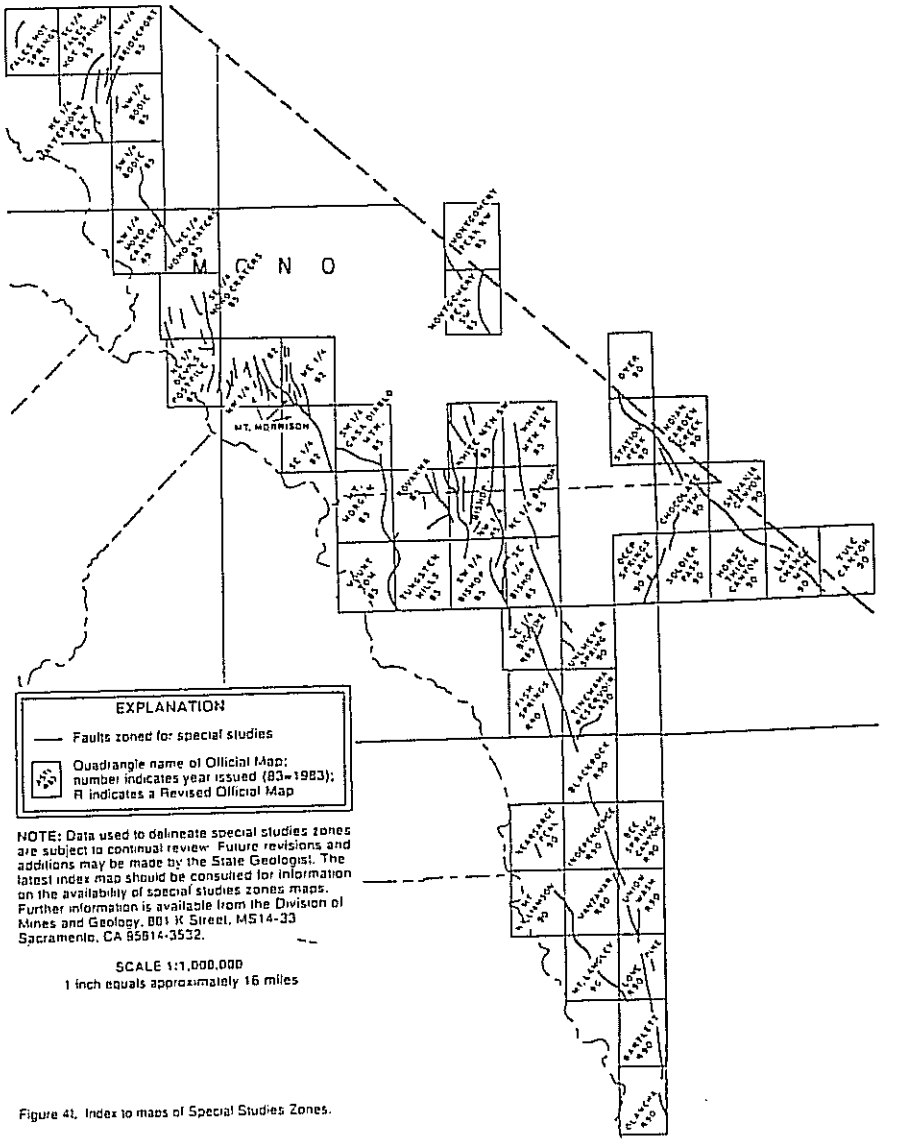


Figure 4I. Index to maps of Special Studies Zones.

APPENDICES

Data are presented herein to provide city and county officials, property owners, developers, geologists, and others with specific information they may need to effectuate the Act.

Because the Act must be implemented at the local government level, it is imperative that the local entities understand its various complex aspects.

Appendix A

ALQUIST-PRIOLO SPECIAL STUDIES ZONES ACT OF 1972

Excerpts from California Public Resources Code

DIVISION 1. ADMINISTRATION
CHAPTER 2. DEPARTMENT OFCONSERVATION
Article 3. State Mining and Geology Board and the Division of Mines and Geology

660. There is in the department a State Mining and Geology Board consisting of nine members appointed by the Governor.

673. The board shall also serve as a policy and appeals board for the purposes of Chapter 7.5 (commencing with Section 2621) of Division 2.

DIVISION 2. GEOLOGY, MINES AND MINING
CHAPTER 7.5. SPECIAL STUDIES ZONES

2621. This chapter shall be known and may be cited as the Alquist-Priolo Special Studies Zones Act.

2621.5. It is the purpose of this chapter to provide for the adoption and administration of zoning laws, ordinances, rules, and regulations by cities and counties in implementation of the general plan that is in effect in any city or county. The Legislature declares that the provisions of this chapter are intended to provide policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibility to prohibit the location of developments and structures for human occupancy across the trace of active faults as defined by this board.

This chapter is applicable to any project, as defined in Section 2621.6, upon issuance of the official special studies zones maps to affected local jurisdictions, but does not apply to any development or structure in existence prior to May 4, 1975. The implementation of this chapter shall be pursuant to policies and criteria established and adopted by the State Mining and Geology Board.

2621.6. (a) As used in this chapter, "project" means:

(1) Any subdivision of land which is subject to the Subdivision Map Act, Division 2 (commencing with Section 66410) of Title 7 of the Government Code, and which contemplates the eventual construction of structures for human occupancy.

(2) Structures for human occupancy, with the exception of:

(A) Single-family wood frame dwellings to be built on parcels of land for which geologic reports have been approved pursuant to the provisions of paragraph (1) of this subdivision.

(B) A single-family wood frame dwelling not exceeding two stories when such dwelling is not part of a development of four or more dwellings.

(b) For the purposes of this chapter, a mobile home, whose body width exceeds eight feet shall be considered to be a single-family wood frame dwelling not exceeding two stories.

2621.7. This chapter, except Section 2621.9, shall not apply to the conversion of an existing apartment complex into a condominium. This chapter shall apply to projects which are located within a delineated special studies zone.

2621.8. This chapter shall not apply to alterations or additions to any structure within a special studies zone the value of which does not exceed 50 percent of the value of the structure.

2621.9. (a) A person who is acting as an agent for a seller of real property which is located within a delineated special studies zone, or the seller if he or she is acting without an agent, shall disclose to any prospective purchaser the fact that the property is located within a delineated special studies zone, provided the maps prepared pursuant to this chapter, or the information contained in the maps, are reasonably available.

(b) For the purposes of this section, in all transactions subject to Section 1102 of the Civil Code, disclosure shall be provided by one of the following means:

(1) The real estate transfer disclosure statement set out in Section 1102.6 of the Civil Code.

(2) The local option real estate transfer disclosure statement set out in subdivision (a) of Section 1102.6 of the Civil Code.

(3) The real estate contract and receipt for deposit.

(c) For the purposes of this section:

(1) "Reasonably available" means that for any county that includes areas covered by a delineated special studies map, a notice has been posted at the offices of the county recorder, county assessor, and county planning commission that identifies the location of the map and the effective date of the notice, which shall not exceed 10 days beyond the date the county received the map from the State Geologist.

(2) "Real estate contract and receipt for deposit" means the document containing the offer to sell or purchase real property, that when accepted becomes a binding contract, and that serves as an acknowledgment of a deposit if one is received.

(d) For purposes of the disclosures required by this section, the following persons shall not be deemed agents of the transferor:

(1) One (1) copy of all such geologic reports shall be filed with the State Geologist by the lead agency within thirty (30) days following the report's acceptance. The State Geologist shall place such reports on open file.

NOTE: Authority cited: Section 2621.5, Public Resources Code. Reference: Sections 2621.5, 2622, 2623, and 2625(e), Public Resources Code.

ADOPTED NOVEMBER 23, 1973; REVISED JULY 1, 1974, AND JUNE 26, 1975.
CODIFIED IN CALIFORNIA ADMINISTRATIVE CODE JANUARY 31, 1979;
REVISED OCTOBER 18, 1984 (EFFECTIVE 30 DAYS THEREAFTER).

Appendix C

GUIDELINES FOR EVALUATING THE HAZARD OF SURFACE FAULT RUPTURE

(These guidelines are not part of the Policies and Criteria of the State Mining and Geology Board. The guidelines are slightly revised and reprinted from DMG Note 49.)

These guidelines are to assist geologists who investigate faults relative to the hazard of primary surface rupture. Subsequent to the passage of the Alquist-Priolo Special Studies Zones Act (1972), it became apparent that many fault investigations conducted in California were incomplete or otherwise inadequate for the purpose of evaluating the potential of surface fault rupture. It was further apparent that statewide standards for investigating faults would be beneficial.

The investigation of sites for the possible hazard of surface fault rupture is a deceptively difficult geologic task. Many active faults are complex, consisting of multiple breaks. Yet the evidence for identifying active faults traces is generally subtle or obscure and the distinction between recently active and long-inactive faults may be difficult to make. Once a structure is sited astride an active fault, the resulting fault-rupture hazard cannot be mitigated unless the structure is relocated, whereas when a structure is placed on a landslide, the hazard from landsliding often can be mitigated. Further, it is impractical from an economic, engineering, and architectural point of view to design a structure to withstand serious damage under the stress of surface fault rupture. Thus, the evaluation of a site for the hazard of surface fault rupture is a difficult and delicate procedure.

Because of the complexity of evaluating surface and near surface faults and because of the infinite variety of site conditions, no single investigative method will be the best, or even useful, at all sites. Nonetheless, certain investigative methods are more helpful than others in locating faults and evaluating the recency of activity.

The evaluation of a given site with regard to the potential hazard of surface fault rupture is based extensively on the concepts of *recency* and *recurrence* of faulting along existing faults. In a general way, the more recent the faulting the greater the probability for future faulting (Allen, 1975). Stated another way, faults of known historic activity during the last 200 years, as a class, have a greater probability for future activity than faults classified as Holocene age (last 11,000 years) and a much greater probability of future activity than faults classified as Quaternary age (last 1.6 million years). However, it should be kept in mind that certain faults have recurrent activity measured in tens or hundreds of years whereas other faults may be inactive for thousands of years before being reactivated. Other faults may be characterized by creep-type rupture. The magnitude, sense, and nature of fault rupture also vary for different faults or even along different segments of the same fault. Even so, future faulting generally is expected to recur along pre-existing faults (Bonilla, 1970, p. 68). The development of a new fault or reactivation of a long-inactive fault is relatively uncommon and generally need not be a concern in site development.

As a practical matter, fault investigations should be directed at the problem of locating existing faults and then attempting to evaluate the recency of their activity. It is pointed out that data are obtained both from the site and outside the site area. The most direct method of evaluating recency is to observe (in a trench or road cut) the youngest geologic unit faulted and the oldest unit that is not faulted. Recently active faults may also be identified by direct observation of young, fault-related geomorphic (i.e. topographic) features in the field, on aerial photographs, or on remotely obtained images. Other indirect and more interpretive methods are identified in the outline below. Some of these methods are discussed in Slemmons (1977), Bonilla (1982), Wallace (1977), Taylor and Cluff (1973), Sherard and others (1974), Hatheway and Leighton (1979), and the National Research Council (1986), but no comprehensive manual on the subject of fault investigation and evaluation exists at this time. Many other useful references exist and are listed in the bibliographies of the references cited here.

The following annotated outline provides guidelines for a comprehensive fault investigation that may be applied to any project site, large or small. Fault investigations may be conducted in conjunction with other geological and geotechnical investigations (see DMG Note 42 and 44). Although not all investigative techniques need to be or can be employed in evaluating a given site, the outline provides a checklist for preparing complete and well-documented reports. Since most reports on fault investigations are filed with and reviewed by local and state government agencies, it is necessary that the reports be documented adequately and written carefully to facilitate that review. The impor-

tance of the review process is emphasized here, because it is the reviewer who must evaluate the adequacy of reports, interpret or set standards where they are unclear, and advise the governing agency as to their acceptability (Hart and Williams, 1978) (see Appendix D).

The scope of the investigation is dependent not only on complexity and economics of a project, but also on the level of risk acceptable for the proposed structure or development (Joint Committee on Seismic Safety, 1974, p.91). Obviously, a more detailed investigation should be made for hospitals, high-rise buildings, and other critical or sensitive structures than for low-density structures such as wood-frame dwellings that are comparatively safe. The conclusions drawn from any given set of data, however, must be consistent and unbiased. Recommendations must be clearly separated from conclusions, since recommendations are not totally dependent on geologic factors. The final decision as to whether, or how, a given project should be developed lies in the hands of the owner and the governing body that must review and approve the project.

Suggested Outline for Geologic Reports on Faults

The following subjects should be addressed, or at least considered, in any geologic report on faults. Some of the investigative methods listed below should be carried out well beyond the site being investigated. However, it is not expected that all of the methods identified would be used in a single investigation.

I. Text.
- A. Purpose and scope of investigation.
- B. Geologic setting.
- C. Site description and conditions. Include information on geologic units, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and the interpretation of data.
- D. Methods of investigation.
  1. Review of published and unpublished literature and records concerning geologic units, faults, groundwater barriers, and other factors.
  2. Stereoscopic interpretation of aerial photographs and other remotely sensed images to detect fault-related topography, vegetation and soil contrasts, and other lineaments of possible fault origin.
  3. Surface observations, including mapping of geologic and soil units, geologic structures, geomorphic features, springs, deformation of manmade structures due to fault creep, both on and beyond the site.
  4. Subsurface investigations.
     a. Trenching and other extensive excavations to permit detailed and direct observation of continuously exposed geologic units and features that must be carefully logged (see Taylor and Cluff, 1973).
     b. Borings and test pits to permit collection of data on geologic units and ground water at specific locations. Data points must be sufficient in number and spaced adequately to permit valid correlations and interpretations.
  5. Geophysical investigations. These are indirect methods that require a knowledge of specific geologic conditions for reliable interpretations. They should seldom, if ever, be employed alone without knowledge of the geology. Geophysical methods alone never prove the absence of a fault nor do they identify the recency of activity. The types of equipment and techniques used should be described.
     a. Seismic refraction.
     b. Magnetic intensity.
     c. Other (e.g., electrical resistivity, seismic reflection, ground-penetrating radar, gravity).
  6. Other methods should be included when special conditions permit, or requirements for critical structures demand, a more intensive investigation.
     a. Aerial reconnaissance overflights.
     b. Geodetic and strain measurements, microseismicity monitoring, or other monitoring techniques.
     c. Radiometric analysis (14C, K-Ar), stratigraphic correlation (fossils, mineralogy), soil profile development, paleomagnetism (magnetostratigraphy), or other age-dating techniques to identify the age of faulted or unfaulted units or surfaces.
- E. Conclusions.
  1. Location and existence (or absence) of hazardous faults on or adjacent to the site.
  2. Type of faults and nature of anticipated offset, including sense and magnitude of displacement if possible.
  3. Probability of or relative potential for future surface displacement. The likelihood of future ground rupture seldom can be stated mathematically, but may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific fault segments.
  4. Degree of confidence in and limitations of data and conclusions.
- F. Recommendations.
  1. Setback distances from hazardous faults, if appropriate. State and local law may dictate minimum standards (see Appendix B).
  2. Need for additional studies.
  3. Risk evaluation relative to the proposed development—opinions are acceptable. But remember that the ultimate decision as to whether the risk is acceptable lies with the governing body.

II. References.
- A. Literature and records cited or reviewed; citations should be complete.
- B. Aerial photographs or images interpreted—list type, date, scale, source, and index numbers.
- C. Other sources of information, including well records, personal communications, and other data sources.

III. Illustrations—these are essential to the understanding of the report and to reduce the length of text.

- A. Location map—identify site locality, significant faults, geographic features, regional geology, seismic epicenters, and other pertinent data; 1:24,000 scale is recommended.
- B. Site development map—show site boundaries, existing and proposed structures, graded areas, streets, exploratory trenches, borings, geophysical traverses, and other data; recommended scale is 1 inch equals 200 feet, or larger.
- C. Geologic map—shows distribution of geologic units (if more than one), faults and other structures, geomorphic features, aerial photo lineaments, and springs; on topographic map 1:24,000 scale or larger; can be combined with III (A) or III (B).
- D. Geologic cross-sections, if needed to provide 3-dimensional picture.
- E. Logs of exploratory trenches, and borings—show details of observed features and conditions; should not be generalized or diagrammatic. Trench logs should show topographic profile and geologic structure at a 1:1 horizontal to vertical scale.
- F. Geophysical data and geologic interpretations.

IV. Appendix: Supporting data not included above (e.g., water well data).

V. Authentication: Signature and registration number of investigating geologist.

REFERENCES

Allen, C.R., 1975, Geologic criteria for evaluating seismicity: Geological Society of America Bulletin, v. 86, p. 1041-1057.

Bonilla, M.G., 1970, Surface faulting and related effects in Wiegel, R.L., editor, Earthquake Engineering, Prentice-Hall, Inc., Englewood Cliffs, N.J., p. 47-74, (Contains an extensive bibliography on surface faulting, fault patterns and types, width of fault zones, and creep).

Bonilla, M.G., 1982, Evaluation of potential surface faulting and other tectonic deformation: U.S. Geological Survey Open-File Report 82-732, 58 p.

California Department of Conservation, Division of Mines and Geology, 1986 (revised), Guidelines to geologic and seismic reports: DMG NOTE 42, 2 p.

California Department of Conservation, Division of Mines and Geology, 1986 (revised), Recommended guidelines for preparing engineering geologic reports: DMG NOTE 44, 2 p.

Hart, E.W., 1992 (revised), Fault-rupture hazard zones in California: California Department of Conservation, Division of Mines and Geology Special Publication 42, 32 p. (Revised periodically; information on state law and zoning program for regulating development near hazardous faults).

Hart, E.W., and Williams, J.W., 1978, Geologic review process: CALIFORNIA GEOLOGY, v. 31, no. 10, p. 235-236.

Hatheway, A.W., and Leighton, F.B., 1979, Trenching as an exploratory tool in Hatheway, A.W. and McClure, C.R., Jr., editors, Geology in the siting of nuclear power plants: Geological Society of America Reviews in Engineering Geology, v. IV, p. 169-195.

Joint Committee on Seismic Safety, California Legislature, 1974, Meeting the earthquake challenge: California Division of Mines and Geology, Special Publication 45, 223 p.

National Research Council, 1986, Studies in geophysics—active tectonics: National Academy Press, Washington, D.C., 266 p. (contains several articles evaluating active faulting).

Sherard, J.L., Cluff, L.S., and Allen, C.R., 1974, Potentially active faults in dam foundations: Geotechnique, Institute of Civil Engineers, London, v. 24, no. 3, p. 367-428.

Slemmons, D.B., 1977, State-of-the-art for assessing earthquake hazards in the United States: Report 6, faults and earthquake magnitude: U.S. Army Engineer Waterways Experiment Station Miscellaneous Paper S-73-1, 129 p. with 37 p. appendix, (Summarizes fault evaluation techniques; extensive bibliography).

Taylor, C.L., and Cluff, L.S., 1973, Fault activity and its significance assessed by exploratory excavation in Proceedings of the Conference on Tectonic Problems of the San Andreas Fault System: Stanford University Publication, Geological Sciences, v. XIII, September 1973, p. 239-247.

Wallace, R.E., 1977, Profiles and ages of young fault scarps, north-central Nevada: Geological Society of America Bulletin, v. 88, p. 1267-1281.

Appendix D

GENERAL GUIDELINES FOR REVIEWING GEOLOGIC REPORTS

(Note: These general guidelines are slightly modified from an article titled "Geologic Review Process" by Hart and Williams (1978) and published in California Geology.)

The purpose of this article is to provide general guidance for those geologists who review geologic reports of consultants on behalf of agencies having approval authority over specific developments.

The geologic review is a critical part of the evaluation process of a proposed development. It is the responsibility of the reviewer to assure that each geologic investigation, and the resulting report, adequately addresses the geologic conditions that exist at a given site. In addition to geologic reports for tentative tracts and site development, a reviewer evaluates Environmental Impact Reports, Seismic Safety and Public Safety Elements of General Plans, as-graded geologic reports, and final, as-built geologic maps and reports. In a sense, the geologic reviewer enforces existing laws and regulations to assure that significant geologic factors (hazards, mineral and water resources, geologic processes) are properly considered, and potential problems are mitigated prior to project development. Generally, the reviewer acts on behalf of a governing agency—city, county, regional, state, federal—not only to protect the government's interest but also to protect the interest of the community at large. Examples of the review process in a state agency are described by Stewart and others (1976).

The need to review geologic reports is emphasized by the fact that geologic hazards and factors are extremely difficult and complex to evaluate. No individual can be totally competent to employ all of the techniques and tools available to the geologic profession. An experienced reviewer, familiar with local geologic conditions, often can identify deficiencies of an investigation merely by closely examining a report. It is important to note that most consultants see themselves, in varying degrees, as proponents for their clients (that is, the developers). By providing a different perspective, the reviewer is able to assist the investigator and to protect the interests of the agency and the public.

THE REVIEWER

Qualifications

In order to make appropriate evaluations of geologic reports, the reviewer must be an experienced geologist familiar with the investigative methods employed and the techniques available to the profession. Even so, the reviewer must know his or her limitations, and at times ask for the opinions of others more qualified in specialty fields (for example, geophysics, mineral exploitation and economics, ground water, foundation and seismic engineering, seismology). In California, the reviewer must be licensed by the State Board of Registration for Geologists and Geophysicists in order to practice. The Board also certifies engineering geologists (Wolfe, 1975). Local and regional agencies may have additional requirements.

The reviewer must have the courage of his or her convictions and should not approve reports if an inadequate investigation has been conducted. Like any review process, there is a certain "give-and-take" involved between the reviewer and investigator. If there is clear evidence of incompetence or misrepresentation in a report, this fact should be reported to the reviewing agency or licensing board. Clearly, the reviewer needs to have the support of his or her agency in order to carry out these duties.

The reviewer should bear in mind that some geologic investigators are not accomplished writers, and almost all are working with restricted budgets. Thus, while a reviewer should demand that certain standards be met, he or she should avoid running rough-shod over the investigator. The mark of a good reviewer is the ability to sort out the important from the insignificant and to make constructive comments and recommendations.

A reviewer may be employed full time by the reviewing agency or part-time as a consultant. Also, some reviewing agencies (such as a city) contract with another agency (such as a county) to perform a geologic review on a contract basis. The best reviews generally are performed by experienced reviewers. Thus, the use of multiple, part-time reviewers by a given agency tends to prevent development of high-quality and efficient reviews. One of the reasons for this is that different reviewers have different standards, which results in inconsistent treatment of development projects. The primary purpose of the review procedure should always be kept in mind—namely, to assure the adequacy of geologic investigations.

Other Review Functions

Aside from his or her duties as a reviewer, the reviewing geologist also must interpret the geologic data reported to other agency personnel who regulate development (for example, planners, engineers, inspectors). Also, the reviewing geologist sometimes is called upon to make investigations for his or her own agency. This is common where a city or county employs only one geologist. In fact, some reviewers routinely divide their activities between reviewing the reports of others and performing one or several other tasks for the employing agency (such as advising other agency staff and boards on geologic matters; making public presentations) (see Leighton, 1975).

Conflict of Interest

In cases where a reviewing geologist also must perform geological investigations, he or she should never be placed in the position of reviewing his or her own report, for that is no review at all. A more significant conflict commonly exists in a jurisdiction where the geologic review is performed by a consulting geologist who also is practicing commercially (performing geological investigations) within the same jurisdictional area. Such situations should be avoided, if at all possible.

GEOLOGIC REVIEW

The Report

The critical item in evaluating specific site investigations for adequacy is the resulting geologic report. A report that is incomplete or poorly written cannot be evaluated and should not be approved. As an expediency, some reviewers do accept inadequate or incomplete reports because of their personal knowledge of the site. However, unless good reasons can be provided in writing, it is recommended that a report not be accepted until it presents the pertinent facts correctly and completely.

The conclusions presented in the report regarding the geologic hazards or problems must be separate from and supported by the investigative data. An indication regarding the level of confidence in the conclusions should be provided. Recommendations based on the conclusions should be made to mitigate those geology-related problems which would have an impact on the proposed development. Recommendations also should be made concerning the need for additional geologic investigations.

Report Guidelines and Standards

An investigating geologist may save a great deal of time (and the client's money), and possibly misunderstandings, if he or she contacts the reviewing geologist at the initiation of the investigation. The reviewer should not only be familiar with the local geology and sources of information, he or she also should be able to provide specific guidelines for investigative reports and procedures to be followed. Guidelines and check-lists for geologic or geotechnical reports have been prepared by a number of reviewing agencies and are available to assist the reviewer in his or her evaluation of reports (for example, CDMG Notes 42, 44, 46, 48, and 49). A reviewer also may wish to prepare his or her own guidelines or check-lists for specific types of reviews.

When a reviewer has questions about a specific investigation, these questions must be clearly communicated to the investigator for response. After the reviewer is satisfied that the investigation and resulting conclusions are adequate, this should be clearly indicated in writing to the reviewing agency so that the proposed development application may be processed promptly.

The biggest problem the reviewer faces is the identification of standards. These questions must be asked: "Are the methods of investigation appropriate for a given site?" and "Was the investigation conducted according to the existing state-of-the-art standards?". Answers to these questions lie in the report being reviewed. For example, a reported landslide should be portrayed on a geologic map of the site. The conclusion that a hazard is absent, where previously reported or suspected, should be documented by stating which investigative steps were taken and precisely what was seen. The reviewer must evaluate each investigative step according to existing standards. Often the reviewer is forced to clarify the standards, or even introduce new ones, for a specific purpose.

Depth (Intensity) of Review

The depth of the review is determined primarily by the need to assure that an investigation and resulting conclusions are adequate, but too often the depth of review is controlled by the time and funds available. A report on a subdivision may be simply evaluated against a check-list to make certain it is complete and well-documented. Additionally, the reviewer may wish to check cited references or other sources of data, such as aerial photos and unpublished records.

Reviewers also may inspect the development site and examine excavations and borehole samples. Ideally, a field visit may not be necessary if the report is complete and well-documented. However, field inspections are of value, and often are necessary, to determine if field data are reported accurately and completely. Also, if the reviewer is not familiar with the general site conditions, a brief field visit provides perspective and a visual check on the reported conditions. Whether or not on-site reviews are made, it is important to note that the geologic review process is not intended to replace routine grading inspections that may be required by the reviewing agency to assure performance according to an approved development plan.

Appeals

In cases where the reviewer is not able to approve a geologic report, or can accept it only on a conditional basis, the developer may wish to appeal the review decision or recommendations. However, every effort should be made to resolve problems informally prior to making a formal appeal. An appeal may be handled through existing legal procedures (such as a hearing by a County Board of Supervisors, or a City Council) or by a specially appointed Review and Appeals Board. Adequate notice should be given to allow time for both sides to prepare their cases. After an appropriate hearing, the appeals decision must be made promptly and in writing as part of the permanent record.

REFERENCES

CDMG Notes of California Division of Mines and Geology:

Note 42 -- Guidelines to geologic/seismic reports

Note 44 -- Guidelines for preparing engineering geologic reports

Note 46 -- Guidelines for geologic/seismic considerations in environmental impact reports

Note 48 -- Checklists for the review of geologic/seismic reports

Note 49 -- Guidelines for evaluating the hazard of surface fault rupture

Hart, E.W., and Williams, J.W., 1978, Geologic review process: California Geology, v.31, p.235-236.

Leighton, F.B., 1975, Role of geotechnical consultants and reviewers for the County of San Mateo: California Geology, v.28, p. 178-181.

Stewart, R.M., Hart, E.W., and Arimoto, P.Y., 1976, The review process and the adequacy of geologic reports: Bulletin of the International Association of Engineering Geology, no. 14, p. 83-88. (Reprinted in California Geology, October 1977, p. 224-229.)

Wolfe, J., 1975, More on registration: California Geology, v. 28, p. 155-156.

Appendix E

PRODUCTS OF THE FAULT EVALUATION AND ZONING PROGRAM

(Modified from California Geology, March 1991)

Since the passage of the APSSZ Act, staff of the Fault Evaluation and Zoning Project have published numerous reports on the Act and the surface fault rupture hazard. These, as well as unpublished files of geologic information, are listed below. A notation next to each entry is the publication number: CG– California Geology, N– DMG note, SP– Special Publication, SR– Special Report, o.p. – report is out of print. " an outside publication not available from DMG. Numbers alone (e.g., 89-16) are Open File Report numbers. The publications are listed chronologically by groups below.

AVAILABILITY

Reports listed here are available for reference at offices of the Division of Mines and Geology in Sacramento, San Francisco, and Los Angeles. Some reports are also available for reference at county and university libraries. Copies of available DMG reports may be purchased by mail order or over-the-counter from any office (see exceptions below):

OFFICES OF THE
DIVISION OF MINES AND GEOLOGY:

GEOLOGIC INFORMATION AND PUBLICATIONS
801 K Street
MS 14-33
Sacramento, CA 95814-3532
(916) 445-5716

BAY AREA REGIONAL OFFICE
1145 Market Street, 3rd Floor
San Francisco, CA 94103-1513
(415) 557-1500

SOUTHERN CALIFORNIA REGIONAL OFFICE
107 South Broadway, Room 1065
Los Angeles, CA 90012-4402
(213) 620-3560

IMPLEMENTATION OF THE ALQUIST-PRIOLO ACT

Official Maps of Special Studies Zones, by California Division of Mines and Geology, 1974-1991. As of November 1, 1992, 634 new and revised Official APSSZ maps have been issued. Special Publication 42 provides an index to these maps and describes how they can be purchased.

SP 42 Fault-rupture hazard zones in California, by E.W. Hart, 1992, 32 p. Includes an index map which identifies all 7.5-minute topographic maps in which AP Special Studies Zones are located.(Revised periodically.)

CG Zoning for surface fault hazards in California–The New Special Studies Zones maps, by E.W. Hart, 1974; v. 27, n. 10, p. 227-230.

N 49 Geologic guidelines for evaluating the hazard of surface fault rupture, by E.W. Hart, 1975 (also Appendix C in SP 42.)

SP 47 o.p. Active fault mapping and evaluation program–10-year program to implement Alquist-Priolo Special Studies Zones Act, 1976.

CG The review process and the adequacy of geologic reports, by R.M. Stewart, E.W. Hart, and P.Y. Amimoto, 1976: Bulletin of the International Association of Engineering Geology, no.14, p. 83-86. (Reprinted in California Geology, v. 30, n. 10, p. 224-229).

CG Geologic review process, by E.W. Hart and J.W. Williams, 1978: v. 31, n. 10, p. 235-236.

" Zoning for the hazard of surface fault rupture in California, by E.W. Hart, 1976, in Proceedings of the Second International Conference on Microzonation, San Francisco, Nov. 26 - Dec. 1, 1976: NSF Special Publication, p. 635-645.

CG Fault Evaluation and Zoning Program, by E.W. Hart, 1980: v. 33, n. 7, p. 147-152.

" Zoning for surface-faulting in California, by E.W. Hart, 1986, in Proceedings of Conference XXXII–Workshop on Future directions in evaluating earthquake hazards in southern California, Nov. 12-13, 1985: U.S. Geological Survey Open-File Report 86-401, p. 74-53.

90-16 A study of the effectiveness of the Alquist-Priolo Program, by R. Reitherman and D.J. Leeds, 1990.

POST-EARTHQUAKE INVESTIGATIONS

CG Ground rupture associated with faulting - Oroville earthquake, August 1975, by E.W. Hart, 1975: v. 26, p. 274-276.

SR 124 Ground rupture along the Cleveland Hill fault, by E.W. Hart and J.S. Rapp, 1975, in R.W. Sherburne and C.J. Hauge, editors, Oroville, California, Earthquake 1 August 1975, p. 61-72.

" Geologic setting, historical seismicity and surface effects of the Imperial Valley earthquake, October 15, 1979, Imperial County, California, by E. Leivas, E.W. Hart, R.D. McJunkin, and C.R. Real, 1980, in Imperial County, California, Earthquake, October 15, 1979 : EERI Reconnaissance Report, February 1980, p. 5-19.

81-5 Preliminary map of October 1979 fault rupture, Imperial and Brawley faults, Imperial County, California, by E.W. Hart, 1981.

80-12 o.p. Preliminary map of surface rupture associated with the Mammoth Lakes earthquakes, May 25 and 27, 1980, by W.A. Bryant, G.C. Taylor, E.W. Hart, and J.E. Kahle, 1980.

SR 150 Surface rupture associated with the Mammoth Lakes earthquakes of 25 and 27 May, 1980, by G.C. Taylor and W.A. Bryant, 1980, in R.W. Sherburne, editor, Mammoth Lakes, California earthquakes of May 1980, p. 49-67.

SR 150 Rockfalls generated by the Mammoth Lakes earthquakes of May 25 and 27, 1980, by W.A. Bryant, 1980, in R.W. Sherburne, editor, Mammoth Lakes, California earthquakes of May 1980, p. 69-73.

SR 150 Planned zoning of active faults associated with the Mammoth Lakes earthquakes of May 1980, by E.W. Hart, 1980, in R.W. Sherburne, editor, Mammoth Lakes, California earthquakes of May 1980, p. 137-141.

CG Ground rupture, Coalinga earthquake of 10 June 1983, by R.D. McJunkin and E.W. Hart, 1983: v. 36, n. 8, p. 182-184.

SP 66 Surface faulting northwest of Coalinga, California, June and July 1983, by E.W. Hart and R.D. McJunkin, 1983, in J.H. Bennett and R.W. Sherburne, editors, The 1983 Coalinga, California earthquakes, p. 201-219.

SP 68 Evidence for surface faulting associated with the Morgan Hill earthquake of April 24, 1984, by E.W. Hart, 1984, in J.H. Bennett and R.W. Sherburne, editors, 1984, The 1984 Morgan Hill, California earthquake, p. 161-173.

CG Fault rupture associated with the July 21, 1986 Chalfant Valley Earthquake, Mono and Inyo Counties, California, by J.E. Kahle, W.A. Bryant, and E.W. Hart, 1986: v. 39, n. 11, p. 243-245.

CG Magnitude 5.9 North Palm Springs earthquake, July 8, 1986, Riverside County, California: Lifeline damage, by Glenn Borchardt and M.W. Manson, 1986: v. 39, n. 11, p. 248-252.

CG Preliminary report: Surface rupture, Superstition Hills earthquakes of November 23 and 24, 1987, by J.E. Kahle, C.J. Wills, E.W. Hart, J.A. Treiman, R.B. Greenwood, and R.S. Kaumeyer, 1988: v. 41, n. 4, p. 75-84.

CG Liquefaction at Soda Lake: Effects of the Chittenden earthquake swarm of April 16, 1990, Santa Cruz County, California, by C.J. Wills and M.W. Manson, 1990: v. 43, n. 10, p. 225-232.

" Surface fissures and the mapping of CDMG Special Studies Zones, by E.W. Hart, 1990, in George Reid, editor, What we have learned from the October 17, 1989 7.1M Loma Prieta earthquake: 16th Annual Saber Society Symposium Proceedings Volume, p. 57-99.

SP 104 The search for fault rupture and the significance of ridge-top fissures, Santa Cruz Mountains, California, by E.W. Hart, W.A. Bryant, C.J. Wills, and J.A. Treiman, 1990, in S.R. McNutt and R.H. Sydnor, editors, The Loma Prieta Earthquake of October 17, 1989, p. 83-94.

CG The Mono Lake earthquake of October 23, 1990, by S.R. McNutt, W.A. Bryant, and R. Wilson, 1991: v. 44, n. 2, p. 27-32.

STUDIES OF INDIVIDUAL FAULTS

FERs Fault Evaluation Reports, by Fault Evaluation and Zoning Project Staff, 1976-1991, copies of the unpublished FERs are available for reference in the Bay Area and Southern California regional offices of DMG. An index to FERs and copies of FERs on microfiche are now available as Open File Reports 90-9 to 90-14 (see below).

81-6 Evidence of Holocene movement of the San Andreas fault zone, northern San Mateo County, California, by T.C. Smith, 1981.

81-7 Sargent, San Andreas and Calaveras fault zones: evidence for recency in the Watsonville East, Chittenden and San Felipe quadrangles, California, by W.A. Bryant, D.P. Smith, and E.W. Hart, 1981.

81-8 Recently active strands of the Greenville fault, Alameda, Contra Costa and Santa Clara Counties, California, by E.W. Hart, 1981.

81-9 Evidence for recent faulting, Calaveras and Pleasanton faults, Diablo and Dublin quadrangles, California, by E.W. Hart, 1981.

SP 62 Southern Hayward fault zone, Alameda and Santa Clara Counties, California, by W.A. Bryant, 1982, in Proceedings–Conference on earthquake hazards of the Eastern San Francisco Bay area, p. 35–44.

" Self- guided field trip No. 4–Fault creep along the Hayward fault in the Richmond - San Pablo area, by T.C. Smith, 1982, in Conference on Earthquake Hazards of the [Eastern] San Francisco Bay Area, Field Trip Guidebook: California State University, Hayward.

84-54 Evidence of recent faulting along the Owens Valley, Round Valley, and White Mountains fault zones, Inyo and Mono Counties, California, by W.A. Bryant, 1984.

84-55 Evidence of recent faulting along the Mono Lake fault zone, Mono County, California, by W.A. Bryant, 1984.

84-56 Evidence of recent faulting along the Antelope Valley fault zone, Mono County, California, by W.A. Bryant, 1984.

88-14 Recently active traces of the Newport-Inglewood fault zone, Los Angeles and Orange Counties, California, by W.A. Bryant, 1988.

CG A neotectonic tour of the Death Valley fault zone, by C.J. Wills, 1989; v. 42, no. 9, p. 195-200.

CG Deep Springs fault, Inyo County, California. An example of the use of relative-dating techniques, by W.A. Bryant, 1988; v. 42, no. 11, p. 243-255.

The Rose Canyon fault zone: a historical review, by J.A. Treiman, 1990 (in press); in Seismic risk in the San Diego region, a workshop on the Rose Canyon fault system: Proceedings volume of a workshop sponsored by the Southern California Earthquake Preparedness Project, June 29-30, 1989.

90-9 Index to fault evaluation reports prepared 1976-1989 under the Alquist-Priolo Special Studies Zones Act, by C.J. Wills, P. Wong, and E.W. Hart, 1990.

90-10 Microfiche copies of Fault Evaluation Reports for northern California, by Division of Mines and Geology Staff.

90-11 Microfiche copies of Fault Evaluation Reports for the southern Coast Ranges, by Division of Mines and Geology Staff.

90-12 Microfiche copies of Fault Evaluation Reports for the Transverse Ranges, by Division of Mines and Geology Staff.

90-13 Microfiche copies of Fault Evaluation Reports for the Peninsular Ranges, by Division of Mines and Geology Staff.

90-14 Microfiche copies of Fault Evaluation Reports for eastern California, by Division of Mines and Geology Staff.

CG Active faults north of Lassen Volcanic National Park, by C.J. Wills, 1991, v.44, p.51-58.

REGIONAL SUMMARY REPORTS

77-8 Summary report-Fault Evaluation Program, 1976 area (western Transverse Ranges), by E.W. Hart, E.J. Bortugno, and T.C. Smith, 1977.

78-10 Summary report-Fault Evaluation Program, 1977 area (Los Angeles Basin region), by E.W. Hart, D.P. Smith, and T.C. Smith, 1978.

79-10 Summary report-Fault Evaluation Program, 1978 area (Peninsular Ranges-Salton Trough region), by E.W. Hart, D.P. Smith, and R.B. Saul, 1979.

81-3 Summary report-Fault Evaluation Program, 1979-1980 area (southern San Francisco Bay region), by E.W. Hart, W.A. Bryant, and T.C. Smith, 1981.

SP 62 California's Fault Evaluation Program-southern San Francisco Bay region, by E.W. Hart, T.C. Smith, and W.A. Bryant, 1982. in Proceedings-Conference on earthquake hazards of the eastern San Francisco Bay area, p. 395-404.

83-10 Summary report-Fault Evaluation Program, 1981-1982 area (northern Coast Ranges region), by E.W. Hart, W.A. Bryant, and T.C. Smith, 1983.

84-52 Summary report: Fault Evaluation Program, 1983 area (Sierra Nevada region), by E.W. Hart, W.A. Bryant, and T.C. Smith, 1984.

86-3 Summary report: Fault evaluation program, 1984-1985, southern Coast Ranges region and other areas, by E.W. Hart, W.A. Bryant, M.W. Manson, and J.E. Kahle, 1986.

88-1 Summary report: Fault evaluation program, 1986-1987, Mojave Desert region and other areas, by E.W. Hart, W.A. Bryant, J.E. Kahle, M.W. Manson, and E.J. Bortugno, 1987.

89-16 Summary report: Faults evaluated 1987-1988 in the southwestern Basin and Range and supplemental areas, by E.W. Hart, W.A. Bryant, C.J. Wills, J.A. Treiman, and J.E. Kahle, 1989.

91-9 Summary report: Fault Evaluation Program, 1989-1990, northeastern California and supplemental areas, by E.W. Hart, W.A. Bryant, J.A. Treiman, C.J. Wills, and R.H. Sydnor, 1991.

CONSULTANTS REPORTS

A-P File, reports by consulting geologists, 1974-1991: reports for sites within Special Studies Zones submitted to the Division of Mines and Geology in compliance with the APSSZ Act. Over 2600 reports on file.

C File, reports by consulting geologists that predate the Special Studies Zones, are outside the Zones, or are for developments that are exempt under the APSSZ act. About 800 reports on file.

77-6 o.p. Index to geologic reports for sites within Special Studies Zones, by W.Y.C. Lo and J.G. Moreno, 1977 (superseded by OFR 84-31).

84-31 Index to geologic reports for sites within Special Studies Zones, by P. Wong, 1984. (Index map to the AP File reports).

89-5 Index to geologic reports for development sites within Special Studies Zones in California, July 1, 1984 to December 31, 1986, by P. Wong, 1989. (Update for OFR 84-31).

90-15 Directory of fault investigation reports for development sites within Special Studies Zones in California, 1974-1988, by P. Wong, E.W. Hart, and C.J. Wills, 1990. (Listing of all AP File reports through December 1988).

Appendix F

WAIVER PROCEDURE FOR THE ALQUIST-PRIOLO ACT

Section 2623 of the Act states " . . . If the city or county [having jurisdiction over the lands] finds that no undue [fault] hazard . . . exists, the geologic report on such hazard may be waived, with approval of the State Geologist." The location of the proposed development or structure may be approved following such waiver.

The State Geologist will review waiver requests only after receiving the Waiver Form completed by the city or county geologist and the property owner, and accompanied by supporting statements and data in writing that would justify approval of the waiver request.

WAIVER FORM FOR THE ALQUIST-PRIOLO ACT

(Pursuant to Chapter 7.5, Div. 2, California Public Resources Code)

1. City or County Geologist, State Registered

I, _____, Registered Geologist,
(Print Name)

representing _____, recommend that the
(City/County

property: _____
(Description, size, proposed development)

_____
(Location of Site —also show location on "Special Studies Zones" maps)

_____, be granted a waiver from geologic studies
(Permit Number)

relating to active faults. Supporting statements that no undue hazard relative to faults exists at the site are attached to this form in writing on City or County letterhead with the City or County Geologist's signature and registration number, and that the Geologist representing the City or County is in agreement with the data:

Attached Data Includes:	YES	NO		YES	NO
1. Geologic Fault Map(s)	_____	_____	4. Aerial Photo(s)	_____	_____
2. Geologic Report(s)	_____	_____	5. Reference to Report(s)	_____	_____
3. Subsurface Geologic Data	_____	_____	6. Other Information	_____	_____

_____ _____ _____
City or County Registered Geologist's Signature R.G. No. Date

2. Owner of the Property

I, _____, acknowledge that the property
is within a Special Studies Zone associated with the _____ fault.

_____ _____
Owner's Signature Date

3. State Geologist

Date Received by DMG _____
(Date)

Reviewer _____ _____ _____
Registered Geologist's Signature R.G. No. Date

Recommendation of Waiver:

Approved: ☐ Not Approved: ☐ (Explanation attached)

State Approval of Review: _____ _____
State Geologist Date

*Defined in Policies and Criteria of the State Mining and Geology Board (See Appendix B)

Mail form to: State Geologist
Division of Mines and Geology
801 K Street, MS 12-30
Sacramento, California 95814-3531

DMG Form AlquistPrio 3

APPENDIX D

BIOLOGICAL ASSESSMENT

FOR

THE TOWN OF YUCCA VALLEY

PREPARED BY:

EDWARD L. LARUE, JR.,
TIERRA MADRE CONSULTANTS, INC.

MARCH, 1994

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

TECHNICAL BIOLOGICAL ASSESSMENT FOR THE TOWN OF YUCCA VALLEY GENERAL PLAN

Prepared for:

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We certify that this report is a complete and accurate account of the findings and conclusions for this biological assessment, that the information herein is cited as it appears in the literature and is the responsibility of the cited author, and that personal observations by TMC personnel are true and correct to the best of the knowledge of the reporting biologist.

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TECHNICAL BIOLOGICAL ASSESSMENT FOR THE TOWN OF YUCCA VALLEY GENERAL PLAN

Tierra Madre Consultants, Inc.

Environmental Analysis and Resource Planning
Endangered Species Surveys • Mitigation Design
Ecological Services

SUMMARY

Tierra Madre Consultants, Inc., (TMC) was contracted by Terra Nova Planning & Research, Inc., on behalf of the Town of Yucca Valley, to prepare a technical biological assessment for the new General Plan and the associated Environmental Impact Report. Included in this report is information on:

- common plant communities
- common animal species
- three biological resource areas
- special-status elements reported from the area
- potential impacts and recommended mitigation measures for the special-status elements
- conservation/open-space elements of the General Plan

TMC identified eight plant communities within the subject area. Recommendations are made for measures to preserve the Joshua tree woodland community and elements of the Mojave creosote bush scrub community. Although the preservation of the Joshua tree woodland community has been partially addressed by the town's "Joshua Tree Relocation Procedures", TMC recommends that the woodland community be preserved in project specific open-space areas, park areas, and in areas planned for low density residential development. Plants within the Mojave creosote bush scrub community recommended for preservation include cactus species and large creosote bush rings. Four other species: Triple-Ribbed Milk Vetch, Parish's Daisy, Little San Bernardino Mountains Gilia, and Robison's Monardella may soon be listed species at the State or Federal level and may require special protective measures.

Eighteen sensitive animal species (1 invertebrate, 5 reptiles, 7 birds, 5 mammals) occur or potentially occur in the Yucca Valley area. Table 1. provides information on State and Federal designations, known occurrences in the area, and associated habitats. Legal requirements and TMC's recommendations have been outlined for each of these species. Extensive information has been provided on the State and Federally listed desert tortoise.

General Plan Conservation and Open-Space elements are addressed to comply with government code requirements and to provide specific measures to incorporate natural resource conservation into the General Plan. TMC recommends the establishment of two open-space areas to provide for the preservation of animals, plants, and plant communities. This plan includes the preservation of existing habitat, the establishment of wildlife travel corridors, and suggestions for low-impact uses of areas which may be involved in future development plans.

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TECHNICAL BIOLOGICAL ASSESSMENT FOR THE TOWN OF YUCCA VALLEY GENERAL PLAN

Tierra Madre Consultants, Inc.
Edward L. LaRue, Jr., M.S.

24 March 1994

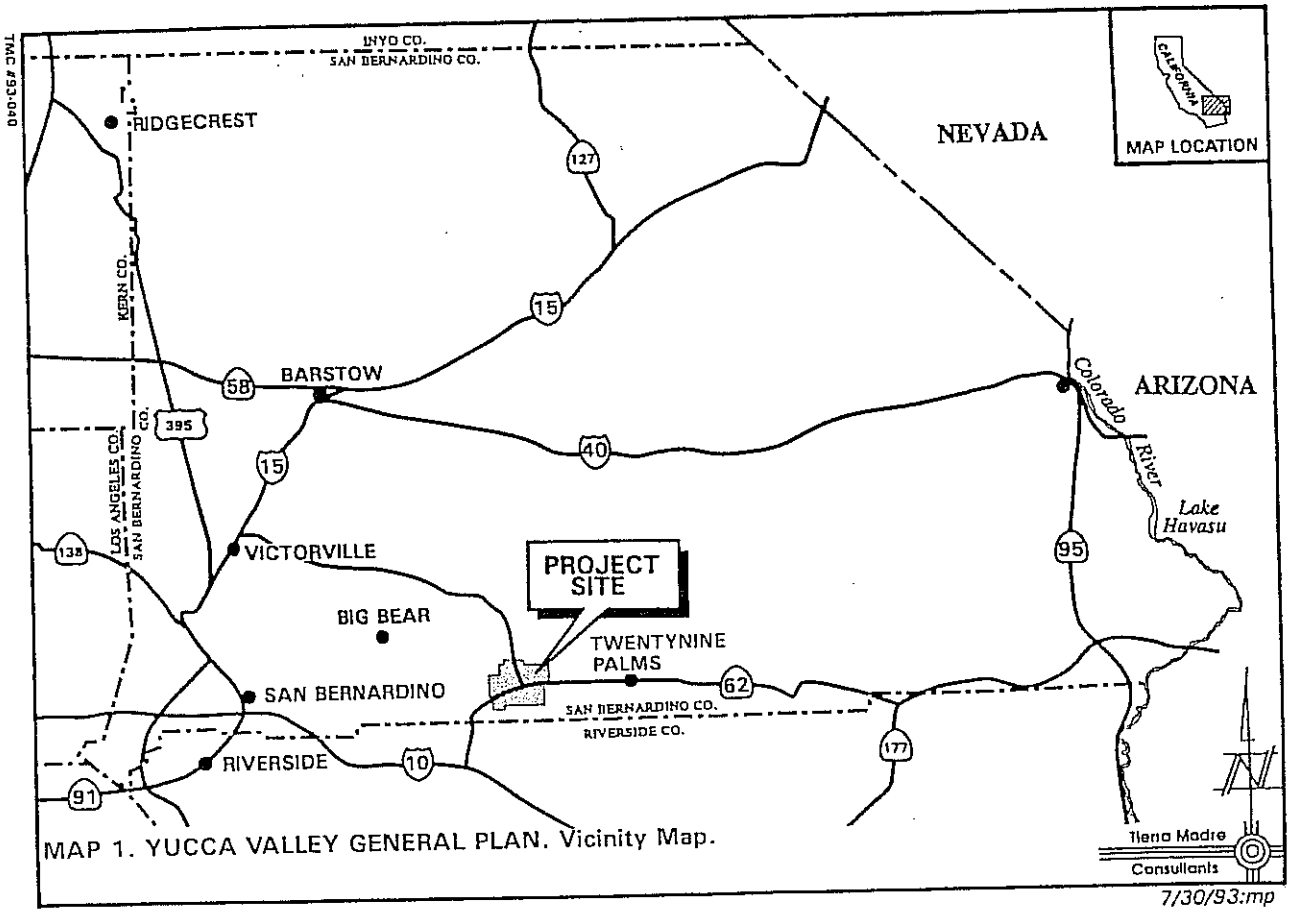
I. INTRODUCTION

Tierra Madre Consultants, Inc. was contracted by Terra Nova Planning & Research, Inc., (Terra Nova) on behalf of the Town of Yucca Valley (Town), to draft a technical biological report for the new General Plan and the associated Environmental Impact Report. The "Planning Area" (Map 1) includes the 38 square miles within the Town Limits, and a buffer area extending two miles north, east, and west; Joshua Tree National Monument is immediately south of the Town limits, so there is not a two-mile buffer to the south. Major Federal lands in the region are shown in Map 2. The Town of Yucca Valley is located in San Bernardino County, California, immediately north of Joshua Tree National Monument, south of Landers, east of the San Bernardino Mountains, and west of the community of Joshua Tree. Major access routes include Highway 247 from the north and Highway 62 from the east and west.

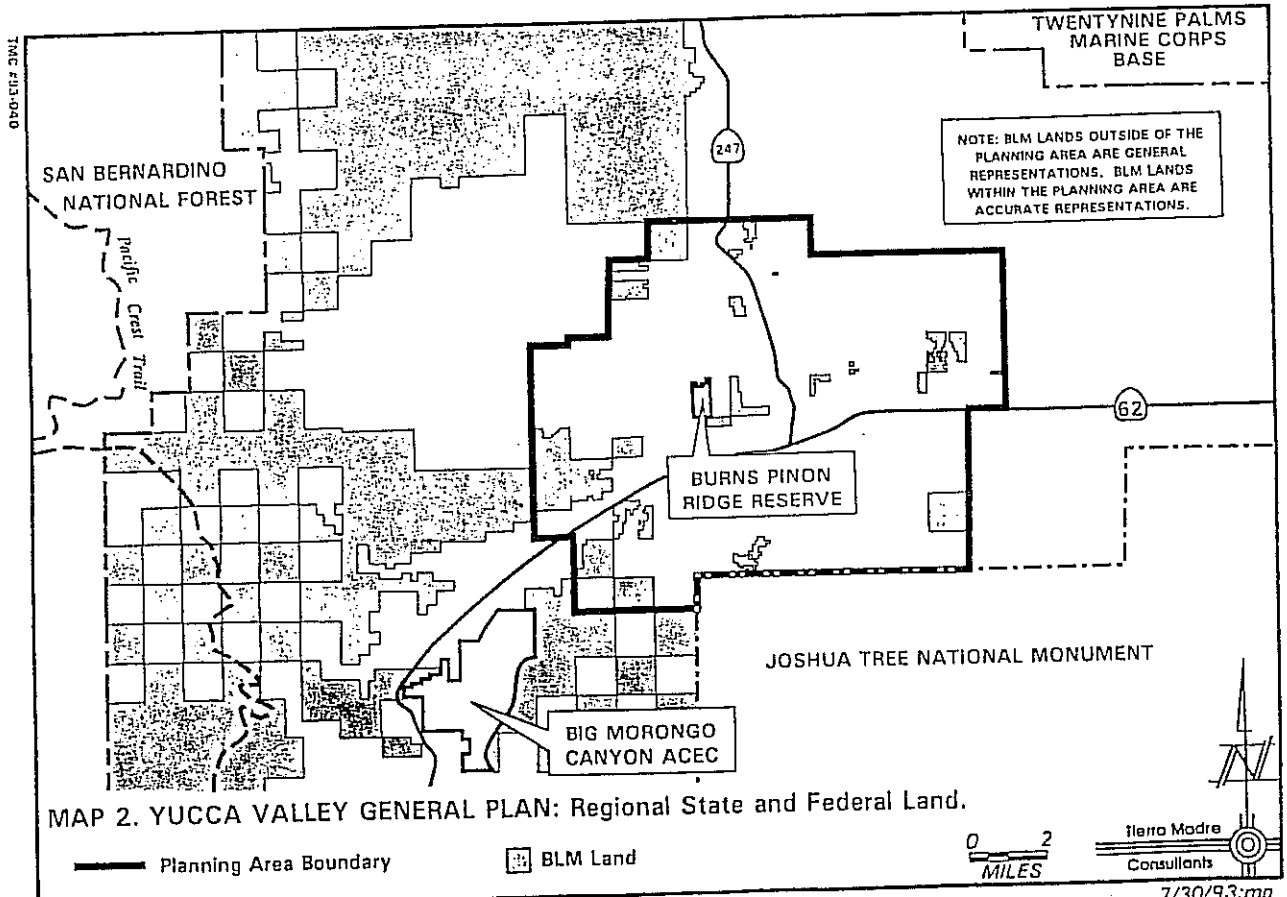
Biological resources within the Planning Area are discussed, and include common and uncommon plant communities, common animals occurring in the area, and State and Federal designated special-status plants and animals. Potential impacts to special-status elements, mitigation measures to avoid or minimize California Environmental Quality Act (CEQA) significant impacts and the "take" of State and Federal designated threatened and endangered species, pre-development survey requirements, and open-space and conservation elements are discussed. The Planning Area is discussed relative to regional plans for the desert tortoise, including the Desert Tortoise Recovery Plan and the Western Mojave Coordinated Management Plan.

II. METHODS

Special-status element reports were taken from the following sources: California Department of Fish and Game (Department) records from the Natural Diversity Data Base (Data Base) for Yucca Valley North, Yucca Valley South, Joshua Tree North, Joshua Tree South, Morongo Valley, and Rimrock USGS 7.5' quadrangles (California Natural Diversity Data Base 1993); and, Tierra Madre Consultants, Inc. 1988b, 1989a, 1989b, 1990, 1991a, 1991b, 1991c, 1991d, 1991e, 1992, 1993a, and 1993b). Known distributions of special-status bat species were taken from Zeiner *et al.* 1990. Personal observations by TMC personnel of special-status elements in the area were used to supplement the literature information; Michael Patten offered many bird records. TMC requested the U.S. Fish and Wildlife Service (Service) to provide a list of special-status elements reported from the area; the Service's response is included in Appendix B. General plant communities expected to occur in the area are based on the author's survey experience, and discussions with Robin Kenehr, Bureau of Land Management (Bureau)



MAP 1. YUCCA VALLEY GENERAL PLAN. Vicinity Map.



MAP 2. YUCCA VALLEY GENERAL PLAN: Regional State and Federal Land.

Botanist (pers. comm. 28 July 1993). The Recovery Plan for the desert tortoise (U.S. Fish and Wildlife Service 1993) is the source of the Designated Wildlife Management Areas (DWMAs). Photographic aerials (1" = 2,000') of the Planning Area, dated 29 April 1993, were reviewed to determine high and low density housing areas, to delineate boundaries of the proposed open-space areas, and to determine a likely large mammal travel corridor between the San Bernardino and Little San Bernardino Mountains.

III. RESULTS

A. Common Plant Communities

The following plant communities, as defined by Holland (1986), are expected to occur within the Planning Area: 1) "Mojavean pinyon-juniper woodland scrub" (4,000 to 8,000 feet); 2) "Blackbush scrub" (4,000 to 7,000 feet); 3) "Mojave mixed steppe" (2,000 to 7,000 feet); 4) "Joshua tree woodland" (2,500 to 5,000 feet); 5) "Mojave mixed woody scrub" (2,000 to 5,000 feet); 6) "Mojave creosote bush scrub" (below 3,000 or 4,000 feet); 7) "Desert saltbush scrub" (no elevation); and, 8) "Mojave wash scrub" (below 5,000 feet). Although "scrub" and "woodland" communities are shown on the USGS 7.5' maps, those delineations are not comprehensive, nor detailed enough to map the vegetation. Human uses in the area have affected many plant communities so that the existing conditions differ from the descriptions given; e.g., Joshua trees in that woodland may be replaced by weedy, non-native annuals and/or ornamental in urbanized areas.

1. "*Mojavean pinyon-juniper woodland scrub*" (4,000 to 8,000 feet): The community is a combination of "Mojavean pinyon woodland" and "Juniper woodland and scrub". The two form an open woodland dominated by pinyon pine (Pinus monophylla) and occasional junipers (*Juniperus californica*), with an open shrubby understory of species commonly found in adjacent nonforested areas, including "Mojave mixed scrub" and "Steppe" species. Dominant species include Great Basin sagebrush (*Artemisia tridentata*), mahogany (*Cercocarpus* sp.), blackbush (*Coleogyne ramosissima*), California buckwheat (*Eriogonum fasciculatum*), antelope brush (*Purshia glandulosa*), scrub oak (*Quercus turbinella*), Joshua tree (*Yucca brevifolia*), bush lupine (*Lupinus excubitus*), and turpentine bush (*Thamnosma montana*). The mixed communities generally occur on the slopes of the Mojave Desert, intergrading with "Jeffrey pine forest" at higher elevations, and "Joshua tree woodland" and "Creosote bush scrub" at lower elevations (Holland 1986). Within the Planning area, this community is found in the foothills and higher slopes throughout the Sawtooths, and through the southern portions of the Planning Area, particularly on the north-facing slopes.

2. "*Blackbush scrub*" (4,000 to 7,000 feet): The community is characterized by low, intricately branched shrubs, 0.5 to 1.0 meter tall, with bare ground between plants. Characteristic dominant plants include bud sagebrush (*Artemisia spinescens*), shadscale (*Atriplex confertifolia*), rabbitbrush (*Chrysothamnus* sp.), blackbush (*Coleogyne ramosissima*), Nevada joint-fir (*Ephedra nevadensis*), California buckwheat (*Eriogonum fasciculatum*), winterfat (*Eurotia lanata*), big galleta (*Hilaria rigida*), spiny hopsage (*Grayia spinosa*), paperbag bush (*Salazaria mexicana*), blue sage (*Salvia dorrii*), desert mallow (*Spheralcea ambigua*), and desert needlegrass (*Stipa speciosa*). The community generally occurs on dry, well-drained slopes with shallow, often calcareous soils of very low water holding capacity (Holland 1986). Within the Planning Area the community is interspersed with moderate to high elevation stands of Joshua trees and pinyon pines.

3. "*Mojave mixed steppe*" (2,000 to 7,000 feet): The community is characterized as fairly dense grassland dominated by big galleta (*Hilaria rigida*), with several shrubby species from "Mojave mixed woody scrub" scattered throughout; Joshua tree (*Yucca brevifolia*) is often found. Other associated species include scalebud (*Anisacoma acaulis*), coreopsis (*Coreopsis bigelovii*), California buckwheat (*Eriogonum fasciculatum*), fluff grass (*Erioneuron pulchellum*), Indian rice grass (*Oryzopsis hymenoides*), and needlegrass (*Stipa speciosa*). The community is generally associated with upper bajadas and lower residual slopes of higher ranges, in dry, sandy, and gravelly places (Holland 1986). This higher elevation community is likely interspersed with "Joshua tree woodland", "Pinyon-juniper pine", and "Mojave mixed woody scrub."

4. "*Joshua tree woodland*" (2,500 to 5,000 feet): "Joshua tree woodland" is a State-designated Community of Highest Inventory Priority, and is discussed elsewhere in this report in that context. The community is considered to be "common" given its prevalence in the area. "Joshua tree woodland" is an open woodland with Joshua tree (*Yucca brevifolia*) usually as the only arborescent (i.e., tree-like) species, with numerous shrub species between 1.0 and 4.0 meters tall. Dominant shrub species include Mojave yucca (*Yucca shidigeria*), California juniper in places (*Juniperus californica*), perennial and annual buckwheat (*Eriogonum* ssp.), peachthorn (*Lycium cooperi*), boxthorn (*Lycium andersonii*), joint-fir (*Ephedra* ssp.), creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), goldenbush (*Haplopappus* ssp.), cheesebush (*Hymenoclea salsola*), cacti (*Opuntia* ssp., *Echinocereus* ssp.), and numerous annual plants in the spring. Perennial grasses may be common, including big galleta (*Hilaria rigida*), indian ricegrass (*Oryzopsis hymenoides*), and desert needlegrass (*Stipa* ssp.) (Holland 1986). Non-native annual plants are often common in degraded "Joshua tree woodland" communities.

The community generally occurs on sandy, loamy, or gravelly, well-drained gentle alluvial slopes. The community often intergrades with "Mojave creosote bush scrub" in lower elevations, and with "Pinyon-juniper woodland" in other areas. Joshua trees are very common in the region, as evidenced by the name of "Joshua Tree National Monument" and the name, "Yucca Valley"; i.e., the scientific, generic name of Joshua tree is "*Yucca*". In many places this community has been replaced by urban development, although individual plants are often used in landscape plans. Existing Joshua Tree Relocation Procedures protect individual trees, but do not protect the community, which is the sensitive element. Joshua trees are found throughout the southern, central, and higher elevation areas to the north, and much of the southern and central areas are considered to be "woodland". It is considered to be the dominant community within the Planning Area.

5. "*Mojave mixed woody scrub*" (2,000 to 5,000 feet): This is a complex scrub community, open enough to be passable, and usually characterized by Joshua tree (*Yucca brevifolia*), California buckwheat (*Eriogonum fasciculatum*), and bladderpod (*Isomeris arboreus*). Other dominant plants include burrobush (*Ambrosia dumosa*), saltbush (*Atriplex* sp.), rabbitbrush (*Chrysothamnus* sp.), blackbush (*Coleogyne ramosissima*), indigo bush (*Psorothamnus fremontii*), two joint-firs (*Ephedra nevadensis* and *E. viridis*), goldenbush (*Haplopappus linearifolia*), California buckwheat (*Eriogonum fasciculatum*), bedstraw (*Galium* sp.), spiny hopsage (*Grayia spinosa*), cheesebush (*Hymenoclea salsola*), bush lupine (*Lupinus excubitus*), beavertail cactus (*Opuntia basilaris*), antelope brush (*Purshia glandulosa*), paperbag bush (*Salazaria mexicana*), blue sage (*Salvia dorrii*), and cottonthorn (*Tetradymia* sp.). It is typically associated with shallow, overly drained, rolling to steep hills, derived from granitic parent materials, intergrading with "Blackbush scrub", "Pinyon-juniper woodland", and "creosote bush scrub" (Holland 1986).

6. "*Mojave creosote bush scrub*" (below 3,000 or 4,000 feet): This is the common plant community of most of the western Mojave Desert. The undisturbed community is characterized by shrubs between 0.5 and 3.0 meters tall, typically widely spaced, with bare ground between. Most perennial plant growth occurs during the spring, or rarely during summer and fall if there is sufficient rainfall; growth is prevented by cold in winter and by drought in other seasons. Flowering annual plants are common in March and April if there is sufficient winter rain. The community is dominated by creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), desert senna (*Cassia armata*), Nevada joint-fir (*Ephedra nevadensis*), cheesebush (*Hymenoclea salsola*), and boxthorn (*Lycium* sp.). Occasional Joshua trees may be present, and it is therefore sometimes difficult to differentiate between the two communities. The community is generally associated with well-drained secondary soils with very low available water holding capacity on slopes, fans, and valleys rather than upland sites with thin residual soils (occupied by "Joshua tree woodland" and "Pinyon-juniper woodland") or soils with high salinity (occupied by "Desert saltbush scrub") (Holland 1986). Within the Planning Area, this community is common throughout the northern and northeastern areas, commonly intergrading with "Joshua tree woodland." The community is not protected by ordinances, but may include cactus species that could or should be salvaged and/or preserved. San Bernardino County Ordinance 3175 recommends that all creosote bush rings greater than 10 feet in diameter be preserved. Some plants within this community work well in landscape designs.

7. "*Desert saltbush scrub*" (no elevation): The community is an assemblage of low, grayish shrubs, 0.3 to 1.0 meter tall, with some succulent species. Total ground cover is often low, with bare ground between perennial plants. The community is dominated by a number of saltbush (*Atriplex*) species, and others that are tolerant of high soil salinity. The community is often found around the edges of dry lake playas, none of which occur in the Planning Area. In addition to *Atriplex* species, the following species are frequently present: spiny hopsage (*Grayia spinosa*), cheesebush (*Hymenoclea salsola*), kochia (*Kochia californica*), boxthorn (*Lycium* ssp.), mesquite (*Prosopis glandulosa*), and suaeda (*Suaeda occidentalis*). Most of the dominant perennial plants are in the "Goosefoot Family" (Chenopodiaceae), hence the synonym, "Chenopod scrub". The community is generally confined to fine-textured, poorly drained soils with high salinity and/or alkalinity, usually surrounding playas (dry lakes) on slightly higher ground (Holland, 1986). Four-winged saltbush (*Atriplex canescens*) is often used in landscape designs. Although the author has not observed this community in the Planning Area, it may occur in isolated patches.

8. "*Mojave wash scrub*" (below 5,000 feet): This is a community of low, scattered to locally dense overstories of small-leaved shrubs such as cat-claw acacia (*Acacia greggii*), mesquite (*Prosopis* sp.), desert willow (*Chilopsis linearis*), and smoke tree (*Psorothamnus spinosa*). Other shrubs may include allscale (*Atriplex polycarpa*), rabbitbrush (*Chrysothamnus paniculatus*), cheesebush (*Hymenoclea salsola*), desert almond (*Prunus fasciculata*), and squawbush (*Rhus trilobata*). The community occurs along sandy bottoms of wide canyons, incised arroyos of upper bajadas, and sandy, braided, shallow washes of lower bajadas (Holland 1986). It is the common community along major designated blue-line streams in the Planning Area.

B. Common Animal Species

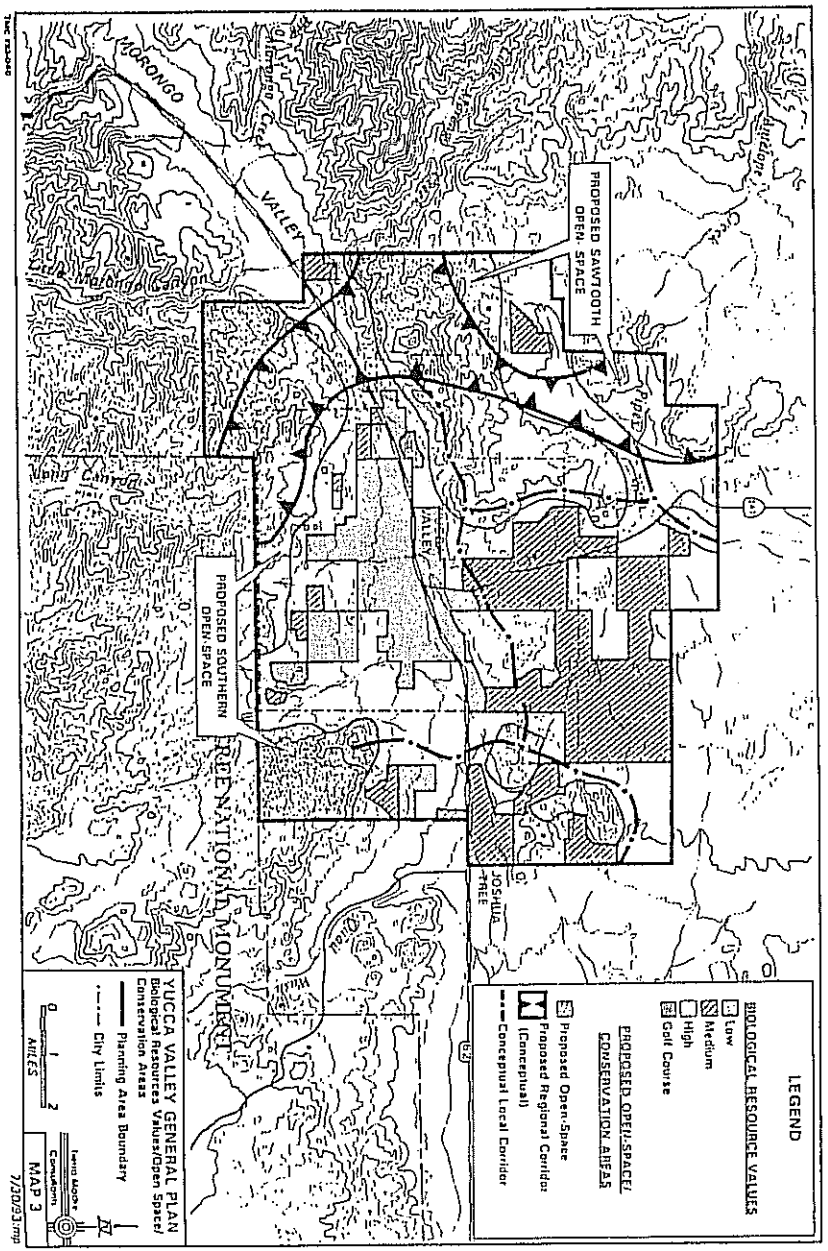
Animals occurring within the Planning Area are associated with the mountainous communities to the south and west, and with the desert in other areas. Those associated with urban areas are more common than they would be in either mountainous or desert ecosystems. No fish are expected in the area. Amphibians are limited in the area by the scarcity of standing water, but are likely common in wet areas such as Big Morongo Canyon, located several miles southwest; several toads and tree frogs are likely to occur there. Reptiles are very common in the area, which is found within and immediately adjacent to the known distributions of 42 different species (Zeiner *et al.* 1988). Some of the more common lizards include desert iguana, zebra-tailed lizard, desert collared lizard, desert spiny lizard, western fence lizard, side-blotched lizard, long-tailed brush lizard, desert horned lizard, desert night lizard, and western whiptail. Snakes include ringneck snake, coachwhip, western patch-nosed snake, glossy snake, gopher snake, long-nosed snake, speckled rattlesnake, sidewinder, western rattlesnake, and Mojave rattlesnake.

In addition to the many rare bird species reported in the Morongo Valley, many common birds visit and are resident in that area. In 1982 the Bureau estimated that 235 species of birds have been observed at the Big Morongo Canyon Area of Critical Environmental Concern (ACEC), and 71 species breed there (Bureau of Land Management 1982). Given the large number of birds that may occur within the Planning Area and adjacent areas, TMC has not listed them in an appendix, as with the other taxa. Some birds are mostly restricted to plant communities (e.g., pinyon jay, plain titmouse, and chickadees in pinyon pine woodlands); are most commonly associated with certain communities, but may occur elsewhere (e.g., cactus wrens and ladderback woodpeckers in Joshua tree woodland, but also in residential areas); are seasonal visitors (e.g., turkey vultures, warblers, many raptors, and other species visiting Morongo Valley); or are benefited by the presence of humans (e.g., common raven, English sparrow, European starling, etc.)

Zeiner *et al.* (1990) lists 59 mammal species with distributions encompassing the Planning Area, or found immediately adjacent. The area is within the ranges of at least 12 common bat species. Small burrowing mammals that are common to the area include desert cottontail, jackrabbit, several chipmunks, antelope ground squirrel, California ground squirrel, pocket gophers, several pocket mice, kangaroo rats, various mice, and woodrats. Larger mammals that occur in the general area, including Joshua Tree National Monument, include coyote, kit fox, gray fox, ringtail, raccoon, striped skunk, spotted skunk, mountain lion, bobcat, and mule deer. Most of the larger animals are not common in residential areas, but may be expected in undeveloped, open-space areas, and frequently to occasionally in slightly developed areas, such as occur in the northeastern portions of the Planning Area.

C. Available habitat for plants and animals within the Planning Area

Areas of differing biological resource values are shown in Map 3. TMC has assigned three categories to land use: Expected low, medium, and high biological resource values. These designations are not intended to be a disclaimer: tortoises, LeConte's thrasher, and burrowing owls, for example, may often occur in medium value habitat, and occasionally in low value habitat. Low value habitats are not intended to serve as biological survey exclusionary zones.



1. *Low biological resource areas* include those lands, mostly along and south of Highway 62, where urban and commercial uses are most common. Using the April, 1993 aerials and a stereoscopic magnifying glass, houses within four quarter sections were counted south of Yucca Trail and west of Joshua Lane within the low value areas. As of April, 1993 there were approximately 819 occupied lots within the four quarter sections, or about 205 houses/quarter section (range 154 to 232). In such areas most of the native scrub has been eliminated from the lots, some of the lots are fenced with dogs inside, and many of the natural resources have been displaced. Non-native plant species, including ornamental shrubs and trees, and invasive annuals, such as mustards, Russian thistle, and grasses are common in these areas. Larger mammals are mostly excluded from such areas, although smaller mammals may be common on cleared and uncleared lots. Bird species tend to be either tolerant or dependent of humans, and those that are not are displaced. Tortoises and other scrub-associated special-status species have mostly been displaced, but may occur in isolated, undeveloped pockets of habitat. Isolated tortoises are effectively segregated from the breeding population, and are more likely to be killed by dogs, off highway vehicles, and to be collected as pets. Vacant lots within these areas should still be surveyed for tortoises and other sensitive resources.

2. *Medium biological resource areas* are mostly found north of Highway 62 along Highway 247 and east thereof, and along the peripheries of low value areas to the south. Residences appear to be on 2.5 to 5.0 acre lots. Suspected occupied residences were counted within four representative quarter sections in the north and northeastern portions of the Planning Area. Within these four quarter sections there were 132 residences, or about 33 houses/quarter section (range 21 to 61). On some lots most of the native vegetation has been removed around the houses, and some lots have been completely cleared; others have been relatively natural, though disturbed. Dogs and horses are relatively common in such areas, and impact tortoises and other special-status species. Even so, the author has observed tortoises, sometimes in backyards, within such areas, and LeConte's thrashers are known to breed across dirt roads from occupied residences. Larger mammals may pass through these areas, and there is likely abundant prey available for them. Some birds may rely on the human presence, but others are typically associated with native scrub communities and are not displaced by human activity. These areas should definitely be surveyed for sensitive species, which may occur in many places, particularly when there are vacant lots contiguous to open, undeveloped desert areas.

3. *High biological resource areas* are those that are mostly undeveloped or contain scattered houses. The open-space areas proposed in this report and shown on Map 3 are prime examples of high biological resource areas. Most of the scrub-associated species occurring in scrub and woodland habitats occur in these areas (see Table 1 section F.3.a.). Map 3 shows that much of the remaining, undeveloped area within the Planning Area is considered to have high biological resource values.

D. Table of special-status elements reported from the area

The following table includes the special-status elements that have been reported from the area. Literature sources are given in the Methods section, and are included in the Literature Cited section of this report. Occurrences cited in the literature are supplemented by observations made by TMC personnel. Special-status species in this report are designated by the Service and/or the Department. Elements listed as sensitive by other groups such as the Audubon Society's "Blue List" or the California Native Plant Society's "Inventory" (1988) are not included if the element is not designated by the State or Federal Government.

Special-status species are so called "because of their limited distribution, restricted habitat requirements, particular susceptibility to human disturbance, or a combination of these factors" (Tierra Madre Consultants 1988a). Footnotes in the title and text, information references, and other definitions follow the table. Elements included in the table are shown on Map 4.

Table 1. Special-Status Elements That Have Been Reported from the Planning Area and Adjacent Areas.

[1] Reported Elements, Date of Report, and Reported Prevalence in the Planning Area and Adjacent Areas (if not within the area, locations are relative to the nearest boundary of Planning Area)	[2] Federal, State, California Native Plant Society Designations (only for plants)	[3] Associated Habitat, Elevation, and Detection Period
Plants & Communities		
Astragalus tricarinatus Triple-Ribbed Milk Vetch: 4 reports (1941, 1983, 1986, 1987) in Big Morongo Canyon, 3 to 5 miles southwest (Map 4).	Federal: Proposed Endangered State: None CNPS: List 1B, R-3, E-1, D-3	Creosote bush scrub, Joshua tree woodland, shad scale scrub at Whitewater and Morongo Valley; gravelly places 1,400 to 4,000 feet. Detected February to May.
Erigeron parishii Parish's Daisy: 3 reports (each from 1988) from within the Planning Area near Pioneertown; 1 report (1975) from northwest corner of Joshua Tree National Monument, 2.5 miles south (Map 4).	Federal: Proposed Endangered State: None CNPS: List 1B, R-2, E-3, D-3	In the Planning Area, found in Pinyon-juniper woodland on quartz monzonite substrate, but mostly restricted to carbonate substrates on north slopes of San Bernardino Mountains; 3,500 to 5,000 feet. Detected May to June.
Gilia maculata Little San Bernardino Mountains Gilia: 1 report (1948) 2 miles southeast of the Town of Joshua Tree, 3.5 miles east (Map 4).	Federal: Category 2 State: None CNPS: List 1B, R-3, E-2, D-3	Creosote bush scrub, Joshua tree woodland in Little San Bernardino Mountains; 500 to 4,000 feet. Detected May.
Monardella robisonii Robison's Monardella: 1 report (1939) near Big Morongo Canyon, 4.5 miles southwest; 1 report (1935) 0.5 miles north of Yucca Valley Airport (Map 4).	Federal: Category 2 State: None CNPS: List 1B, R-3, E-1, D-3	Pinyon-juniper woodland and about rocks in Joshua Tree National Monument; no elevation given. Detected June.

Desert Fan Palm Oasis Woodland: 1 report (1975) from Big Morongo Wildlife Preserve in Big Morongo Canyon, 3 miles southwest (Map 4).	Federal: None State: Community with Highest Inventory Priority	Elevation usually below about 3,000 feet.
Joshua Tree Woodland: Community is found throughout much of the Planning Area and surrounding areas (not mapped).	Federal: None State: Community with Highest Inventory Priority	Elevation from 2,500 to 5,000 feet.
Mesquite Bosque: 1 report (1980) from near Little Morongo Canyon, 1.75 miles west (Map 4).	Federal: None State: Community with Highest Inventory Priority	No elevation given.
Mojave Riparian Forest: 1 report (1979) from Big Morongo Canyon, 3 miles southwest (Map 4).	Federal: None State: Community with Highest Inventory Priority	Generally below about 4,000 feet.
Invertebrates		
Eremarionata morongoana Morongo Desert Snail: 1 report (no date) from near Big Morongo Canyon, 3.5 miles southwest (Map 4).	Federal: Category 2 State: None	Habitat requirements unknown; only reported from the Morongo Valley. Seasonal detection unknown.
Reptiles		
Gopherus agassizii Desert Tortoise: 6 reports (1988, 1989, 1990, 1992, 1993, 1993) from within Planning Area; 3 reports (1991, 1991, 1992) from from 1.5 to 2.5 miles east (Map 4).	Federal: Threatened State: Threatened	Tortoises are found in burrows in creosote bush scrub, Joshua tree woodland, saltbush scrub, and maybe pinyon pine below 5,000 feet elevation. Tortoise sign can be detected year round, particularly from late March through early June.

Phrynosoma coronatum blainvillei San Diego Horned Lizard: 2 reports (1890's, no date) from inside the Planning Area (Map 4): 3 reports (no date, 1949, 1970's), 1 from Big Morongo Creek, 3.5 miles west (Map 4); 1 from 1.5 miles southwest of Morongo Valley, 5 miles southwest (not mapped); and 1 from Black Rock Spring, 1.5 miles south (Map 4).	Federal: Category 2 State: Species of Special Concern	Found in scrubland, grassland, coniferous forests, and broadleaf woodland. Most readily detected from April through August, occasionally in September and October; may be confused with desert horned lizard (*Phrynosoma platyrhinos*).
Uma inornata Coachella Valley Fringe-Toed Lizard: 1 report (no date, no date) on Indian Avenue, 8 miles north of Dillon Road, 6.5 miles southwest (not mapped).	Federal: Threatened State: Endangered	Limited to sand dunes in the Coachella Valley, associated with sparse scrub, alkali scrub, and desert wash habitats, between sea level and 1,600 feet. Detected from April through mid-October.
Lichanura trivirgata Coastal Rosy Boa: TMC observations at Big Morongo Canyon (Map 4).	Federal: Category 2 State: None	In the desert found in brushy cover on scrub flats, canyons, washes, and in mountainous areas; found under rocks, in boulder piles, along rock outcrops, and on vertical canyon walls. Detected mostly from early spring through mid-summer, at dawn, dusk, and at night; rarely in broad daylight.
Crotalus ruber Red Diamond Rattlesnake: TMC observations at Big Morongo Canyon, 3 miles southwest, but likely occur in many areas (Map 4)	Federal: Category 2 State: Species of Special Concern	Occurs from sea level to about 3,000 feet in chaparral, woodland, and arid desert habitats in rocky areas and dense vegetation. Most active between March and June; active throughout the day in spring, and fully nocturnal by late summer.

Sauromalus obesus Chuckwalla: Several observed in Big Morongo Canyon by TMC, although is likely common in most undisturbed rocky areas (Map 4).	Federal: Category 2 State: None	Occurs on rocky outcrops, lava flows, boulders, and other rugged, rocky areas. May be active in warm areas throughout the year, but mostly detected between late March and July.
Birds		
Accipiter cooperi Cooper's Hawk: 1 report (1977) from Big Morongo Canyon, 3 miles southwest; 1 report (1989) from Little Morongo Canyon, 0.5 miles west (Map 4); [4] observed commonly by TMC in Morongo Valley, including nesting pairs (Map 4).	Federal: None State: Species of Special Concern	Nests in Mojave Riparian Forest in Big Morongo Canyon, and forages over native scrub areas and in residential areas. [5] Uncommonly detected year round; fairly commonly in mid-September to October.
Accipiter striatus Sharp-Shinned Hawk: Observed commonly by TMC in Big Morongo Canyon, 3.5 miles southwest (Map 4).	Federal: None State: Species of Special Concern	Suspected, rare nesting in San Bernardino and San Jacinto Mountains, but mostly a winter visitor, foraging in riparian woodland, desert scrub, and residential areas; not likely to nest in Planning Area. Detected commonly to abundantly from late September through October; fairly commonly from November through mid-April; uncommonly in mid-April and mid-September; and casually in early may.
Aquila chrysaetos Golden Eagle: 3 or 4 observed by TMC at Big Morongo Canyon, 3 miles southwest (Map 4).	Federal: None State: Species of Special Concern	Nest in high, rugged terrain in mountainous areas, and forage over native desert scrub, pinyon woodland, and occasionally in fields.

Buteo regalis **Ferruginous Hawk:** No reports from the area, although they are expected to occur (not mapped).	Federal: Category 2 State: Species of Special Concern	Do not nest in southern California, forage over agricultural fields, grassland, and sparse scrub. Detected fairly commonly north of Morongo Valley from late October through late March; uncommonly in early April, and mid-September through mid-October; and rarely in mid-April and mid-September.
Circus cyaneus **Northern Harrier:** 1 report (1993) of winter migrant 10 miles north (not mapped); several observed at Big Morongo Canyon, 3 miles southwest (Map 4).	Federal: None State: Species of Special Concern	Nests in marshy areas, and forages in fields and native desert scrub. Uncommonly detected during April, May, August, and September; rarely from mid-May to mid-August; and fairly commonly from mid-September to mid-April.
Pandion haliaetus **Osprey:** 1 report (1989) from Little Morongo Canyon, 0.5 miles west (Map 4).	Federal: None State: Species of Special Concern	Nests in tree tops near large bodies of water, and feeds exclusively on fish. Rarely detected April, September, and October; casually detected during other months of the year.
Falco mexicanus **Prairie Falcon:** 1 report (1980) from 1 mile east of Yucca Valley Airport (Map 4), likely nests in the area.	Federal: None State: Species of Special Concern	Nests on cliff faces and rugged mountainous areas, and forages over fields and native desert scrub. Uncommonly detected throughout the year.
Coccyzus americanus occidentalis **Western Yellow-Billed Cuckoo:** Observed by TMC (1993) at Big Morongo Canyon, 3 miles southwest; 1 report at Yucca Valley Golf Course within the Planning Area (Map 4).	Federal: None State: Endangered	Nests and forages in dense riparian groves, particularly with a dense understory of willow or mesquite. Detected uncommonly June through August; and, rarely in late May and early to mid-September.

Asio otus **Long-Eared Owl:** 1 report (1975) from Big Morongo Canyon, 3 miles southwest, where it commonly occurs; has nested there (no date) (Map 4).	Federal: None State: Species of Special Concern	Nests in riparian woodlands; roosts in woodlands and large stands of trees; forages in understory and adjacent fields. Uncommonly detected throughout the year.
Speotyto cunicularia **Burrowing Owl:** 1 report (1993) from beside Highway 247, 10 miles north (not mapped).	Federal: None State: Species of Special Concern	Nests in underground burrows in fields and native desert scrub, and forages in same habitat. Uncommonly detected year round.
Empidonax traillii **Willow Flycatcher:** Has been observed several times in late 1980's to early 1990's by TMC personnel in Big Morongo Canyon; may breed there (Map 4).	Federal: None State: Endangered	Nests and forages in willow thickets in floodplains and broader canyons, most often seen as a transient in similar habitat. Detected commonly to abundantly from mid-August to early September; fairly commonly from late-May to early June, and in early August and mid-September; uncommonly in mid-May, mid-June, late July to early August, and late September; and rarely in early October.
Myiarchus tyrannus **Brown-Creasted Flycatcher:** 1 report (1977) from Big Morongo Canyon, 3 miles southwest; 1 to 3 pairs breed there annually (TMC observation) (Map 4).	Federal: None State: Species of Special Concern	Nests in riparian groves of cottonwoods, mesquite, willows, etc., and forages in adjacent desert scrub and tamarisk plantings. Detected fairly commonly from mid-May through July; uncommonly in early May and early August; and rarely in late April, and mid-August to mid-September.

Pyrocephalus rubinus Vermilion Flycatcher: 1 report (1977) from Big Morongo Canyon, 3 miles southwest; 1 to 3 pairs breed there and in Yucca Valley annually (TMC observation); 1 TMC observation at municipal golf course (Map 4).	Federal: None State: Species of Special Concern	Nests near water in both riparian groves and mesquite with bordering fields. Rarely detected throughout the year.
Toxostoma bendirei Bendire's Thrasher: 1 report (1991) 0.5 miles north (Map 4).	Federal: None State: Species of Special Concern	Nests and forages in Joshua tree woodland with scattered shrubs and patches of grassland, mostly in the east Mojave Desert, only uncommonly in the Joshua Tree National Monument. Detected fairly commonly from late March through mid-July; uncommonly in mid-March and mid- to late July; and casually from early to mid-August.
Toxostoma lecontei LeConte's Thrasher: 4 reports (1988, 1988, 1991, 1991) within the Planning Area; 2 reports (1986, 1992) north and east; 1 record (1970's) at Big Morongo Canyon (TMC observation); all occurrences on Map 4.	Federal: None State: Species of Special Concern	Nests and forages in sparse creosote bush scrub and Joshua tree woodland, particularly along washes. Detected uncommonly throughout the year.
Lanius ludovicianus Loggerhead Shrike: 1 report (1992) 1.5 miles north (Map 4), although likely very common throughout the area.	Federal: Category 2 State: None	Nests in vegetation often slightly taller than surrounding scrub or grassland, and forages in adjacent areas. Detected fairly commonly throughout the year.

Vireo belli pusillus Least Bell's Vireo: 1 report (1987) from Big Morongo Canyon, 3 miles southwest; have nested at Big Morongo Canyon 5 or 6 of the past 7 years (TMC observation); 1 report (1978) from Little Morongo Canyon, < 1.0 mile west (Map 4).	Federal: Endangered State: Endangered	Nests and forages in willow thickets and other dense, low riparian growth, along permanent or near-permanent streams. Detected rarely from mid-March through early September.
Dendrioca petechia brewsteri Yellow Warbler: 2 reports (1970, 1977) from Big Morongo Canyon, 3 miles southwest; 10 pairs or more regularly nest in this area (TMC observation); 1 report (1950) from Big Rock Spring, 1.5 miles south (Map 4).	Federal: None State: Species of Special Concern	Nests and forages in riparian woodlands. Commonly detected in riparian areas during May, and late-August to mid-September; uncommonly in mid-April, from mid-June to mid-August, and from late September to mid-October; and rarely from late October to mid-November.
Icteria virens Yellow-Breasted Chat: 1 report (1977) from Big Morongo Canyon, 3 miles southwest; 3 to 5 pairs nest there annually (TMC observation) (Map 4)	Federal: None State: Species of Special Concern	Nests and forages in dense riparian thickets along watercourses. Detected uncommonly from mid-April through mid-August; rarely in early April, and late August to early October; and individual sightings in February, March, November, and December.
Piranga rubra Summer Tanager: 1 report (1986) from Big Morongo Canyon, 3 miles southwest; 5 to 7 pairs nest there annually (TMC observation); 1 report at Yucca Valley Golf Course within the Planning Area (TMC observation) (Map 4).	Federal: None State: Species of Special Concern	Nests and forages in mature riparian groves dominated by cottonwoods. Detected uncommonly from early May through mid-September; rarely in late April, and mid-September to mid-October; and casually in mid-April, and late October to late November.

Mammals		
Euderma maculatum Spotted Bat: Planning Area within range, no specific reports (not mapped).	Federal: Category 2 State: Species of Special Concern	Roosts in rock crevices, caves, buildings, and on cliffs; forages over water and along washes; occupies arid deserts, grasslands, and conifer forests. Females detected from June to August, mostly feeding after midnight.
Plecotus townsendii Townsend's Big-Eared Bat: Planning Area within range, no specific reports (not mapped).	Federal: Category 2 State: Species of Special Concern	Roosts in caves, mines, tunnels, and buildings; reporduces in maternal colonies; forages along edges of mesic habitats. Peak activity is in late evening, hibernates from October to April.
Antrozous pallidus Pallid Bat: Planning Area within range, no specific reports (not mapped).	Federal: None State: Species of Special Concern	Occupies grasslands, shrublands, woodlands, and coniferous forests; most common in open dry areas with rocky areas for roosting; reproduces in maternal colonies; roosts in caves, crevices, mines, and occasionally in hollow trees and buildings. Hibernates in winter, otherwise active just after dark and just before dawn.
Nyctinomops femorosaccus Pocketed Free-Tailed Bat: Planning Area at western edge of range, no specific reports (not mapped).	Federal: None State: Species of Special Concern	Prefers rocky desert areas with high cliffs and rock outcrops; forages over ponds, streams, and open desert; occupies pinyon-juniper woodland, desert scrub, desert succulent scrub, desert riparian, desert wash, alkali desert scrub, Joshua tree woodland, and palm oasis. No detection period given.

Ovis canadensis nelsoni Nelson's Bighorn Sheep: Unspecified reports from Joshua Tree National Monument to south and east, and from San Bernardino Mountains to the west (not mapped)	Federal: None State: Special Animal	Habitats include alpine dwarf shrub, low sage, sagebrush, bitterbrush, pinyon-juniper woodland, palm oasis, desert riparian, desert succulent scrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian. Summer ranges in high elevations, moving downslope in the winter; detected year round.

[1] Reported elements, date of report, and reported prevalence are taken from the California Natural Diversity Data Base 1993; Tierra Madre Consultants, Inc. 1988b, 1989a, 1989b, 1990, 1991a, 1991b, 1991c, 1991d, 1991e, 1992, 1993a, 1993b.

[2] Federal, State, and California Native Plant Society Designations are taken from California Natural Diversity Data Base 1993; California Department of Fish and Game 1992; California Department of Fish and Game 1993; and, California Native Plant Society 1988.

[3] Associated habitats and detection periods for various taxa are taken from the following sources: Plants - Munz 1974 and California Native Plant Society 1988. Reptiles - Stebbins 1985 and Zeiner *et al.* 1988. Birds - Garrett and Dunn 1981. Mammals - Zeiner *et al.* 1990. Elevations for plants are taken from Munz 1974; and for communities, from Holland 1986.

[4] Some bird species have not been reported in the above references, or there are more occurrences than referenced; these birds have been identified in the area by TMC personnel, as denoted by "TMC observation", no dates given.

[5] For detection of birds, Garrett and Dunn (1981) use the following terms and definitions, which are used in Table 1:

Commonly to abundantly - almost always encountered in proper habitat within the given district(s), usually in moderate to large numbers. When "abundant" is used, it implies that the species is always encountered under the indicated conditions, and in large numbers.

Fairly commonly - usually encountered in proper habitat at the given season(s) in the given district(s), generally not in large numbers.

Uncommonly - occurs in small numbers or only locally under the indicated conditions.

Casually - records within a given district at the season indicated are few, but not cited individually. There may be no records in some (or many) years, but a general pattern of occurrence is suggested.

Individual record - Generally used for species which have been recorded about ten times or fewer in the region, or which have been recorded only a very few times (the exact number varies) in that district or at that season.

Status Designations for Special-Status Species

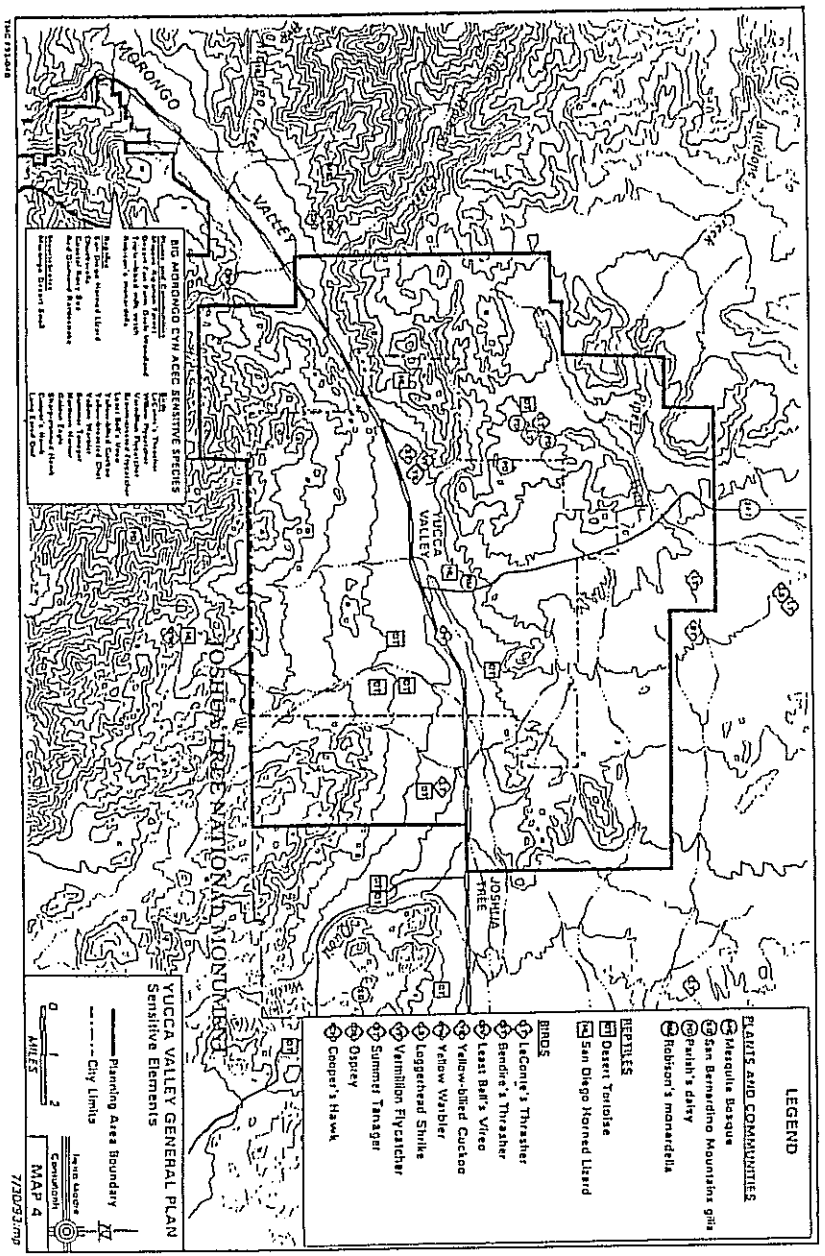
Federal Designations
Endangered - Listed as Endangered by the Federal Government
Threatened - Listed as Threatened by the Federal Government
Proposed Endangered - Proposed Endangered by the U.S. Fish and Wildlife Service
Category 2 - Category 2 Candidate for listing by the U.S. Fish and Wildlife Service: existing information indicates taxa may warrant listing, but substantial biological information necessary to support a proposed rule is lacking
None - Not designated as a special-status element by the Federal Government or the U.S. Fish and Wildlife Service

State Designations
Endangered - Listed as Endangered by the State of California
Threatened - Listed as Threatened by the State of California
California Species of Special Concern - Designated as a Species of Special Concern by the California Department of Fish and Game
Special Animal - taxa that are biologically rare, very restricted in distribution, or declining throughout their range; and/or, population(s) in California that may be peripheral to the major portion of the taxon's range, but which are threatened with extirpation within California; and/or, taxa closely associated with a habitat that is declining in California (e.g., wetlands, riparian, old growth forest).
Community with Highest Inventory Priority - Communities considered to be rare, for which the State is collecting information (Holland, 1986)
None - Not designated as a special-status element by the State of California or the California Department of Fish and Game

California Native Plant Society (CNPS) designations
List 1B - Plants rare and endangered in California and throughout their range.

CNPS R-E-D Code:

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.
Endangered	1:	Not endangered.
	2:	Endangered in a portion of its range.
	3:	Endangered throughout its range.
Distribution	1:	More or less widespread outside California.
	2:	Rare outside California.
	3:	Endemic to California (i.e., does not occur outside California).



E. **Potential direct impacts and recommended mitigation measures for special-status species**

This section discusses some of the local and regional impacts that may occur, and offers generalized guidelines for mitigation measures. State and Federal policies regulating development are discussed relative to the particular element. Detection of the species and/or assessment of suitable habitat are important for future biological assessments, and are discussed accordingly. This section does not extensively discuss the biology (e.g., natural history) of each element; references for that information follow Table 1, and are cited in the Literature section. Impacts for future development should be assessed on a case-by-case basis, and mitigation measures designed accordingly.

The proposed open-space area through the center of the Planning Area is referred to as the "Sawtooth open-space area", and the one in the southern and western portions of the Planning Area is referred to as the "southern open-space area" (Map 3).

1. Plant Communities *Desert Fan Palm Oasis*, *Mesquite Bosque*, and *Mojave Riparian Forest* are not reported from the Planning Area. Given their rarity in the area, it would be very important to preserve these communities if found during future biological assessments. Suitable habitat included drainage courses, springs, seeps, etc.

Joshua Tree Woodland occurs in many places throughout the Planning Area. The Town's "Joshua Tree Relocation Procedures" provide guidelines for the salvage of trees, but does not protect the woodland community. Although continued salvage of trees is recommended for small projects, TMC recommends that the woodland community be preserved in project specific open-space areas, park areas, and perhaps in areas planned for low density residential development. Within these areas the shrub species that occur with the Joshua trees must be preserved for the community to be protected.

Cory Dixon, a local arborist, makes the following recommendations for Joshua tree salvage (pers. comm. 28 July 1993). Trees should be monitored and maintained after transplantation if there is any likelihood of success. An arborist or other qualified individual, using a soil probe, should determine the soil's water-holding capacity at the relocation site; soils with poor water retention characteristics require more water than retentive soils. Supplemental watering is needed year round, and particularly during the growth period, between April and October. Trees should be monitored at monthly intervals until they are established. The arborist should determine if a micronutrient deficiency is present, and should supplement the plant as necessary. At the time of transplanting, roots should be treated with rooting hormone.

There are limitations to successfully transplanting trees. For best results, an arborist should inspect each tree to be transplanted and make recommendations. Joshua trees that do not survive transplanting include small-trunked trees with many limbs; trees with poor frond development; trees with severe insect damage; and, trees shorter than 18" should not be relocated in the field, but can survive with proper care in nurseries, and can later be transplanted.

San Bernardino County Ordinance 3175 regulates sensitive plant removal and salvage. It protects individual Joshua trees, Mojave yuccas, mesquite, cacti, smoke trees, creosote bush rings greater than 10 feet in diameter, and desert willow. TMC recommends that the Town draft a similar ordinance, or adopt the County's, so that plants other than Joshua trees are also salvaged and/or protected within the Planning Area.

2. Plants Of the four plants reported from the area, *Triple-Ribbed Milk Vetch* and *Parish's Daisy* have been proposed as federally listed species. If they are listed, and occur on Federal lands, impacts to either of them would violate the Federal Endangered Species Act. (Note: their listing is still being reviewed as of 30 July 1993). Because of the federal proposal for listing, impacts to them would be considered CEQA significant; they are not being presently considered for State listing. The other two plants, *Little San Bernardino Mountains Gilia* and *Robison's Monardella*, are not listed, but impacts to newly discovered populations may be considered CEQA significant. Of the four plants, Robison's monardella and Parish's daisy are reported within the Planning Area: monardella was reported in 1935 near the Yucca Valley Airport, and is likely extirpated from that site (California Natural Diversity Data Base 1993); Parish's daisy was reported from the Sawtooth area (Tierra Madre Consultants 1988b). Any of these plants found elsewhere within the Planning Area would be new occurrences.

Biological assessments within the Planning Area should address the likelihood of occurrence for each of the species, and surveys should, preferably, be performed during the detection periods given in Table 1. When found, the biologist should confer with State and Federal jurisdictional botanists to determine the significance of the new population. The biologist working with the agency botanist(s) should consider possible mitigation measures to avoid or minimize impacts to these plants. If listed, the plants would be protected under the Native Plant Protection Act, which prohibits the taking of plants from the wild, and requires that the property owner contact the Department at least 10 days in advance of ground disturbance so that the plants may be salvaged by Department botanists.

3. Invertebrates *Morongo Desert Snail* is only expected to occur in Morongo Valley. Detecting the snail in the Planning Area would be a significant range extension for the species. If found, the biologist should contact the Service and determine appropriate mitigation measures, if any, to avoid or minimize impacts.

4. Reptiles *Desert Tortoise* State and Federal listing information and desert tortoise life history are included in Appendix A. The Federal Endangered Species Act protects the tortoise from unauthorized "take", which is defined as "harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The loss of occupied tortoise habitat is considered "take" under the definition of "harm". As a State designated threatened species, the tortoise is protected by the State Endangered Species Act, and must be addressed as a CEQA issue. CEQA states that "a project will normally have a significant effect on the environment if it will: (c) Substantially affect a rare or endangered species of animal or plant or the habitat of the species" (California Environmental Quality Act, Appendix G 1983). The State Endangered Species Act is similar to the Federal Act described above.

Without appropriate precautions, tortoises may be killed by construction activities, and occupied tortoise habitat may be lost. The Service requires that focused tortoise surveys be performed for projects located below 5,000 feet in the Mojave and Colorado Deserts (U.S. Fish and Wildlife Service 1992a, 1992b). Within the Planning Area, tortoises may be encountered in many places, including residential areas. There are many anecdotal accounts of tortoises found in unlikely places, such as backyards and under houses. Non-habitat areas where tortoises are usually absent, but not always, include paved lots and areas devoid of vegetation; e.g., dirt parking lots, denuded recreation areas, graded flood control areas, etc.

The Service's survey guidelines are included in Appendix C. TMC strongly recommends that the Town of Yucca Valley require surveys following Service protocol to avoid "take" of tortoises and violation of State and Federal Endangered Species Acts. TMC further recommends the Town draft a "minimum requirements for tortoise reports" to ensure that the reports are meeting standards used in San Bernardino County and elsewhere.

Federally, mitigation for impacts to tortoises are either implemented under Section 7 of the Federal Endangered Species Act, when a Federal agency either "funds, authorizes, or carries out" some portion of the project, or under Section 10 of the Act, when there is not a Federal involvement ("nexus"). The Section 7 Consultation is appropriate when a Federal agency, such as the Bureau, U.S. Army Corps of Engineers, Federal Housing Administration, Bureau of Indian Affairs, etc. is involved. For example, placing a water pipeline through Bureau lands would require a right-of-way Grant from the Bureau, which "authorizes" a portion of the project. An analogous situation for the Army Corps of Engineers occurs when fill is deposited in designated "Waters of the U.S.", thereby requiring a 404 Permit, which also "authorizes" a portion of the project. Upon the proponent's request for a formal consultation, the project-supporting Federal agency (Bureau or Corps in above examples) consults with the Service, and the two produce a "Biological Opinion" that typically restricts construction activities, requires a biological monitor, may require land compensation, and outlines other measures to ensure that tortoises populations are not jeopardized by the project. The Bureau typically issues "Stipulations" that incorporate the entire Biological Opinion and add a few other requirements. Issuance of a Biological Opinion and associated documents normally takes from two to six months depending on the project.

If there is no Federal nexus the project proponent must obtain a Section 10(a)(1)(B) Incidental Take Permit. A "Habitat Conservation Plan" (HCP) is drafted for the project, which includes conservation measures similar to those given in a Biological Opinion. Parties responsible for implementing the HCP sign an "Implementation Agreement", and typically include the Service, Department, and project proponent. There is also an "Environmental Assessment" written by or for the Service as part of the National Environmental Policy Act (NEPA), which is distributed to the public for review and comment. The issuance of the first HCP in California for tortoises was in Yucca Valley, and took 17 months; future permits may not take as long.

For the State, mitigation for impacts to tortoises is either implemented under Section 2090 of the State Endangered Species Act if there is a State nexus, or by Section 2081 of the Act if there is no nexus. For example, when Caltrans, as the state agency, is the project proponent, Caltrans and the Department have a formal consultation that results in a "State Biological Opinion" under Section 2090 of the Act. Development on State lands that would affect a State threatened or endangered species would also warrant a formal consultation. When there is not a State nexus, the proponent must obtain a Section 2081 Incidental Take Permit, which has traditionally taken from five months to one year to obtain. It is essential that the Federal 10(a)(1)(b) Permit and the State 2081 Permit compliment one another; and, that the regulatory agencies be involved in the plan from the beginning.

The Town of Yucca Valley is participating in the Western Mojave Coordinated Management Plan (West Mojave Plan), which is being drafted by the Bureau, with cooperation from the Service and the Department, to mitigate impacts to tortoises. The effect of the West Mojave Plan on Town planning cannot be fully ascertained until the plan is completed.

However, the Bureau has indicated a few characteristics of the plan that may affect planning (Bureau of Land Management 1991). For example, the Bureau has stated that all General Plans throughout the West Mojave Planning Area, which includes Palmdale to the west, Twentynine Palms to the east, and Ridgecrest to the north, would have to be modified, or drafted, to compliment the West Mojave Plan. The West Mojave Plan would function as a programmatic Section 7 Consultation (for Federal projects), State 2090 Formal Consultation (for State projects), Federal Section 10a(1)(B) Permit (for private projects), and State Section 2081 Permit (for private projects): rather than pursue the tortoise take permits on a case-by-case basis, the West Mojave Plan would provide the permits, and the requirements regulating project completion.

The West Mojave Plan will likely be fee-based. Each property would pay a fee to develop a project in tortoise habitat, regardless of the presence of tortoises. The fee would likely be on a per-acre basis. Presently, the developer only mitigates impacts if tortoise sign is present on the project site. Once the fees are paid, tortoises, if present, would be removed from the site, and the site could be developed. Developers would have to conform to other, unknown components of the Plan. The Town may want to speak with Alden Sievers, Bureau Barstow Office, who is the coordinator for the West Mojave Plan, to ensure that the General Plan incorporates the guidelines of that Plan, thereby avoiding extensive changes. It is not known when the West Mojave Plan will be finished, but likely within the next 18 months. Once completed, it will be submitted to the Service and Department for issuance of programmatic incidental take permits.

The Service published the Draft Recovery Plan for the desert tortoise in April, 1993 (U.S. Fish and Wildlife Service 1993). The Recovery Plan identifies six distinctive population segments, called "Recovery Units", throughout the range of the listed desert tortoise, which includes all tortoises north and west of the Colorado River. The Planning Area is located entirely within the Western Mojave Recovery Unit. The Recovery Plan then identifies 14 "Desert Wildlife Management Areas" (DWMAs), where "recovery actions would be implemented to provide for long-term persistence of viable desert tortoise populations and the ecosystems upon which they depend" (U.S. Fish and Wildlife Service 1993). The Planning Area relative to the nearest DWMAs is shown on Map 5. Portions of the Joshua Tree DWMA, which encompasses all of Joshua Tree National Monument, are located along the southern boundary of the Planning Area.

Although management prescriptions for DWMAs are not likely to directly affect land use within the Planning Area, it is strongly recommended that the General Plan incorporate Conservation and Open-Space Elements that minimize impacts to the adjacent Joshua Tree DWMA. This recommendation is reflected in TMC's proposed open-space designation (Map 3).

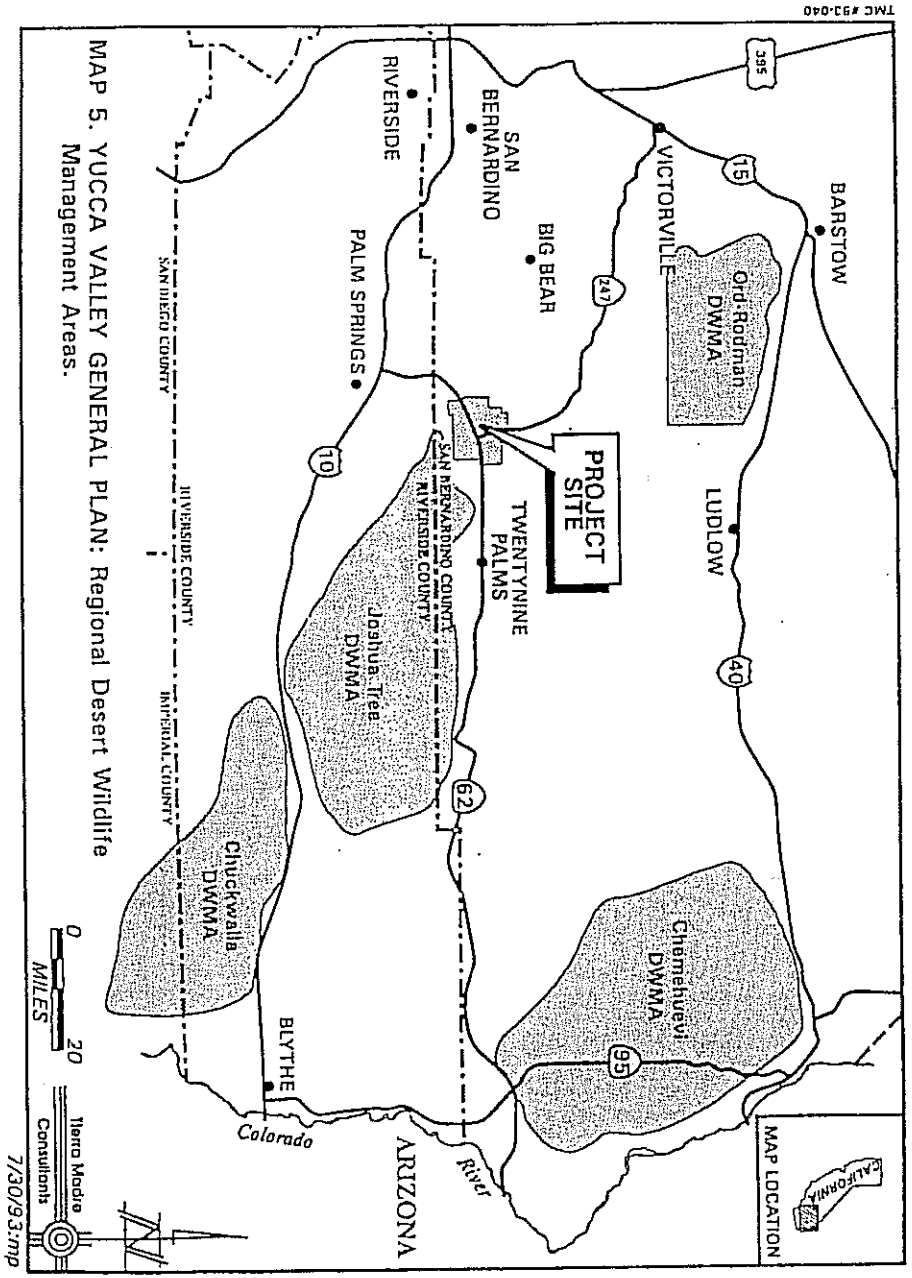
There is no likelihood that *Coachella Valley Fringe-Toed Lizard* occurs within the Planning Area or contiguous areas, no direct impacts are expected, and they are not further discussed in this report.

San Diego Horned Lizard, Chuckwalla, Red Diamond Rattlesnake, and Coastal Rosy Boa These species are not listed by State or Federal Governments. The Yucca Valley area is likely the eastern extent of the horned lizard and rattlesnake's ranges, chuckwalla occur throughout the rocky desert areas to the east, and rosy boa occurs north and east of the Planning Area. Unless these species become listed, impacts to them are not considered to be significant. The "Natural Communities Conservation Plan" in portions of San Diego, Orange, Riverside, and San Bernardino Counties to the west, would protect much of the southern California habitat in which the San Diego horned lizard, Red diamond rattlesnake, and coastal rosy boa reside, and chuckwallas are found throughout the Mojave and Colorado Deserts. Establishment of the southern and Sawtooth open-space areas would preserve much of the suitable habitat for the species within the Planning Area. Biological assessments should, preferably, be performed during the time that the species are detectable, and if not, should assess the likelihood of occurrence for the species. New location records would be very useful to the scientific community to track population trends for each species.

5. Birds *Cooper's Hawk, Golden Eagle, Prairie Falcon, Burrowing Owl, Bendire's Thrasher, LeConte's Thrasher, and Loggerhead Shrike* With the exception of Bendire's thrasher, which is uncommon at any time, each of these bird species may be expected in relatively undeveloped portions of the Planning Area, where they would most likely be foraging, and some nesting. Cooper's hawk, burrowing owl, LeConte's thrasher, and loggerhead shrike may forage in somewhat developed areas, and are more likely to nest within the Planning Area than golden eagle, prairie falcon, or Bendire's thrasher, which are not likely to nest within the Planning Area. Development within the Planning Area will result in the incremental cumulative loss of suitable foraging and nesting habitat for most of the species.

The loss of foraging habitat, unless it impacts a riparian area, is not considered CEQA significant, and would not result in "take", since none of the species is listed threatened or endangered. Loss of a confirmed nesting site for Cooper's hawk would most likely be associated with impacts to riparian woodland, which is a community protected by State and Federal wetlands permits. Requirements in the permits should be designed to avoid or minimize impacts to riparian communities, which would benefit nesting Cooper's hawks. Golden eagles and prairie falcons do not likely nest within the Planning Area, although there is some potential for nesting in the Sawtooths or other mountainous areas. If adopted, the recommended restrictions in open-space areas would minimize or avoid impacts to breeding eagles and falcons.

Burrowing owl, LeConte's thrasher, and loggerhead shrike each likely nest within the Planning Area. Impacts to nesting birds would not be CEQA significant, nor would "take" occur since they are not listed. However, TMC recommends that nesting individuals not be disturbed until after the young have left the nest or burrow. A qualified biologist should observe pairs of these birds, determine if they are nesting and, if so, determine when the young birds have fledged; construction should be postponed until fledgling occurs. Designation of the southern and Sawtooth open-space areas includes a considerable portion of the existing habitat within the Planning Area for these birds. Birds that would be force-dispersed from development sites could nest in adjacent open-space lands, which with proper management, would minimize impacts to these species on a local and regional level.



Ferruginous Hawks and Northern Harriers observed within the Planning Area may occasionally forage there, but are not heavily reliant on natural resources; *Osprey* is strictly an incidental visitor. There is more suitable foraging habitat for ferruginous hawks and harriers south of the Transverse Range (San Bernardino and San Gabriel Mountains), and in other areas outside the Planning Area. None of the birds is expected to nest in the area. Loss of foraging habitat is not considered to be a CEQA significant impact, and would not result in "take". Designation of open-space areas would maintain some suitable foraging habitat for ferruginous hawks and northern harriers.

Western Yellow-Billed Cuckoo, Long-Eared Owl, Willow Flycatcher, Brown-Crested Flycatcher, Vermilion Flycatcher, Least Bell's Vireo, Yellow Warbler, Yellow-Breasted Chat, and Summer Tanager Many of these birds nest in Big Morongo Canyon, and all of them visit the area. Cuckoo, vermilion flycatcher, and summer tanager have been reported at the municipal golf course, where landscaping resembles riparian habitat. If observed within the Planning Area, the biologist should confirm that the bird is not nesting, which presently would only likely occur at the golf course. If nesting does occur, the birds have nested there in spite of the human presence.

Impacts to nesting cuckoos, willow flycatchers, and vireos would be considered CEQA significant and would constitute "take" under State and/or Federal Endangered Species Acts. Such impacts should either be avoided or mitigated by issuance of State and Federal incidental take permits. Most of the birds observed within the Planning Area are non-breeding visitors, but may nest in Big Morongo Canyon; impacts to such non-nesting birds would not be considered significant or constitute "take". They are also protected under the Migratory Bird Treaty Act.

6. Mammals *Spotted Bat, Townsend's Big-Eared Bat, Pallid Bat, and Pocketed Free-Tailed Bat* None of these species is listed by State or Federal Governments. Individuals may be found roosting in the Planning Area, particularly in the rocky, mountainous areas. Spotted bats and pocketed free-tailed bats do not form maternal colonies as do Townsend's big-eared bats and pallid bats. Disruption of "nesting" individual spotted and pocketed free-tail bats should be avoided, but would not be considered a CEQA significant impact, nor "take". Maternal roosts for Townsend's big-eared bats and pallid bats, consisting of numerous females and their offspring, should be avoided, and impacts to such a colony may be considered significant depending on the size of the colony. Upon finding such a colony, the biologist should contact the State and Federal jurisdictional biologists to determine the significance of the find. The biologist and agency person working together should determine appropriate mitigation measures, if any, to avoid or minimize impacts. Zeiner, *et al.* (1990) indicate that the maternal colonies are susceptible to even minor disturbance, so there may be no latitude to minimize impacts, but only avoid them. Designation of the proposed open-space areas, particularly in the Sawtooths, may be very beneficial to bat species occurring in the area.

Nelson's Bighorn Sheep occur in the National Monument and in the San Bernardino Mountains, and have not been reported in the Planning Area. During severe drought years when natural water sources are depleted, sheep may conceivably visit available, peripheral water

sources within the Planning Area. Direct impacts to sheep are not likely to occur. In the rare case that a sheep is observed in the Planning Area, the biologist assessing the site should immediately report the occurrence to National Forest personnel and/or National Monument personnel, depending on the location of the occurrence. (Note: sheep should not be distinguished from mule deer based on scat or tracks because of the similarities between the two).

The establishment of open-space areas, which would facilitate the travel corridor recommended between the San Bernardino and Little San Bernardino Mountains, may prove beneficial to movement by bighorn sheep. The Department has established populations of Nelson's bighorn sheep in many mountain ranges in the west and east Mojave Deserts. Sheep fitted with radio transmitters and recently introduced into the northern portion of the Bristol Mountains, located north of Ludlow, were found at the southern end of the mountain range within several weeks, covering an area of 15 to 20 miles during that time (Vern Bleich, pers. comm. 1992). Bleich indicated that relocated sheep often travel long distances in a given mountain range, unlike the sheep naturally occurring there, which move in short, altitudinal migrations. If such introductions were to occur in either of the two ranges, this travel corridor may be important. If bighorn sheep became over-crowded, or if their habitat were adversely impacted by fire, they may move between the two mountain ranges via this corridor. Therefore, the designation of open-space, which facilitates this corridor, would partially minimize the indirect impacts that may affect sheep in the adjacent areas.

Note: TMC recommends that each of the special-status species discussed in this section, and others that might be found, be reported to the California Natural Diversity Data Base. The Data Base maintains records that provide information essential for tracking population trends, and information essential to drafting conservation plans.

F. General Plan Conservation and Open-Space Elements

Government Code Section 65302(d) requires that the General Plan have a conservation element for the conservation of, among other things, wildlife and other natural resources. "The Required Elements of the General Plan" (Governor's Office of Planning and Research 1987) states that inventories of natural vegetation, fish and wildlife and their habitats, including rare and endangered species be included within the General Plan. Government Code Section 65302(e) requires that the General Plan have an open-space element with requirements similar to those given above for the conservation element. Conservation and open-space elements of the General Plan should include goals, objectives, policies, principles, plan proposals and standards for the conservation, development, and utilization of the [Town's] natural resources (Governor's Office of Planning and Research 1987). Given the similarities between the two elements, they are discusses together in this section.

"The Required Elements of the General Plan" (Governor's Office of Planning and Research 1987) defines "open-space" as any parcel or area of land or water which is essentially unimproved and devoted to an open-space use [including] open-space used for the preservation of natural resources including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes..." Furthermore, "the open-space plan shall contain an action program

consisting of specific programs which the legislative body intends to pursue in implementing its open-space plan: no building permit may be issued, no subdivision map approved, and no open-space zoning ordinance adopted, unless the proposed construction, subdivision, or ordinance is consistent with the local open-space plan." Pursuant to Public Resources Code Section 5076, [Towns] in developing their open-space elements are required to consider the demands for trail-oriented recreational use. Open-space for outdoor recreation should also consider outstanding scenic beauty. Riparian habitats are also considered a valuable natural resource.

The proposed conservation area/open-space areas are delineated on Map 3. These areas are chosen based on the criteria given above, and include undeveloped portions of the Planning Area through the Sawtooths and along the northern boundary of the Monument; Bureau in-holdings are also shown as open space. Common communities occurring in the proposed conservation/open-space areas are discussed (section A.1. - 8.); and rare and endangered species are discussed (Table 1, and section D.1.- 6.) and mapped (Map 4). The proposed "Sawtooth" and "southern" open-space areas are shown in Map 3; smaller "islands" are Bureau lands.

1. Goals The goals of establishing the two conservation/open-space areas within the Planning Area are to maintain these areas in their near-original conditions for 1) the conservation of suitable habitat for rare and endangered species found in the region; 2) to maintain riparian habitat found within the areas; 3) to maintain the areas for aesthetic and low-impact recreational purposes; 4) to utilize major recreation and open-space reservations, including trails and scenic highway corridors; 5) to provide a buffer between high density residential development and Joshua Tree National Monument to the south, ACEC at Big Morongo Canyon to the southwest, and Burns Pinyon Ridge Reserve near the center of the Planning Area; 6) to maintain areas for travel corridors between the San Bernardino Mountains to the west and the Little San Bernardino Mountains to the south; and, 7) to maintain linkage corridors between Desert Wildlife Management Areas (DWMAs) which are delineated in the Draft Recovery Plan for the Desert Tortoise, including the Joshua Tree National Monument DWMA to the south, the Chuckwalla DWMA to the southeast, and the Ord-Rodman DWMA to the northwest (U.S. Fish and Wildlife Service 1993).

2. Objectives The objectives are to implement protective measures, including development restrictions, to attain the goals as stated above. The objectives are: 1) designate the two open-space areas, with appropriate restrictions, to protect habitat for rare and endangered species occurring therein and in adjacent areas; 2) to ensure that State Streambed Alteration Agreements (1601-1603 Agreements) and Federal U.S. Army Corps of Engineers 404 Permits are obtained, so that there is "no net loss of wetlands"; 3) through designation of open-space, and enforcement of restrictions under the designation, to protect the aesthetic values of the areas, and to recommend recreational uses compatible with the designation; 4) to recommend measures to utilize recreation and open-space areas, trails, and scenic highway corridors; 5) to determine land use policies and restrictions that would minimize impacts to the Joshua Tree National Monument, the Big Morongo Canyon ACEC, and the Burns Pinyon Ridge Reserve; 6) to maintain travel corridors between the two, adjacent mountain ranges; and, 7) to have the open-space areas compliment the regional plans for the recovery of the desert tortoise, as given in the Draft Recovery Plan for the species.

3. Policies, principles, plan proposals and standards for the conservation, development, and utilization of natural resources The following management recommendations are made by TMC to meet the goals and objectives stated above.

a. *To maintain suitable habitat for rare and endangered species* Rare plants and animals reported in desert scrub from within the Planning Area include Parish's daisy, Robison's monardella, desert tortoise, San Diego horned lizard, LeConte's thrasher, and prairie falcon. The reported Parish's daisy population at Burns Pinyon Ridge Reserve and just west of there is the eastern extent of the range for the species. This population occurs on quartz monzonite rather than carbonate soils where most of the plants occur, and is therefore an important occurrence for the plant, and should be preserved. Western yellow-billed cuckoo and vermilion flycatcher have been reported from the Town's golf course, which supports many trees that resemble riparian habitats. Most of the special-status species are reported in biological assessments for proposed projects. Much of the conservation/open-space areas is undeveloped, so there have been few assessments in those areas, and reported occurrences of these species is therefore low or absent. However, the species are likely to occur because there is suitable habitat, and thus far, relatively little development and impact. In addition to the species given above, the following elements are known or expected in the conservation areas: Joshua tree woodland, chuckwalla, Cooper's hawk, sharp-shinned hawk, golden eagle, ferruginous hawk, northern harrier, burrowing owl, loggerhead shrike, spotted bat, Townsend's big-eared bat, pallid bat, and pocketed free-tailed bat.

Any development within the Sawtooth and southern open-space areas should consider the pertinent species listed above and in Table 1. Of these, desert tortoise is designated as threatened by State and Federal Governments; western yellow-billed cuckoo is listed as endangered by the State; and Parish's daisy has been proposed as endangered. State and federally designated threatened and endangered species are protected by respective Endangered Species Acts, and by CEQA. Most special-status species not designated as threatened or endangered are considered to be rare, and impacts to them may be considered significant under CEQA, depending on the size of the project, the prevalence of the species within the proposed project area, and other factors; e.g., new population(s) of rare plants, significant bat roost or breeding area, nests of some sensitive bird species, such as golden eagle or prairie falcon, etc.

The central location of the proposed Sawtooth open-space area would protect habitat for rare plants and animals at the center of the Planning Area, and would provide refuge habitat for species dispersed from surrounding areas. Although habitat for nesting bird species such as LeConte's thrasher, burrowing owl, and loggerhead shrike would likely be lost from adjacent areas, the protection of the Sawtooth area would provide a location into which the displaced birds could disperse. The proposed southern open-space area would also be available for birds dispersed from the higher density housing areas to the north.

Any proposed project sites within open-space areas should be surveyed at the appropriate time of year to detect the species, if possible. If surveys cannot be performed at the appropriate detection season, the habitat on-site should be assessed for the likelihood that the species listed in Table 1 may occur. Development within open-space areas should be regulated by the Town's open-space plan, and should consider larger lot sizes; maintain most of the desert scrub community occurring within the lots (i.e., avoid cleat cutting or extensive brushing); restrict

activities, using appropriate ordinances (e.g., Joshua tree, Mohave Yucca, and cactus salvage ordinances; noise restrictions; off highway vehicle use restrictions; etc.); determine restrictions for residents that may live within the proposed southern open-space area; (e.g., enforce leash laws; prevent cutting of firewood, particularly pinyon pine, on or adjacent to the Monument; discourage trespass and vandalism on the Monument; etc.); define similar restrictions for residents living in the vicinity of the Big Morongo Canyon ACEC and Burns Pinyon Ridge Reserve; use native, drought-resistant plants in landscape design; use existing roadways rather than create new ones; and delineate areas in which no development will occur.

Within the two proposed open-space areas, there are a few residences, and private lands that have not been developed. TMC discourages high density housing on these lands, and even unrestricted, low density housing may impair their conservation; clustered housing in non-designated open-space areas is preferred. The Town may consider having developers compensate impacts to tortoises by buying private lands adjacent to the Burns Pinyon Ridge Reserve and the Joshua Tree National Monument, and conveying those lands to the Preserve and Monument, which are mandated to protect desert tortoises and would protect other special-status species. Transferal of development rights and/or conservation easements may help conserve open-space areas.

Sheep grazing is not recommended in these areas, but suspects that cattle grazing will continue at existing levels, and that cattle grazing should not increase in the area. Sheep grazing has the detrimental effect of removing tortoise forage (annual plants) and cover (particularly perennial grasses); tortoise burrows may be collapsed, and juvenile tortoises may be crushed; grazing encourages non-native plant growth, which replaces native annual plants, and can result in increased fire hazard by supporting more combustible fuels (e.g., several mustards and Russian thistle, when dead, are highly combustible and often common in grazed areas); it damages native perennial plants, which may also lead to increased growth of non-native annual plants; etc.

b. *To maintain riparian habitat* Riparian habitat within the open-space areas should be preserved. Therefore any development that would impact riparian communities should be regulated by a State Streambed Alteration Agreement (Section 1601-1603) and/or a U.S. Army Corps of Engineers 404 Permit. In addition to maintaining existing riparian habitat, riparian habitats may be established along appropriate drainage courses as partial mitigation for impacts to riparian areas occurring elsewhere in the Planning Area. Potential areas that may be used to establish riparian habitat coincide with some USGS-designated blueline streams, which are shown on Map 3.

c. *To maintain areas for aesthetics and low-impact recreation* The rugged areas comprising the proposed Sawtooth open-space area offer an excellent opportunity for low-impact recreational uses, particularly the establishment of foot trails that may be used for non-motorized travel. Horseback riding would marginally impact the area by damaging the trails and possibly introducing non-native plant species via horse droppings. However, these impacts are not considered severe enough to preclude horse use in recreational/open-space areas. The use of motorized vehicles in this area is strongly discouraged. Such use would likely result in the destruction of the trails and the proliferation of unwanted trails in adjacent areas; the disruption of nesting special-status bird species and roosting bat species; the deaths of desert tortoises and perhaps horned lizards that would be crushed; loss and damage of vegetation alongside the trails; and the noise would detract from the aesthetic and wildlife value of the area.

Some non-motorized recreational use could be planned for the southern open-space area, including parks, desert tortoise educational center, desert tortoise drop off facility, foot trails, etc. The area provides habitat for most of the special-status species associated with desert scrub. Conservation of the area would benefit these species, and would help protect the plants and animals that occur in the adjacent National Monument; this is important given the Monument's designation as a Desert Wildlife Management Area (DWMA) (U.S. Fish and Wildlife Service 1993). Recreational trails may be established in the area, but some other recreational uses should be discouraged, particularly recreational vehicle activity.

d. *To utilize major recreation and open-space reservations, including trails and scenic highway corridors* Joshua Lane extends south of Highway 62 from Highway 247, enters Joshua Tree National Monument, and accesses Black Rock Campground. A second Monument entrance is on Park Boulevard along the eastern boundary of the Planning Area. These two roads are authorized entrances to the Monument, providing access into one of the most pristine desert ecosystems in the Mojave Desert. TMC does not recommend ways in which the Monument should be used by local residents, but recommendations are provided for minimizing impacts to the Monument (section E.3.e.). Burns Pinyon Ridge Reserve and Big Morongo Canyon ACEC provide opportunities for scientific study, but neither of these areas is designed for intensive recreational use. They should not be addressed in the General Plan as "recreational opportunities".

The Pacific Crest National Scenic Trail is a hiking trail that runs from Canada to Mexico, and at its closest point is approximately eight miles west of the Planning Area. The nearest community to the west is Big Bear, and Morongo Heights occurs to the south. The proximity of the trail to the Planning Area offers an excellent opportunity to link foot trails in the proposed Sawtooth open-space area with this National Trail. Much of the area between the Planning Area and the Pacific Crest Trail is managed by the Bureau, which may provide an opportunity to establish trails through the area. If a trail system is established in the proposed Sawtooth open-space area, the Pacific Crest hikers would be given an opportunity to visit the Sawtooth area, which geographically, and physically, resembles the National Monument, which is not crossed by the Pacific Crest Trail.

e. *To buffer between residential areas, Joshua Tree National Monument, the Big Morongo Canyon ACEC, and Burns Pinyon Ridge Reserve* Without the southern open-space designation, the residential communities of the Town could likely expand to the south, and may eventually border the National Monument. Such development would have the deleterious impact of eliminating rare species that presently occur in residential expansion areas, and would likely result in increased trespass into the Monument, where these species are protected. The Monument will likely be used for the regional conservation of tortoises under the Recovery Plan. Therefore, a buffer area of minimal human use adjacent to the Monument is recommended, and appropriate management of the southern open-space area would minimize impacts.

The Big Morongo Canyon ACEC is managed by the Bureau, and aside from passive recreation, such as bird watching, is not considered a public recreational area. In 1982, the Bureau estimated that thousands of people visited the ACEC, including birdbanders and birdwatchers, environmental groups, university classes, photographers, researchers, and

recreationists (Bureau of Land Management 1982). In 1982, the Bureau established the following pertinent objectives for the management of the ACEC: 1) protect existing wildlife and sensitive riparian habitat; 2) expand the northern boundary of the ACEC to encompass approximately 3,705 acres (the Bureau's access guide to the Yucca Valley area, printed in 1988, shows that this expansion has occurred); 3) coordinate land use programs and objectives with those of the Nature Conservancy and San Bernardino County Wildlife Reserve for adjacent lands in Big Morongo Canyon; and, 4) determine the feasibility of acquiring private land in Section 3 and 10, T.2S., R.4E., SBBM, which occurs south of the ACEC (Bureau of Land Management 1982).

The proposed southern open-space area would serve as a buffer to the ACEC where most of the bird species, including the endangered least Bell's vireo, willow flycatcher, and western yellow-billed cuckoos either nest or stay during the spring and summer; the proposed endangered triple-ribbed milk vetch also occurs in this area. Land use in the southern open-space area should be regulated to provide protection to the ACEC, including, but not limited to, the restrictions given in section F.3.a. of this report.

Designation of the Sawtooth open-space area should provide a similar buffer to the 320-acre Burns Pinyon Ridge Reserve, which is a State-owned site managed for rare plants and animals. Joshua Tree National Monument, Big Morongo Canyon, and Burns Pinyon Ridge Reserve provide opportunities for scientific research in desert ecology and conservation of rare plants and animals, which is an important aspect of open-space designation (Governor's Planning Office 1987). Although the Monument and ACEC are found outside the Planning Area, these two ecologically significant areas would benefit from the establishment of properly managed open-space in contiguous areas.

f. *To maintain a "regional" travel corridor between San Bernardino and Little San Bernardino Mountains and "local" corridors within the Planning Area* Travel corridors function "as pathways for wildlife movement between natural areas that were once historically connected, but which have been [or would be] severed by expanding development" (Envicom 1993). Travel corridors include "Regional Corridors" and "Local Corridors", and conceptual designations are shown on Map 3. Of the two, Regional Corridors are less conceptual, and include areas that would "link" two separate geographical regions together; in this case, San Bernardino and Little San Bernardino Mountains. Conceptually, the Regional Corridor between these two ranges is mostly found through the Morongo Valley, and passes through the southwestern corner of the Planning Area. The corridor functions as habitat for existing, resident wildlife; as an undeveloped area through which animals can move to enhance genetic transfer between different groups of animals, if not populations; and two allow general travel between two natural areas. The local corridors delineated on Map 3 allow for this movement, and also connects most of the proposed open-space areas.

Local Corridors are much more conceptual than are the regional ones, but do have a few characteristics that should be considered in their designation. Local Corridors typically follow drainage courses, washes, mountainous ridges, and other geographic features; they should connect open space areas with relatively undeveloped habitat; there should be at least two local corridors connecting each open-space area; they occur in existing low-impact areas where much of the native scrub is intact; etc.

The conservation/open-space areas in the western and southern portions of the Planning Area would maintain a relatively intact, natural corridor that may be used by large mammals travelling between the San Bernardino and Little San Bernardino Mountains. Mountain lions, black bear, mule deer, coyotes, bobcats, and foxes are a few animals that may occasionally use this corridor. Such areas linked by undeveloped corridors are more ecologically important on a regional scale than are two adjacent mountain ranges isolated from one another by development. Dense urban housing and other uses incompatible with the conservation of open-space would discourage or prevent the use of this corridor by large mammals. The corridor would likely be a critical link between the two areas if a forest fire, for example, affected normal land use by the animals, causing them to disperse between the mountain ranges.

Within the proposed open-space areas, approximately six square miles are owned by the Bureau to the west, and a few scattered parcels to the east (Map 2). These lands are included within the boundaries of the California Desert Conservation Area Plan (Bureau of Land Management 1980), which includes management prescriptions for land uses on Bureau lands. The Town's open-space plan should consider the restrictions and permissible uses on Bureau lands located within the Planning Area.

g. *To provide linkage corridors between DWMAs south and northwest of the Planning Area* Within the region, Joshua Tree National Monument to the south and Ord-Rodman Mountains, approximately 40 miles north, are the two nearest DWMAs; the Chuckwalla DWMA is contiguous to the southeastern corner of Joshua Tree National Monument. Functional linkage corridors should be relatively natural, undeveloped areas containing suitable habitat for desert tortoises and other plants or animals that may be moved from one area to the other. The Service (1992a) indicates that tortoise habitat mostly occurs below about 5,000 feet in the Mojave Desert. The highest elevation within the proposed conservation/open-space areas is approximately 4,800 feet in the Sawtooths. North of that area, which is out of the Planning Area, the linkage corridor between Joshua Tree and the Ord-Rodman Mountains would extend along the north face of the San Bernardino Mountains, through Johnson Valley, and into eastern Lucerne Valley. Much of this area is suitable, occupied tortoise habitat.

The corridor may function for the transplantation of tortoises from one of the DWMAs into the other if, for example, the regulatory agencies determine that there was a need to supplement tortoises into one of the DWMAs. Although tortoises would most likely be transplanted from the Ord-Rodman DWMA into the Superior-Cronese Lakes DWMA to the north or Fremont-Kramer DWMA to the northwest, and from the Joshua Tree DWMA into the Chuckwalla DWMA to the southeast, it is important to consider the link between the Joshua Tree and Ord-Rodman DWMAs.

The Draft Recovery Plan states that a "variety of topographic features and vegetation types are critical for protecting desert tortoise populations in the event of climatic change" (U.S. Fish and Wildlife Service 1993). Within the proposed open-space areas, there are the rugged Sawtooths, the rocky areas east of Pioneertown, and the foothills and gentle-sloping alluvium north of the Monument. The extended corridor to the north would include the foothills and lower peaks of the San Bernardino Mountains, and the broad alluvial plains of Johnson and Lucerne Valleys. Elevation through this areas ranges from about 4,800 feet in Yucca Valley,

down to 2,900 in Lucerne Valley, and up to 6,300 feet in the Ord Mountains. A variety of plant communities are present, including Joshua tree woodland, creosote bush scrub, pinyon-juniper woodland, and saltbush scrub.

Most of the land northwest of the Planning Area, and some of the land to the west, which include this proposed linkage corridor, is Bureau Land; lands further west that may be within the corridor are National Forest lands. Management prescriptions within these lands are intended to minimize impacts to tortoises and other rare species, and would not be developed to the extent of adjacent, private lands. Land use within the corridor, including the open-space areas within the Town, may be sufficiently protected to manage this DWMA linkage.

The Draft Recovery Plan describes "Limited Use Zones" (LUZ) within the core of the DWMA, and "Experimental Management Zones" (EMZ) at the peripheries (U.S. Fish and Wildlife Service 1993). Certain activities restricted in the LUZs would be allowed in the EMZs, and the Draft Recovery Plan indicates that "research activities in the EMZs will be important in furthering our understanding of desert tortoise ecology and how populations respond to various human uses." The Draft Plan states that "EMZs may be appropriate at the west end of the [Joshua Tree] DWMA near Yucca Valley."

The proposed southern conservation/open-space area may be used to benefit tortoises by educating the public. The Draft Recovery Plan recommends that the Joshua Tree DWMA include "development of visitor education and desert tortoise adoption centers where the public could learn about the needs of the desert tortoise, its habitat requirements, the fragile nature of desert ecosystems, and turn in unwanted captive desert tortoises. These facilities could be located in Yucca Valley at the northwest end of the Monument..." (U.S. Fish and Wildlife Service 1993); this area is found within the proposed southern open-space area.

LITERATURE CITED AND REFERENCES

Beauchamp, R. 1986. *A Flora of San Diego County, California.* Sweetwater River Press. National City, CA.

Bureau of Land Management. 1980. *The California Desert Conservation Area Plan.* California Desert District, Riverside, CA.

Bureau of Land Management. 1982. "Big Morongo Canyon Area of Critical Environmental Concern, Final Management Plan and E.A.R." California Desert District, Indio Resource Area, Indio, CA.

Bureau of Land Management. 1988. "Recommendations for management of the desert tortoise in the California desert". California Desert District, Riverside, CA.

Bureau of Land Management. 1990. "Desert tortoise densities in the California Desert Con servation Area". Map obtained from Larry Foreman, Biologist for the California Desert District, 1965 Spruce Street, Riverside, CA.

Bureau of Land Management. October, 1991. "Preparation Guide for West Mojave Coordi nated Management Plan". A multi-agency plan for managing the desert tortoise and the Mohave ground squirrel and the ecosystems upon which they depend. Barstow Resource Area, Barstow, CA.

California Department of Fish and Game. August, 1991. Natural Diversity Data Base, Special Plants. Sacramento, CA.

California Department of Fish and Game. December, 1992. Natural Diversity Data Base, Special Animals. Sacramento, CA.

California Department of Fish and Game. April, 1993. "State and Federal endangered and threatened animals of California." Sacramento, CA.

California Environmental Quality Act. 1983. From the Governor's Office of Planning and Research. Sacramento, CA.

California Native Plant Society. 1988. *Inventory of Rare and Endangered Vascular Plants of California.* 4th edition. Edited by J.P. Smith, Jr. and K. Berg. Sacramento, CA.

California Natural Diversity Data Base. 1993. Records check for special-status elements occurring on the Yucca Valley North, Yucca Valley South, Joshua Tree North, Joshua Tree South, Morongo Valley, and Rimrock 7.5' USGS quadrangles. California Department of Fish and Game. Sacramento, CA.

Garret, K. and J. Dunn. 1981. *Birds of Southern California, Status and Distribution.* Los Angeles Audubon Society. Los Angeles, CA.

Governor's Office of Planning and Research. *The General Plan Guidelines.* Sacramento, CA.

Holland, R. 1986. "Preliminary descriptions of the terrestrial communities of California." State of California, The Resources Agency, Department of Fish and Game. Sacramento, CA.

Jaeger, E. 1969. *Desert Wild Flowers.* Stanford University Press. Stanford, CA.

Luckenbach, R. 1982. "Ecology and management of the desert tortoise (*Gopherus agassizii*) in California". In North American Tortoises: Conservation and Ecology. U. S. Department of the Interior, Fish and Wildlife Service. Wildlife Research Report No. 12.

Munz, P. 1974. *A Flora of Southern California.* University of California Press. Berkeley and Los Angeles, CA.

San Bernardino County Planning Department. July, 1992. "Desert tortoise and Mojave ground squirrel survey requirements." A memorandum from the Planning Department, signed 14 July 1992 by Randy Scott, and received by Tierra Madre Consultants shortly thereafter.

Stebbins, R. 1985. *A Field Guide to Western Reptiles and Amphibians.* Second Edition, Revised. Sponsored by the National Audubon Society and the National Wildlife Federation. Houghton Mifflin Company. Boston, Mass.

Tierra Madre Consultants, Inc. 1988a. "Blythe General Plan biological assessment." An unpublished report contracted by Terra Nova Planning & Research, Inc. Riverside, CA.

Tierra Madre Consultants, Inc. 1988b. "Biological assessment of Pioneertown (#88-060)." An unpublished report contracted by Mueller & Turner. Riverside, CA.

Tierra Madre Consultants, Inc. 1989a. "Focused desert tortoise survey for TT 14140 (#89-219)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1989b. "Biological assessment for the Pipes Road Property (#89-043)." An unpublished report contracted by Jeffries & Associates. Riverside, CA.

Tierra Madre Consultants, Inc. 1990. "Biological assessment for APN 588-041-036 (#90-056)." An unpublished report contracted by Warner Engineering. Riverside, CA

Tierra Madre Consultants, Inc. 1991a. "Biological assessment for the Morongo Basin Pipeline (#91-045)." An unpublished report contracted by Tom Dodson & Associates. Riverside, CA.

Tierra Madre Consultants, Inc. 1991b. "Biological Assessment for the Gatlin Development (#91-125)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1991c. "Focused desert tortoise survey for the Hi Desert Medical Center (#91-140)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1991d. "Focused desert tortoise survey for TT 14140 (#91-027)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1991e. "Focused desert tortoise survey for PM 13882 (#91-081)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1992. "Focused desert tortoise survey of the Miller Church Site (#92-004)." A report contracted by Art Miller, Jr. Riverside, CA.

Tierra Madre Consultants, Inc. 1993a. "Focused desert tortoise survey for the Morongo Unified School District (#93-015)." An unpublished report contracted by Warner Engineering. Riverside, CA.

Tierra Madre Consultants, Inc. 1993b. "Biological assessment for the Hi-Desert Water District Proposed Pipeline (#92-072)." An unpublished report contracted by Tom Dodson & Associates. Riverside, CA.

United States Fish and Wildlife Service. November, 1989. "The desert tortoise emergency and proposed listing". Portland, Oregon.

United States Fish and Wildlife Service. January, 1992a. "Field survey protocol for any federal action that may occur within the range of the desert tortoise." Ventura, CA.

United States Fish and Wildlife Service. January, 1992b. "Field survey protocol for any non-federal action that may occur within the range of the desert tortoise." Ventura, CA.

U.S. Fish and Wildlife Service. April, 1993. *Draft Recovery Plan for the Desert Tortoise (Mojave Population).* Prepared for Regions 1, 2, and 6 of the U.S. Fish and Wildlife Service. Lead Region, Portland, Oregon.

Zeiner, D., Laudenslayer, W., and K. Mayer. 1988. *California's Wildlife, Volume I, Amphibians and Reptiles.* State of California, The Resources Agency, Department of Fish and Game. Sacramento, CA.

Zeiner, D, Laudenslayer, Jr., W., Mayer, K., and M. White. 1990. *California's Wildlife, Volume III, Mammals.* State of California, The Resources Agency, Department of Fish and Game. Sacramento, CA.

APPENDICES

Appendix A1. Current desert tortoise designation

In 1984 the Service was petitioned to designate the desert tortoise (*Gopherus agassizii*) as an endangered species on an emergency basis. The possible listing was deferred for five years due to other priorities of the Service. However, in 1989, after reviewing the earlier evidence and new information, the Service designated the "Mojave Desert" population of desert tortoise as an emergency listed endangered species; this designation includes all tortoise habitat north and west of the Colorado River, which includes the Colorado Desert in the Coachella Valley region.

The emergency rule was published in the Federal Register on August 4, 1989, and remained effective for 240 days until April 1, 1990. On August 4, 1989 the desert tortoise was afforded full protection under the Endangered Species Act of 1973 (Act), as amended. During the period of emergency listing the Service prepared a proposed rule for listing the tortoise on a more long-term basis.

Just before the April 1 deadline, the Service declared that the western Mojave population of the desert tortoise be listed as a threatened species on the Federal level. A significant result of this listing is that "take" of this species is now prohibited under the authority of the Act. The definition of "take" includes harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. The loss of tortoise occupied habitat is also considered a "take".

Anyone who engages in a "take" will be subject to prosecution under Section 9 of the Act. Section 1540 (a)(1) states a civil penalty of not more than $25,000 in fines, and Section 1540 (b)(1) states a criminal penalty of not more than $50,000 in fines and/or up to one year imprisonment. Taking may occur only under authority of the Service, pursuant to Section 7 (through Federal interagency consultation) or Section 10(a) of the Act.

The Section 7 consultation process evaluates the impacts of the proposed Federal action and determines whether the proposed action is likely to jeopardize the continued existence of the species. The consultation requirement does not apply to purely State or private actions with no Federal agency involvement. For there to be a Section 7 Consultation, activities associated with the project must be "funded, authorized or carried out" by a Federal agency, such as the Bureau, Army Corps of Engineers, etc.

The Endangered Species Act provides issuance of Section 10(a) permits to authorize "incidental taking" (the loss of tortoises or occupied habitat) in connection with otherwise lawful private activities. Such a permit represents the only means of authorized incidental taking of an endangered species when there is no Federal agency action involved. The Section 10(a) permit may only be issued upon the completion of an approved Habitat Conservation Plan (HCP) that meets all of the requirements of the Endangered Species Act.

Appendix A2. Desert tortoise life history

Creosote bush scrub, saltbush scrub, and Joshua tree woodland are some of the plant communities in which tortoises occur. Although tortoises may occur in canyon bottoms and on rocky hillsides, in California, they are most often found on level ground, especially adjacent to washes. Tortoises typically burrow in areas with firm soil, and may remain underground six to nine months out of the year. Some tortoises have reportedly remained in their burrows throughout the year when unfavorable conditions, such as prolonged drought, occur. Burrows are typically found at the base of shrubs, but may occur in the open. Diurnal activity is greatest during the spring and early summer months, and to a lesser extent during the fall. They are in a state of torpor (= hibernation) during the winter.

Tortoises use two types of burrows, "brumation burrows" and "pallet burrows." Brumation burrows, which may extend many feet below the ground, are used in summer aestivation (heat avoidance and decreased food availability) and winter hibernation (cold avoidance); several "brumating" tortoises may be found in a single burrow. Pallet burrows are excavated to avoid temperature fluctuations. They are typically one to three feet deep and may not be long enough to conceal the tortoise. Tortoises usually emerge in late February or early March and may be active during the summer if there are rains or when temperatures are moderate. They are herbivores and feed on a variety of plants including annual plants and perennial grasses.

Tortoises are most often detected by their scats and burrows. Sunlight reflected into a burrow may reveal the backside of a tortoise, and they are occasionally seen above-ground during favorable times of the year. Courtship rings, "feeding" depressions, and carcasses are occasionally found. Any of these signs is an indication that tortoises have been or still are resident on the site; they indicate suitable habitat, if not occupied habitat.

The historical range of the desert tortoise includes a variety of desert communities in southeastern California, southern Nevada, western and southern Arizona, southwestern Utah, and through Sonora and northern Sinaloa, Mexico. They are still found in most of these areas although populations are largely fragmented and apparently declining over most of the former range. Desert tortoises north and west of the Colorado River are afforded full Federal protection as a threatened species.

Threats to desert tortoises include loss or degradation of habitat by off road vehicles, military training maneuvers, various kinds of mineral extraction activities, grazing by livestock, and agricultural and residential development. Young tortoises are killed by ravens, and all ages may be taken by pet collectors. Recently a mycoplasmic respiratory disease has been detected in desert tortoises. The disease appears to be most prevalent in the western Mojave although it has been found elsewhere in California and in Utah, Nevada, and Arizona. This fatal disease is apparently spreading through the wild population. It is likely that the disease was introduced into wild populations by the release of ill captive tortoises.

APPENDIX B:

USFWS RESPONSE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
Ventura Field Office
2140 Eastman Avenue, Suite 100
Ventura, California 93003

July 26, 1993

Edward L. LaRue
Tierra Madre Consultants
1159 Iowa Avenue, Suites E and F
Riverside, CA 92507

Subject: Species List for the Town of Yucca Valley

Dear Mr. LaRue:

This is in response to your letter dated June 15, 1993, and received by us on June 18, 1993, requesting information on listed and proposed endangered and threatened species which may be present in the vicinity of Yucca Valley, San Bernardino County, California. If implementation of the Yucca Valley General Plan may affect a listed species and a Federal nexus exists, the Federal lead agency has the responsibility to prepare a biological assessment if the project may require an Environmental Impact Statement. If a biological assessment is not required, the Federal lead agency still has the responsibility to review its proposed activities and determine whether any listed species will be affected.

Project proponents without a Federal nexus should be aware of the prohibitions against the take of a listed species. Section 9 of the Federal Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (Act), prohibits the "take" of any listed species. The definition of "take" includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

A notable component of this definition, particularly in the case of the desert tortoise, which occurs in your project area, is the definition of "harm." "'Harm' in the definition of 'take' in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Anyone who engages in a take is subject to prosecution under Section 9 of the Act. Such taking may occur only under the authority of the Fish and Wildlife Service (Service) pursuant to Section 7 (through Federal interagency consultation if there is Federal involvement with a

project) or through a Section 10(a)(1)(B) permit, as mandated by the Act.

During the assessment or review process, the Federal lead agency may engage in planning efforts, but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of Section 7(d) of the Act. If a listed species may be affected, the Federal lead agency should request, in writing through our office, formal consultation pursuant to Section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to listed species prior to a written request for formal consultation.

Enclosed is a list of endangered, threatened, and candidate species presently under review by the Service for consideration for Federal listing. This list is consistent with the list you compiled in your June 15 letter, except we have added Little San Bernardino Mountains Gilia (Gilia maculata), and excluded the least bell's vireo (Vireo bellii pusillus), which occurs outside your project area in Big Morongo Canyon. Only listed species receive protection under the Act. However, candidate species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in Section 7(c) of the Act, is not required for candidate species. If early evaluation of the project indicates that it is likely to adversely affect a candidate species, you may wish to request technical assistance from this office.

If you have any questions, please contact Jim Rorabaugh of my staff at (805) 644-1766.

Sincerely,

Craig Faanes
Field Supervisor

Enclosure

LISTED ENDANGERED, THREATENED, AND CANDIDATE SPECIES THAT MAY OCCUR WITHIN THE VICINITY OF YUCCA VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

	Listed Species	STATUS
Reptile		
Desert tortoise	Gopherus agassizii	T
	Candidate Species	
Reptile		
Chuckwalla	Sauromalus obesus	C2
San Diego horned lizard	Phrynosoma coronatum blainvillei	C2
Plants		
Parish's daisy	Erigeron parishii	C2
Robison's monardella	Monardella robisonii	C2
Little San Bernardino Mountains Gilia	Gilia maculata	C2

(E) -Endangered (T) -Threatened (CH) -Critical Habitat
(C1) -Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(C2) -Category 2: Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(C3) -Category 3(c): Taxa more common than previously thought; no longer being considered for a listing proposal at this time.

APPENDIX C:

USFWS FIELD SURVEY PROTOCOL FOR DESERT TORTOISE

June 1990

FIELD SURVEY PROTOCOL FOR ANY NON-FEDERAL ACTION
THAT MAY OCCUR WITHIN THE RANGE OF THE DESERT TORTOISE

The Mojave population of the desert tortoise was listed as a federally endangered species on August 4, 1989 by emergency rule and as a threatened species by final rule on April 2, 1990. Section 9 of the Endangered Species Act prohibits the "taking" of any federally listed threatened or endangered species without first obtaining necessary authority from the Fish and Wildlife Service. "Take" includes "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct" (Section 3(19), Endangered Species Act 1973, as amended). Harm includes "significant habitat modification or degradation where it actually kills of injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" (50 CFR 17.3(c)). "Take" also includes modification of habitat that would result in harm to the desert tortoise.

In response to a demand for information and/or guidance on compliance with the Endangered Species Act, the Fish and Wildlife Service has developed a protocol for surveys within the range of the federally threatened desert tortoise. The purpose of this protocol is to provide technical assistance to entities to determine presence or absence of this animal and thus avoid "take" of the desert tortoise. Where avoidance is not possible, this protocol will provide information from which the project proponent can develop a "conservation plan" with guidance from the Fish and Wildlife Service. The conservation plan is the primary component of a Section 10(a) permit application intended to obtain the necessary authorization to "take" a federally listed species as specified in the Endangered Species Act. While no one is required to conduct surveys, survey information will help the project proponent avoid potential "take" of the desert tortoise, an act prohibited by Federal law.

This survey protocol is subject to revision as new information becomes available. Before initiating the survey protocol described below, we recommend checking with the Fish and Wildlife Service to verify that you are implementing up-to-date survey methods.

In Arizona:

Fish and Wildlife Service
Phoenix Field Office
3616 West Thomas, Suite 6
Phoenix, Arizona 85019
(602) 379-4720

In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:

Fish and Wildlife Service
Ventura Office
2140 Eastman, Suite 100
Ventura, California 93003
(805) 644-1766

In California, for Imperial and Riverside Counties:

Fish and Wildlife Service
Laguna Niguel Field Office
Federal Building, 24000 Avila Road
Laguna Niguel, California 92656
(714) 643-4270

In Nevada:

Fish and Wildlife Service
4600 Kietzke Lane, Building C
Reno, Nevada 89502
(702) 784-5227

In Utah:

Fish and Wildlife Service
2078 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104-5110
(801) 524-4430

Survey protocol includes four parts: 1) survey need, 2) survey types, 3) survey quality, 4) survey time period, and 5) qualifications of the surveyor.

Survey Need: The Fish and Wildlife Service has defined four Classes of desert tortoise habitat. Please refer to the appropriate Class below for information on survey recommendations within each Class.

Bureau of Land Management Category Maps: Please note that the Bureau of Land Management category maps for desert tortoises were developed to assist the Bureau in managing public lands for the tortoise within their multiple use mandate. Bureau maps were not developed to provide information on how to avoid take of the desert tortoise or comply with the Endangered Species Act.

Class 1: In Class 1 areas there is a high probability of encountering desert tortoises. Activities such as land clearing are likely to result in "take" of desert tortoises or habitat, unless site specific information indicates that no take would occur. The Fish and Wildlife Service recommends that the project proponent conduct a Clearance survey for tortoises and tortoise sign over the entire project area and the Zone of Influence adjacent to the project area. The survey information would be part of the requirements of the Endangered Species Act Section 10(a) permit application. Depending on the type of project, a Pre-Construction survey (see below) in occupied tortoise habitat may be necessary. The Fish and Wildlife Service requests that survey results (i.e., copies of the completed transect forms) be submitted to the appropriate Service office within 30 days.

Class 2: Class 2 areas may have a reduced probability of encountering desert tortoises than in Class 1 areas for various reasons including previous modification of habitat or presence of marginal habitat in the project area and adjacent areas. Despite lower probabilities of encountering tortoises, surface disturbance activities including land clearing could result in the take of tortoises in these areas. As in Class 1 areas, the Fish and Wildlife Service recommends that the project proponent conduct a Clearance survey for tortoises and tortoise sign over the entire project area and the Zone of Influence adjacent to the project area. The survey information would be part of the requirements of the Endangered Species Act Section 10(a) permit application. Depending on the type of project, a Pre-Construction survey (see below) in occupied tortoise habitat may be necessary. The Fish and Wildlife Service requests that survey results (i.e., copies of the completed transect forms) be submitted to the appropriate Service office within 30 days.

The project area is defined as any area to be cleared, partially cleared, with vehicles on or adjacent to it, any area temporarily or permanently used for equipment or materials storage, loading or unloading, or areas where soils/vegetation is damaged, fragmented, or disturbed.

The entire project area is surveyed using belt transects 10 yards or 30 feet wide (100 percent coverage). In addition, the Zone of Influence is surveyed. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. As a minimum, the Zone of Influence belt transects are located at 10, 100, 200, 400, and 800 yard intervals from and parallel to the edge of the project boundaries. (See Figures 1 and 2.) All tortoise sign (live tortoises, shells, bones, scutes, limbs, scats, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) within the project area and sign located on transects within the Zone of Influence should be mapped.

The extent of the Zone of Influence is dependent on the type of habitat alteration/development and its proximity to other developments. The extent of the Zone of Influence increases with the probability of domestic predators, potential human use in the Zone, road use, littering, and waste disposal. Additional transects may be recommended at 1200- and 1600-yard intervals from the perimeter of the project area for developments 1) located in or within one mile of Class 1 or 2 habitats and 2) associated with residential development, new or increased road use, landfills, or increases in litter.

For example, if a project area is 640 acres or one square mile, 176 parallel transects each one mile long and 10 yards wide would be necessary to provide 100 percent coverage of the project area. Additional transects would be necessary to survey the adjacent areas or Zone of Influence in Class 1 and 2 habitats or habitats with tortoise sign.

When mapping tortoise sign, the recommended map scale is 1 inch=100 feet for plans involving ground disturbance and 1 inch=1000 feet for preliminary planning (master planning or specific planning). The map should include locations and types of all tortoises and sign found on the project area and Zone of Influence, location and number of each transect, significant landmarks, legal description of the project area, survey dates, and elevation range within the project boundaries. The transect data should include size/sex of skeletal remains, total corrected sign, and estimated size of live tortoises. Please note that a Federal Fish and Wildlife License/Permit is required before a surveyor can capture or touch a live desert tortoise even for the purposes of taking measurements. A permit may also be required form the appropriate state wildlife resource agency (e.g., Arizona Game and Fish Department, California Department of Fish and Game, Nevada Department of Wildlife, Utah Division of Wildlife Resources). The Fish and Wildlife Service emphasizes that the surveyor should only estimate the size of all live desert tortoises encountered.

The following format is recommended for recording transect data. (See Figure 3.) This format has been borrowed from the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. One form is used for each transect. Pages 1, 2, and 3 of the form would be completed for each transect in Class 1 and 2 areas and the Zone of Influence; page 1 would be completed for each transect in Class 3 areas. If tortoise sign is found in a Class 3 project area, then all three pages would be completed by the surveyor. If additional space is needed, more forms may be used for each transect and stapled together.

Class 3: The probability of encountering desert tortoises or tortoise sign in the project area or Zone of Influence is low. Class 3 areas are within the historical range of the desert tortoise but because of habitat modification or other factors, tortoise populations have declined and may no longer be present. Class 3 areas would include parcels within tortoise habitat surrounded by or adjacent to urban development. Clearance surveys for desert tortoises and tortoise sign in Class 3 areas are recommended for the entire project area but at a reduced level of survey effort. Rather than completing the three pages of survey forms for each transect, only the first page would need to be completed. If tortoise sign is found, Clearance surveys of the project area and a Pre-Construction survey may be necessary at a level of effort equivalent to that recommended for Class 1 or 2 areas. The Fish and Wildlife Service requests that survey results (i.e., copies of the completed transect forms) be submitted to the appropriate Service office within 30 days.

Class 0: Based on current information in our files, Class 0 areas are believed to be outside the historical range of the desert tortoise. Clearance surveys for desert tortoises and tortoise sign in Class 0 areas would not be necessary. However, in the event that a desert tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pallets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) are found in the project area during the course of construction, all surface disturbance should stop. The Fish and Wildlife Service recommends that the project proponent notify us and the local planning and zoning department in writing within three days of the discovery. This short notification period will ensure a prompt response by the Fish and Wildlife Service to facilitate compliance with the Endangered Species Act.

If tortoise sign is found, Clearance surveys of the project area and a Pre-Construction survey may be necessary. The Fish and Wildlife Service requests that survey results (i.e., copies of the completed transect forms) be submitted to the appropriate Service office within 30 days of completion of surveys in the project area.

If information indicates probable presence of desert tortoises in these Class 0 areas, the Fish and Wildlife Service would reclassify these areas as Class 1, 2, or 3. Upon reclassification, a Clearance survey would be recommended.

Survey Types: Two types of surveys are recommended: 1) Clearance and 2) Pre-Construction. Neither survey utilizes the 1.5-mile triangular transect survey method developed by the Bureau of Land Management. This triangular transect method does not provide reliable information on the number of desert tortoises that would be taken as a result of implementation of the proposed project and thus is not adequate for meeting the requirements of the Endangered Species Act.

Clearance: This survey type is recommended for all Class 1 and 2 habitats and for Class 3 habitat types but at a reduced level of effort. A Clearance survey equivalent to that in a Class 1 or 2 habitat would be requested for Class 3 or 0 habitats if tortoise sign is found within the project area.

The purpose of this survey is to determine impacts of potential land disturbance activities to the local tortoise population. This includes identifying the number and location of all tortoises and tortoise sign that occur within a given project area and if any tortoises occur in adjacent areas whose home range may overlap into the project area and thus be lost by the proposed action.

If the surveyor is unable to submit copies of the completed transect forms to the Fish and Wildlife Service, we recommend that the surveyor complete and submit the summary form(s) (Figure 4) to the appropriate Fish and Wildlife Service office listed above. Submission of the summary form(s) to the Fish and Wildlife Service may be preferable when the survey area covers several hundred acres.

Please do not collect any desert tortoise sign. Tortoise scats may be used by tortoises to mark or identify travel areas and coversites. Tortoise shells may be an important source of minerals for reptiles and mammals.

Pre-Construction Survey: For projects located in occupied tortoise habitat, especially those projects with a linear band of disturbance (e.g. pipelines, roads, transmission lines), a Pre-Construction survey may be required as part of a Section 10(a) permit. The purpose of the survey would be to relocate or salvage tortoises from the area of construction. A Pre-Construction survey would require full coverage of the project area, not the Zone of Influence, and would focus on locating all desert tortoises above and below ground within the project area. This survey would be conducted immediately prior to surface disturbance at each site within the project area. The survey period would be stipulated in a Section 10(a) permit.

For example, Miles 10 to 50 of a pipeline project will be constructed in occupied desert tortoise habitat. A Clearance survey has been completed and several tortoises and cover sites were found within the project area. The project proponent received a Section 10(a) permit from the Fish and Wildlife Service which requires a Pre-Construction survey. Miles 10 to 12 will be constructed from June 10 to June 20. The desert tortoise Pre-Construction survey for this segment of the pipeline was stipulated in the Section 10(a) permit to be conducted from June 9 to June 19.

Survey Quality: To determine the accuracy of the surveyor in locating desert tortoise sign during Clearance surveys for each project area, the Fish and Wildlife Service suggests that the surveyor conduct an intensive survey in a portion of the project area following completion of the 100 percent survey. The size of the intensive survey area is 5 percent of the size of the project area. The intensive survey area would also receive 100 percent coverage using transects 10 feet wide rather than 30 feet. The location of the intensive survey would be plotted on the map and a comparison made between the sign recorded in this area during the 30-foot wide surveys and the 10-foot wide surveys. The quality or accuracy of the survey results for the project area will be determined by comparing the transect data with the data from the intensively surveyed area.

If the surveyor does not meet the minimal qualifications stated below or if there is a statistically significant difference in number of sign recorded between the 30-foot wide transects in the 5 percent project area and the 10-foot wide transects, the survey may not be deemed reliable by the Fish and Wildlife Service.

Survey Time Period: Survey time for Clearance surveys is limited to the following approximate activity period of the desert tortoise, March 25 to May 31. This survey time may be extended by the Fish and Wildlife Service if tortoises on or near the project area have been observed above ground prior to March 25 or after May 31. This survey window is based on the activity period for the desert tortoise during a typical year and equates to the period of time when a tortoise is not brumating or aestivating. During dry years this activity period may be shorter and in wet years it may be longer.

Qualifications of Surveyor: The Fish and Wildlife Service does not necessarily endorse any individual or company with respect to their abilities to conduct satisfactory surveys. We provide the following guidelines that we recommend you follow when selecting someone to conduct surveys to determine presence or absence of tortoises in a given area.

As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors degree or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. He/she must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises. Field experience may mean a minimum of 60 days field experience searching for tortoises and tortoise sign.

The surveyor should have the following qualifications for the survey results to be accepted by the Fish and Wildlife Service: 1) ability to recognize and accurately identify all types of desert tortoise sign as listed above and 2) ability to carefully, legibly, and completely record all sign including size of cover sites, shells, and estimated size of live tortoises.

Figure 1. Example of a proposed transmission line including areas with full (100 percent) survey coverage for desert tortoises (construction area) and locations of transects within the Zone of Influence.

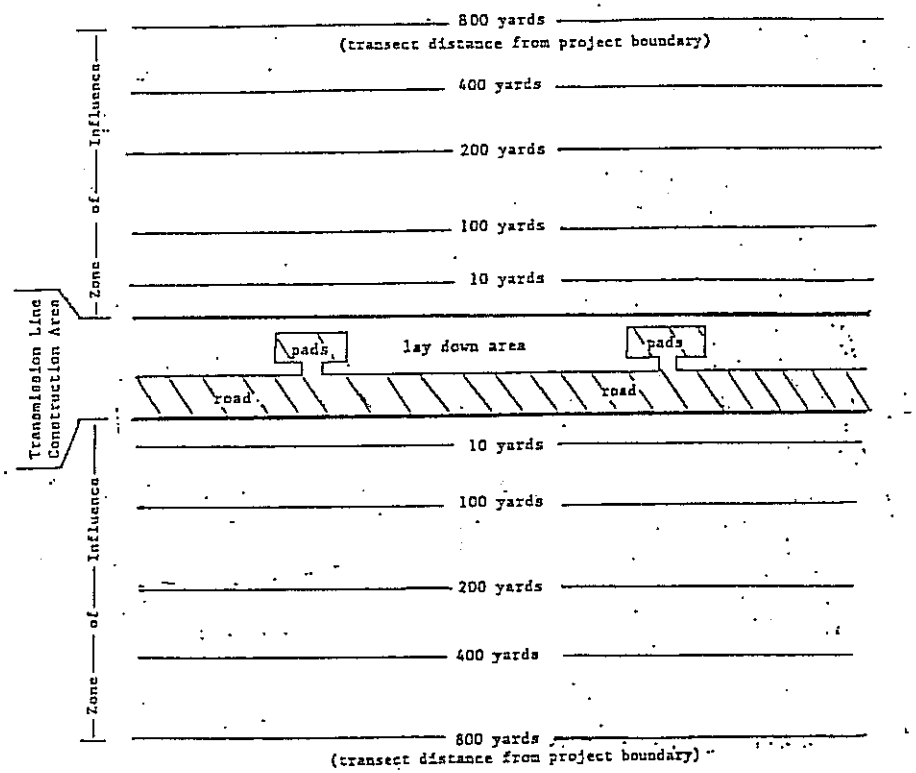


Figure 2. Example of a proposed spatial development (e.g., residential development, commercial development) with full (100 percent) survey coverage for desert tortoises and locations of transects within the Zone of Influence.

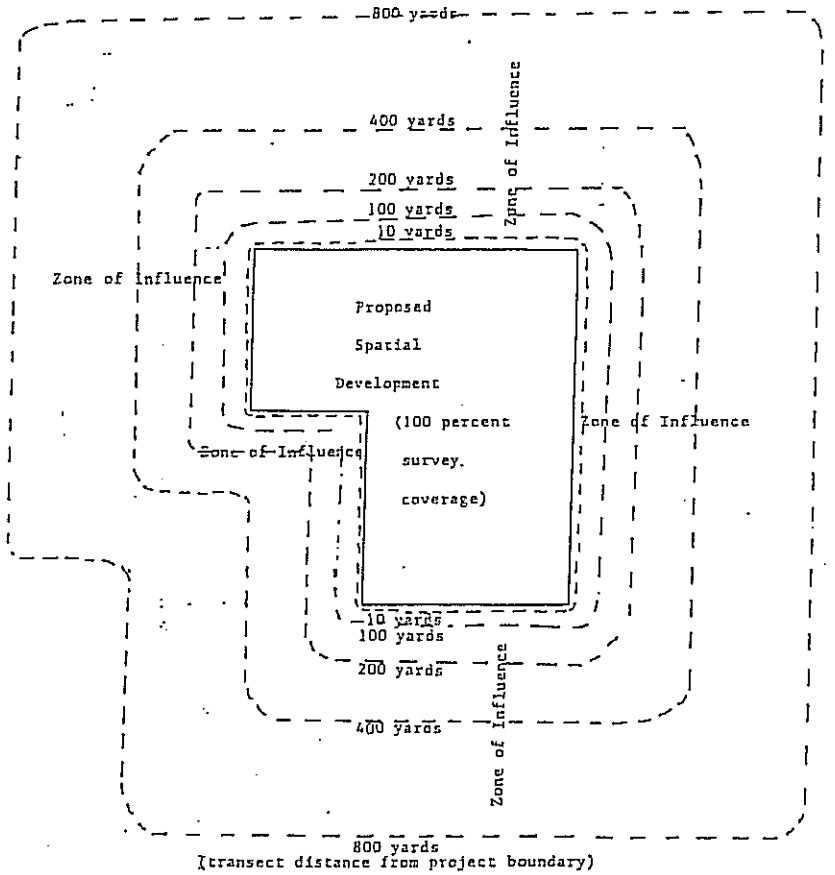


Figure 3. Desert tortoise survey form (4 pages) for clearances.

(leave a blank space for a 4 X 6
or 6 X 4 photograph)

M/D/Y
Date _____
Transect No. _____
State _____
County _____
Recorder _____
Project Name _____

Quad Name _____
Scale _____
Site Name _____
T ____ R ____ Sec ____
¼ Sec ____ ¼¼ Sec ____
UTM Zone _____
Northing _____
Easting _____

DESERT TORTOISE HANDBOOK 1990:
FORM FOR CLEARANCES AND PRECONSTRUCTION SURVEYS

Transect Length: _____ft Width: 30 ft

Rainfall ____in Humidity ____% Cloud cover ____% Wind speed ____
% Slope: high ____ low ____ Aspect ____ Elevation ____ft

Land Form _____
Soils _____
Vegetation: perennials _____
annuals _____

Adjacent Land Use _____
Soils _____
Vegetation _____

Time (start) _____ PDT/MDT Airtemp ____°C 1cm ____°C Surface ____°C
Time (finish) _____ PST/MST Airtemp ____°C 1cm ____°C Surface ____°C

Total Numbers of						
Corrected Sign	Live Tortoises	Coversites	Scats	Shells	Other	Total Number of Neotoma Middens

Tortoise Sign

Sign No.	Scat No.	No. Class No.	Live	Shell	Cover Site	Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings
1.									
2.									
3.									
4.									

continued on next page

M/D/Y
Date _____
Transect No. _____
State _____
County _____
Recorder _____
Project Name _____

Sign No.	Scat No.	No. Class No.	Live	Shell	Cover Site	Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

L=Live L=Live LIVE TORTOISES, SHELLS, AND SHELL PARTS S=Shell

Sign No.	Shell Sex	Size	Age	Marked	S/L Location	Live Est Size	Marked	Captive	Activity	Condition	URDS

continued on next page

H/D/Y

Date_____
Transect No._____
State_____
County_____
Recorder_____
Project Name_____

COVERSITE DATA

Sign No.	Type	Location	Condition	Length	Width	Height	Soil Cover At Entry	Other Sign

NEOTOMA MIDDENS

Sign No.	Type of Sign	Location of Midden	Size of Bones (Adult/Juvenile)	Remains from more than one tortoise

COMMENTS

Show locations of types of tortoise sign on transect line below:

_____

Drawing: Scale 8 in = 0.5 mi Drawing or Map Reference No._____

Scat Class: 1: wet (not from rain or dew) or freshly dried, obvious odor
2: dried with glaze, some odor, dark brown
3: dried, no glaze, no odor, signs of bleaching (light brown), tightly packed material
4: dried, light light brown to pale yellow, loose material, scaly appearance
5: bleached, or consisting only of plant fiber

Figure 4. Desert tortoise summary form for clearances and preconstruction surveys (1 page).

(place a 4 X 6 or 6 X 4 photograph of project area or part thereof)

M/D/Y
Date _____
Transect Nos. _____
State _____
County _____
Biologist _____
Project Name _____

Quad Name _____
T___ R___ Sec___
¼ Sec___ ¼¼ Sec___

DESERT TORTOISE SUMMARY FORM
FOR CLEARANCES AND PRECONSTRUCTION SURVEYS

Rainfall____in. cloud cover____% Wind speed____
% Slope: nigh_____ low_____ Aspect_____ Elevation_____ft.

Land Form (e.g., mesa, bajada, wash)_____
Soils_____
Vegetation: dominant perennials_____
other species_____
dominant annuals_____
other species_____
Adjacent Land Use: immediate_____
Within 1 km._____
Soils_____
Vegetation_____

Average Daily Max Airtemp____°C 1cm____°C Surface____°C
Average Daily Min Airtemp____°C 1cm____°C Surface____°C

Corrected Sign	Live Tortoises Adult/Juv.	Total Number of Coversites Pallet/Burrow/Den Active/Inactive	Scats	Shell Remains
	A= J=			A= J= Unk= M= F= Unk=

Total Number of

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Total Number of Neotoma Middens

Evidence of Human Disturbance
Numbers Seen / Number of Transects

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
/	/	/	/	/	/	/	/	

Comments/Drawings

APPENDIX E

TRAFFIC STUDY REPORT

PREPARED FOR:

TOWN OF YUCCA VALLEY

PREPARED BY:

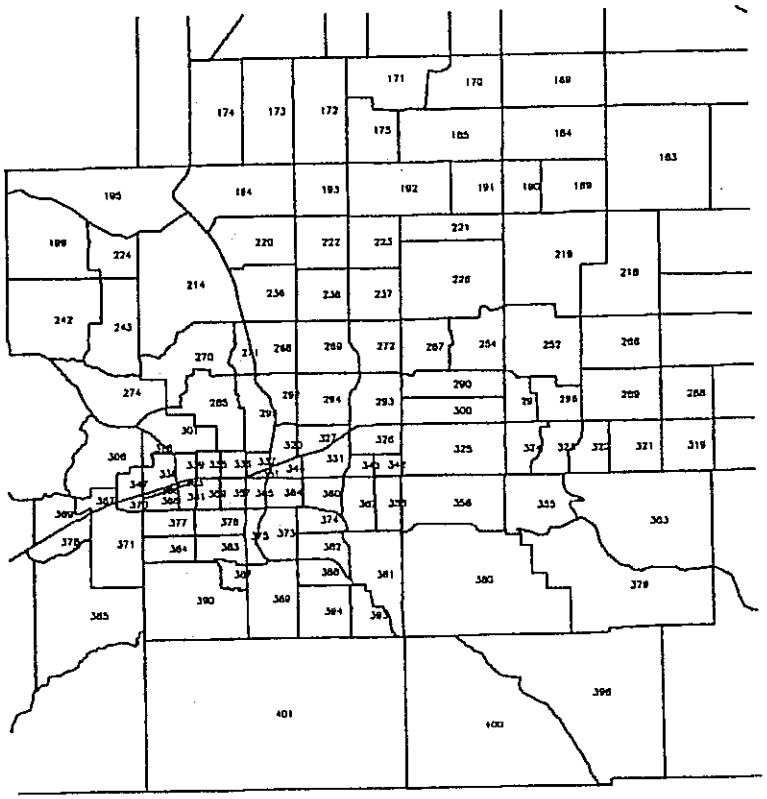
ROBERT KAHN, JOHN KAIN & ASSOCIATES

AUGUST, 1995

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

TOWN OF YUCCA VALLEY
GENERAL PLAN PROGRAM
CIRCULATION ELEMENT TRAFFIC STUDY



Robert Kahn, John Kain
& Associates, Inc.

Robert Kahn, John Kain
& Associates, Inc.

Transportation Planning • Traffic/Acoustical Engineering

August 24, 1995

Mr. Shane Stueckle
TOWN OF YUCCA VALLEY
57090 29 Palms Highway
Yucca Valley, CA 92284

Subject: Town of Yucca Valley General Plan Program Circulation Element Traffic Study

Dear Mr. Stueckle:

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC. is pleased to present this Circulation Element Traffic Study for the Town of Yucca Valley General Plan program. This report summarizes our findings regarding future roadway conditions as discussed at the Joint Planning Commission and Town Council meeting of July 12, 1995. Buildout traffic assignments have been performed using the Previously Circulated and Preferred Land Use alternatives.

The last two sections of the report present our conclusions on circulation system requirements. Recommendations for a Draft Circulation Plan including the location of intersections which require capacity enhancement are also presented.

If you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 474-0809.

Sincerely,

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC.

John Kain, AICP
Principal

JK:kgd/4826

JN:636-94-001

REGISTERED PROFESSIONAL ENGINEER
CARLETON WATERS
NO. 52916
EXP 12/31/98
CIVIL
STATE OF CALIFORNIA

Carleton Waters, P.E.
Associate

4101 Birch Street, Suite 100, Newport Beach, California 92660
(714) 474-0809 • FAX (714) 474-0902

TOWN OF YUCCA VALLEY
GENERAL PLAN PROGRAM
CIRCULATION ELEMENT TRAFFIC STUDY

Prepared for:

Mr. Shane Stueckle
TOWN OF YUCCA VALLEY
57090 29 Palms Highway
Yucca Valley, CA 92284

Prepared by:

Robert Kahn, John Kain and Associates, Inc.
4101 Birch Street, Suite 100
Newport Beach, CA

John Kain, AICP
Carleton Waters, P.E.
William Lawson

August 24, 1995

JN:636-94-001
JK:kgd/4826

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YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ (TOWN LIMITS) ..... B

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE SUMMARY BY TAZ (TOWN LIMITS) C

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE POPULATION/EMPLOYMENT/HOUSING SUMMARY BY TAZ (RSA 33) D

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE POPULATION/EMPLOYMENT/HOUSING SUMMARY BY TAZ (RSA 33) . E

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TOWN OF YUCCA VALLEY
GENERAL PLAN PROGRAM
CIRCULATION ELEMENT TRAFFIC STUDY

INTRODUCTION

This report presents the technical analysis of the circulation system requirements for the Town of Yucca Valley General Plan Program. The General Plan review process has produced new preferred land use and circulation plans. These plans have been analyzed in this report using a computerized traffic model developed for the Morongo Basin. In addition to the preferred circulation plan, traffic projections for the previously circulated land use and circulation plans were also presented at the Joint Planning Commission and Town Council meeting of July 12, 1995.

A Preferred Circulation Plan for the Town of Yucca Valley General Plan is summarized in the conclusions section of the report. Also included are recommendations for roadway cross-sections for additional plan flexibility.

Background

The purpose of the General Plan is to provide a comprehensive set of planning elements to guide the Town in all aspects of future development. A key part of the General Plan is the Circulation Element.

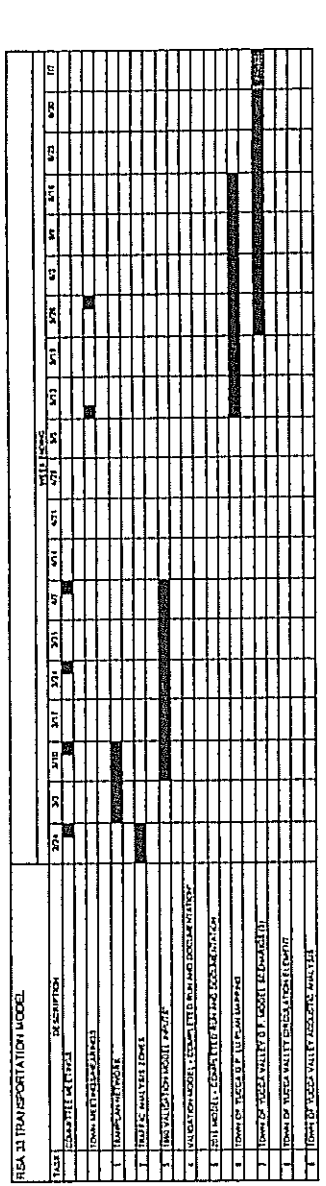
The function of the Circulation Element is to provide a master blueprint for implementation of the circulation system. It anticipates the travel demands within the Town at buildout of the Land Use Element of the General Plan, provides a map of

approximate alignments and classifications of key roadways, and includes goals, objectives and policies to implement the circulation system.

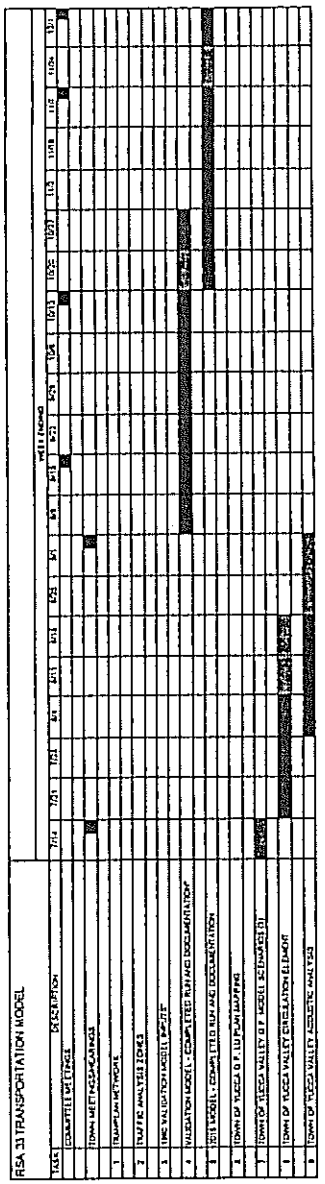
A new computerized traffic model has been developed for the Morongo Basin to evaluate travel demand within the Town of Yucca Valley General Plan study area. The model will eventually be validated for 1993 conditions based on census data, existing land use within the model study area, and traffic count data.

Exhibit A presents the schedule of tasks to be accomplished by ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC. (RKJK) relative to the development and application of the Morongo Basin Transportation Model. The overall model tasks are being accomplished in cooperation with input from a Project Review Committee. The Project Review Committee consists of representatives of San Bernardino Associated Governments (SANBAG), Southern California Association of Governments (SCAG), the Town of Yucca Valley, the City of Twentynine Palms, the County of San Bernardino, and Caltrans.

EXHIBIT A
PROJECT SCHEDULE



Schedule Continued



1993 TRAFFIC CONDITIONS

The Town of Yucca Valley is located in the west-central portion of the Morongo Basin and is served by State Highways 62 and 247. Each of the major roadways serving the Town both regionally and locally is briefly described below along with 1993 average daily traffic (ADT) volumes.

Regional Facilities

There are two highway corridors which traverse the study area and provide regional access. These facilities are State Highway 62 and State Highway 247.

State Highway 62: This generally east/west roadway is a four-lane divided highway that is designated as an "Expressway (Limited Access Control)" from Interstate 10 north to the Riverside County line. From the San Bernardino County line and through the Town of Yucca Valley, State Highway 62 is designated "Conventional (No Access Control)". Within the Town limits, existing major intersections with Highway 62 occur at Acoma Trail, Sage Avenue, Highway 247/Joshua Lane, Warren Vista Avenue, Hilton Avenue, Balsa Avenue and Yucca Mesa Road/La Contenta Road. The 1993 average daily traffic (ADT) volumes for key locations along Highway 62 are approximately as follows: 32,000 vehicles per day west of Camino Del Cielo; 35,000 vehicles per day west of Pioneertown Road; 39,000 vehicles per day west of HWY 247; and 27,000 vehicles per day west of Yucca Mesa Road/La Contenta Road. This roadway is planned for an ultimate cross-section of six travel lanes with a controlled (raised median) center turn lane.

State Highway 247: This State Highway is generally north/south oriented and intersects State Highway 62 in the center of Town. Highway 247 is a regional highway connecting Yucca Valley with the Mojave Desert communities to the north.

As the highway continues north out of Town, the road grade steepens and curves to the northwest. The majority of adjacent development along this highway north of the airport is rural residential, with some commercial development south of the intersection at Highway 62 and the west end of the Yucca Valley Airport just south of the Yucca Wash. Currently, Highway 247 is a two lane facility north of the airport and widens to five lanes southward to the intersection at Highway 62, providing two lanes northbound with three lanes (one through, one right turn, one left turn) southbound. The 1993 traffic volumes were 7,900 vehicles per day south of Buena Vista, and 10,200 vehicles per day north of HWY 62. This roadway is planned for four to six travel lanes with raised median.

Key Arterials, Collector Streets

Joshua Lane: This roadway is oriented in a north/south direction from the intersection at Highway 62, southward to and off-set from the north end of Black Rock Canyon Road, which is an entrance to the Joshua Tree National Monument. Joshua Lane is currently five lanes at the intersection of Highway 62 and continues south as a four lane facility to the intersection of Yucca Trail. South of Yucca Trail, this roadway is improved as a paved two lane facility. The 1993 traffic volumes were as follows: 4,400 vehicles per day south of Highway 62; 3,700 vehicles per day north of Joshua Drive; and 1,100 vehicles per day south of Palomar Avenue.

Yucca Trail: This roadway is aligned in an east/west direction, parallel to and south of Highway 62, extending from the intersection of Sage Avenue/Yucca Trail and Highway 62 eastward to La Contenta Road. Yucca Trail is currently improved as a two-lane roadway with varying pavement width. The 1993 traffic volumes were as follows: 7,400 vehicles per day east of Joshua Lane; 6,300 vehicles per day west of Avalon Avenue/ Palomar Avenue; and 4,500 vehicles per day west of La Contenta Road.

Onaga Trail: This roadway is aligned in an east/west direction parallel and south of both Highway 62 and Yucca Trail. It is currently a two lane facility between Inca Trail on the west and Warren Vista on the east. The 1993 ADT volumes along Onaga Trail are 2,900 vehicles per day east of Deer Trail, 4,600 vehicles per day east of Acoma Trail, 3,600 vehicles per day west of Joshua Lane, and 700 west of Avalon Avenue/Palomar Avenue.

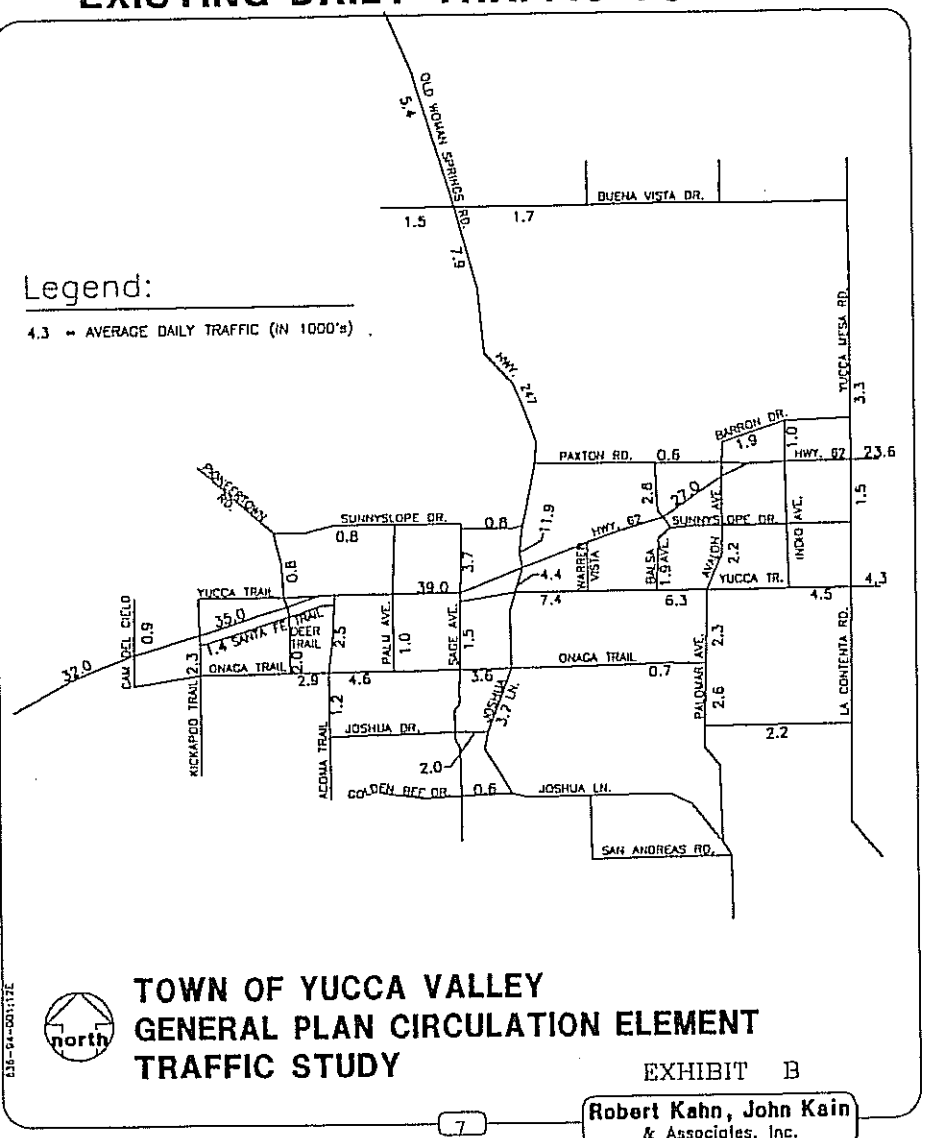
Sage Avenue: Sage Avenue is a north-south roadway, extending from Sunnyslope on the north to south of Golden Bee. This roadway provides paved two lane improvements from immediately south of Yucca Wash to Mountain View Trail, and is paved from Joshua Drive to just south of Golden Bee. The 1993 ADT volumes were as follows: 3,700 vehicles per day north of Onaga Trail; and 1,500 vehicles per day north of Highway 62.

Avalon/Palomar Avenue: This roadway is aligned in a north-south direction, located one mile west of La Contenta/Yucca Mesa Road. This roadway currently provides a paved two-lane cross-section facility extending from Joshua Lane in the south to Barron Drive in the north, with an unpaved extension continuing approximately one-half mile to the north. The 1993 ADT volumes were as follows: 2,200 vehicles per day north of Yucca Trail; 2,300 vehicles per day north of Onaga Trail; 2,600 vehicles per day south of Onaga Trail; and 1,500 vehicles per day north of Highway 62.

1993 Daily Traffic Volumes

Exhibit B shows traffic counts compiled by RKJK during 1995 as well as Paul Singer, P.E., during 1994. Average Daily Traffic (ADT) data are based upon a compilation of this data, as well as traffic counts taken by the California Department of Transportation; Counts Unlimited, November, 1993; and Traffic Counts, Inc., December, 1993.

YUCCA VALLEY
EXISTING DAILY TRAFFIC VOLUMES



north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT B

Robert Kahn, John Kain & Associates, Inc.

7

Approximate daily roadway capacity values for various sizes of roadways are shown in Table 1. With the exception of Highway 62, existing traffic counts indicate that traffic volumes in the Town are generally low, and that most roadways other than Highway 62 are generally operating at acceptable levels of service.

The circulation system for the Town of Yucca Valley has developed peripherally from the Town's two major regional Highways, 62 and 247, as residential areas and strip commercial development along Highway 62 have expanded over the years (see Exhibit C).

There are seven traffic signals currently installed within the Town, all along Highway 62. Signals at four additional intersections along HWY 62 at Camino Del Cielo, Kickapoo Trail, Deer Trail/Pioneertown Road, and Avalon Avenue/Palomar Avenue have been proposed. Additional signals are also proposed along Highway 247 at Sunnyslope Drive and Buena Vista Drive/Skyline Ranch Road.

San Bernardino County General Plan Circulation Element

Exhibit D exhibits the current County of San Bernardino General Plan Circulation Element roadway classifications for existing and future roadways in the study area. Primary access to the General Plan study area will continue to be via State Highways 62 and 247.

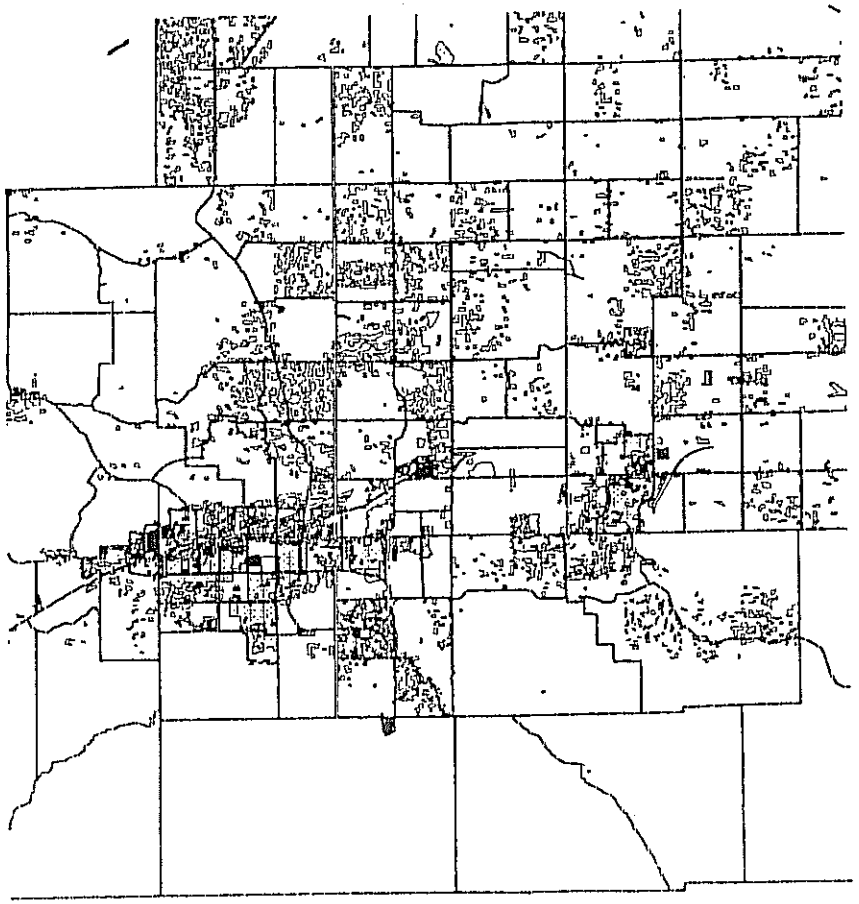
TABLE 1

DAILY ROADWAY CAPACITY VALUES[1]

TYPE OF ROADWAY	LEVEL OF SERVICE				
	A	B	C	D	E
8 lanes divided	45,000	52,500	60,000	67,500	75,000
6 lanes divided	33,900	39,400	45,000	50,600	56,300
4 lanes divided	22,500	26,300	30,000	33,800	37,500
4 lanes undivided	15,000	17,500	20,000	22,500	25,000
2 lanes divided	11,300	13,200	15,000	17,000	18,800
2 lanes undivided	7,500	8,800	10,000	11,300	12,500

[1] These roadway capacities are approximate figures only, and are used at the General Plan level. They are affected by such factors as intersections (numbers & configuration), degree of access control, roadway grades, design geometrics (horizontal & vertical alignment standards), sight distance, level of truck and bus traffic, and level of pedestrian and bicycle traffic. Average daily traffic (ADT) is used by the Town only as a long range planning tool to assist in determining roadway highway classification (number of through lanes) needed to meet traffic demand.

YUCCA VALLEY 1993 LAND USES



Legend:

- Rural Residential (Hillside Reserve)
- Rural Residential
- Single Family Residential
- Multi-Family Residential
- Mixed Residential
- Service Commercial
- Retail Centers
- Community Commerical
- General Office Use
- Retail Stores and Commerical Services
- Hotels and Motels
- Light Industrial
- Heavy Industrial
- Utilities / Misc. Facilities
- Open Space, Recreation and Agriculture
- Public/Quasi Public
- Traffic Analysis Zone (TAZ) Boundary

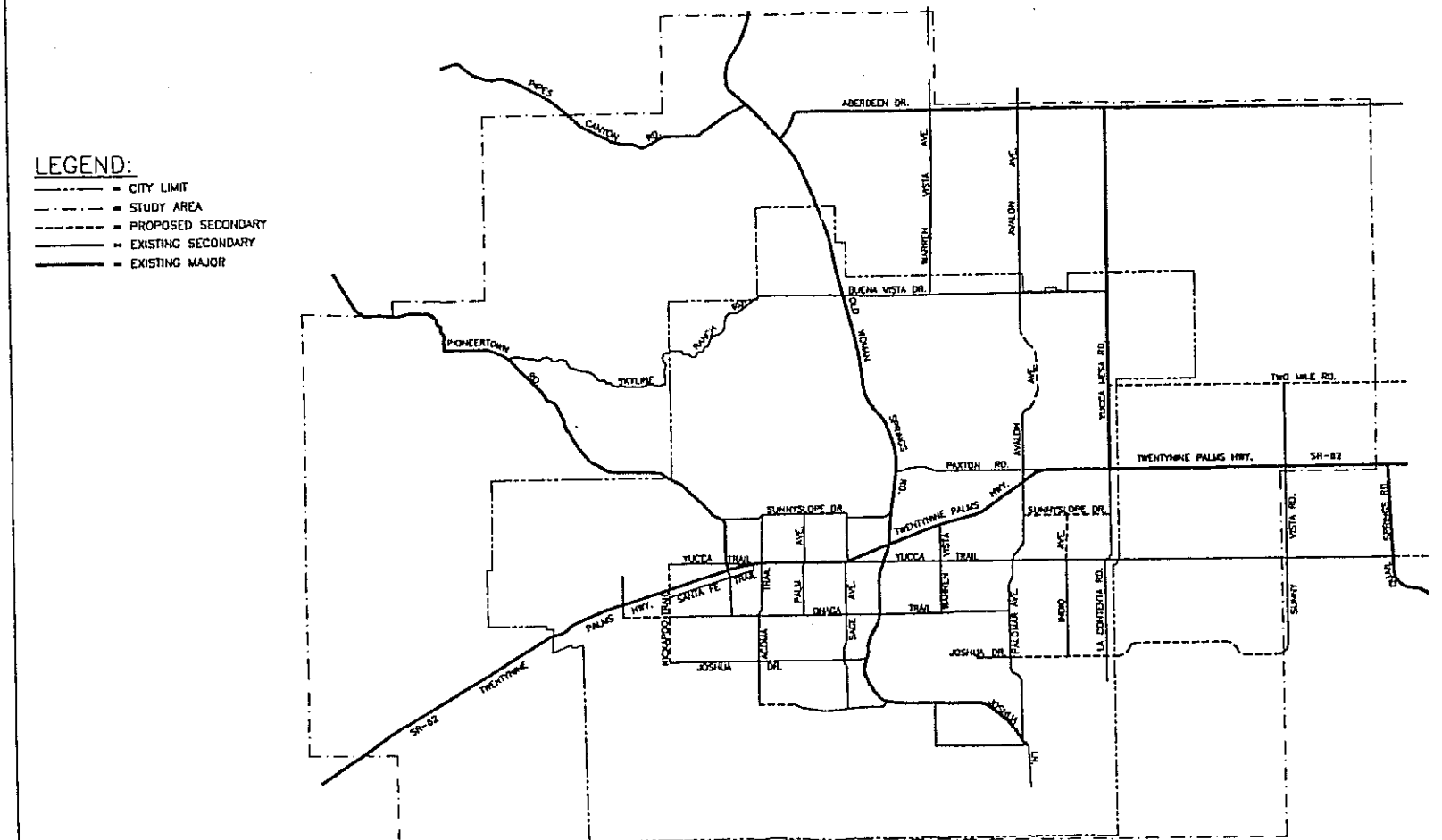
north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION STUDY
TRAFFIC STUDY

REVISED 8/4/95
EXHIBIT C

Robert Kahn, John Kain & Associates, Inc.

COUNTY OF SAN BERNARDINO CIRCULATION ELEMENT



TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT D

Robert Kahn, John Kain & Associates, Inc.

TRAFFIC MODEL DESCRIPTION

This section of the report describes the operational procedures and data input formats of the model. The subdivision of the modeling area into a representative zone system, and the representation of the roadway network are described. The procedures utilized for trip generation and distribution, and assignment of traffic to the roadway network are discussed.

The computer modeling process consists generally of seven individual but interrelated steps. These are:

- Definition of a traffic analysis zone system;
- Definition of a roadway network to serve the zone system;
- Determination of efficient and logical route paths through the network between the individual traffic analysis zones;
- Collection of land use data for each of the traffic analysis zones;
- Determination of trip generation within each traffic analysis zone;
- Determination of the distribution of trip ends between the traffic analysis zones for five individual trip purposes; and
- Assignment of trips to the individual roadway segments of the overall roadway network.

Morongo Basin (RSA 33) Transportation Model

The boundaries of the Morongo Basin Transportation Model coincide with the boundaries defined as the Morongo Basin Subarea (Regional Statistical Area 33) for purposes of the Comprehensive Transportation Plan for San Bernardino County.

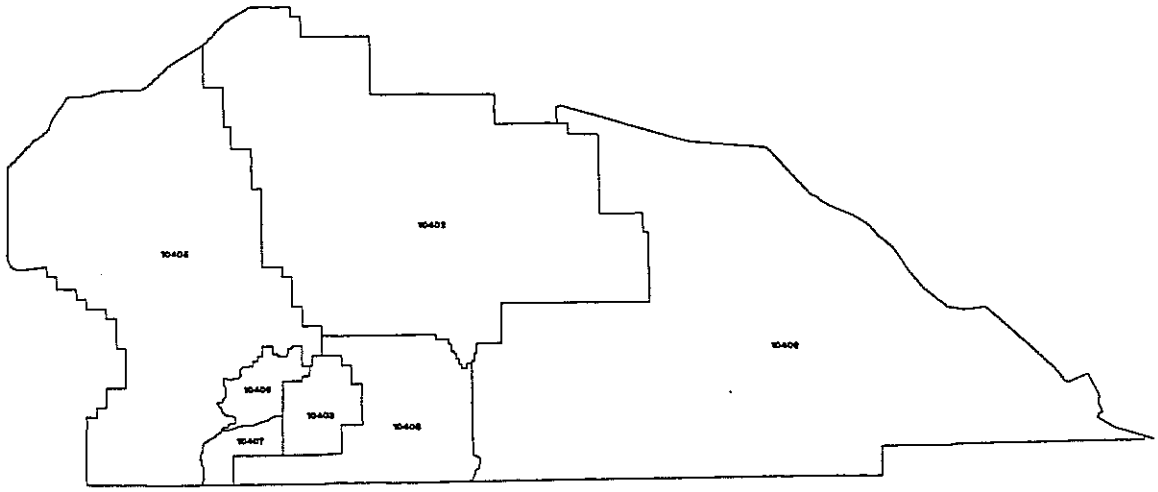
The Comprehensive Transportation Plan (CTP) is a long-range, twenty-year plan which identifies the programs, projects, and financing strategies needed to meet the county's transportation goals, consistent with economic development, social, and environmental objectives. Although plan development is being coordinated by San Bernardino Associated Governments (SANBAG), the CTP is viewed as the product of a collaborative effort that relies on input from many sources including the Town of Yucca Valley.

An appropriate traffic analysis zone (TAZ) structure has been defined for the overall model area based upon 1990 federal census geography and adopted general plans of local jurisdictions. Exhibits E and F illustrate the census tract and census block boundaries within RSA 33. Exhibit G depicts the TAZ boundaries. In general, TAZ's comprise individual census blocks, block groups, or aggregates of block groups.

Plots of the Morongo Basin Transportation Model network, TAZ boundaries, and centroid connectors have been reviewed by members of the Project Review Committee.

In cooperation with the Project Review Committee, the network of roadways to be modeled, including but not limited to all State highways, major and secondary arterials, and any other roadways within the designated Congestion Management Program network were compiled and encoded by RKJK staff. Additional roadways

RSA 33 CENSUS TRACT BOUNDARIES



north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

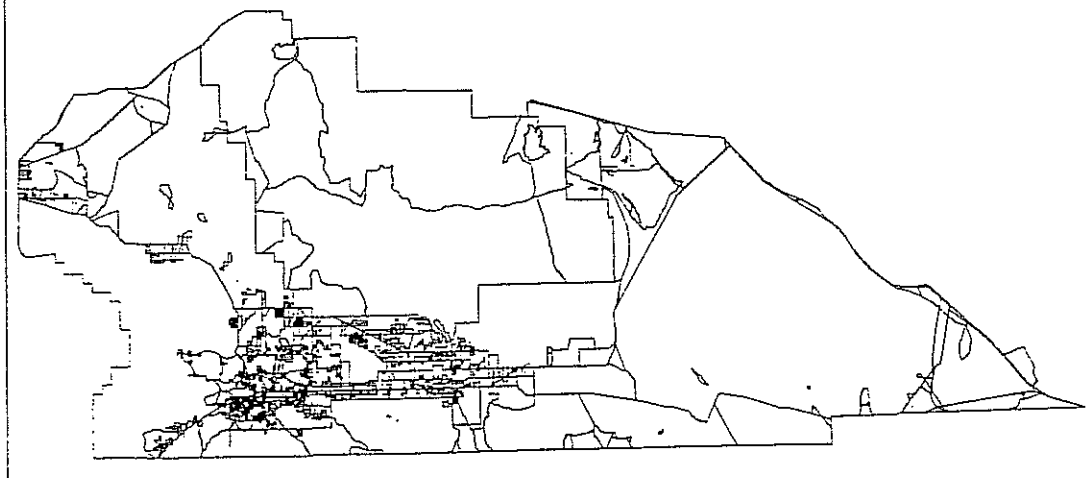
LEGEND:
—— = CENSUS TRACT BOUNDARY
10406 = CENSUS TRACT NUMBER

EXHIBIT E

14

Robert Kahn, John Kain & Associates, Inc.

RSA 33 CENSUS BLOCK BOUNDARIES



north

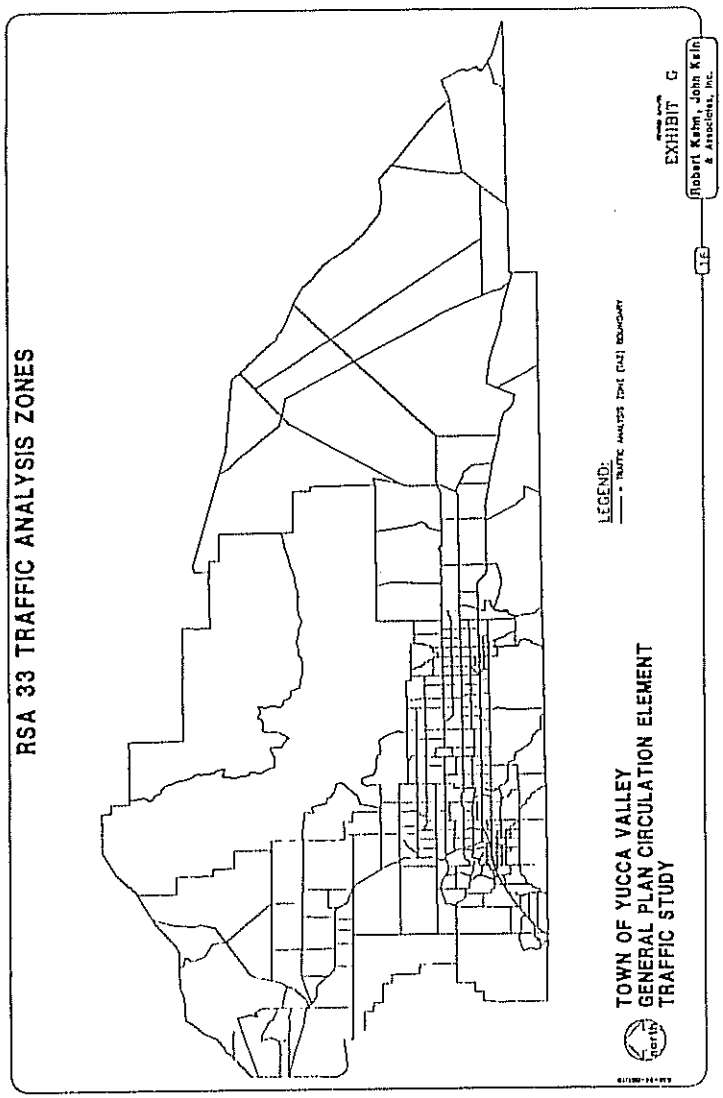
TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

LEGEND:
—— = CENSUS BLOCK BOUNDARY

EXHIBIT F

15

Robert Kahn, John Kain & Associates, Inc.



were identified for inclusion in the network as needed to ensure proper loading and distribution of trips.

Exhibit H shows the roadway system map which was used as a base in the preparation of the model network. Plots of the Morongo Basin Transportation Model network (see Exhibit I) were reviewed by members of the Project Review Committee, with data showing critical network information, including facility type, area type, and number of lanes.

Both census tract level socioeconomic data and land use data were provided by SCAG. Disaggregation to the TAZ level was performed by RKJK in cooperation with the local jurisdictions in the modeled area, represented through the Project Review Committee. Exhibit J illustrates the coverage of SCAG 1993 land use data. During September and October of 1995 data for the modeled area from SCAG's 1991 Origin and Destination Survey is scheduled to be incorporated into the trip generation and distribution components of the model by RKJK, under the direction of SCAG staff.

Zone System

To produce a forecast of traffic volumes within the modeling area, traffic must be loaded onto the roadway network in a manner which approximates how real traffic enters and uses the real roadway system. To accomplish this, the study area traffic analysis zone (TAZ) system was developed by RKJK staff, under the direction of the Morongo Basin Transportation Model Project Review Committee. The TAZ structure was created from existing census block boundaries, census tract boundaries, and digital street centerlines using ArcCAD software tools. Exhibit K illustrates the integrated GIS process.

RSA 33 ROADWAY SYSTEM BASE MAP

north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

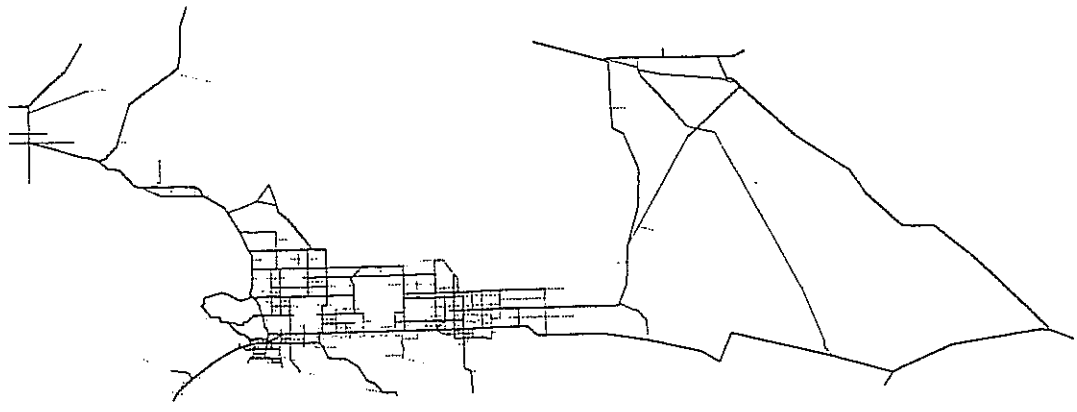
LEGEND:
- HIGHWAY
- PRIMARY ROADWAY
- SECONDARY ROADWAY
- LOCAL COLLECTOR
- OTHER ROADWAY
- RAILROAD

EXHIBIT H

19

Robert Kahn, John Kain & Associates, Inc.

RSA 33 1993 MODEL NETWORK



north

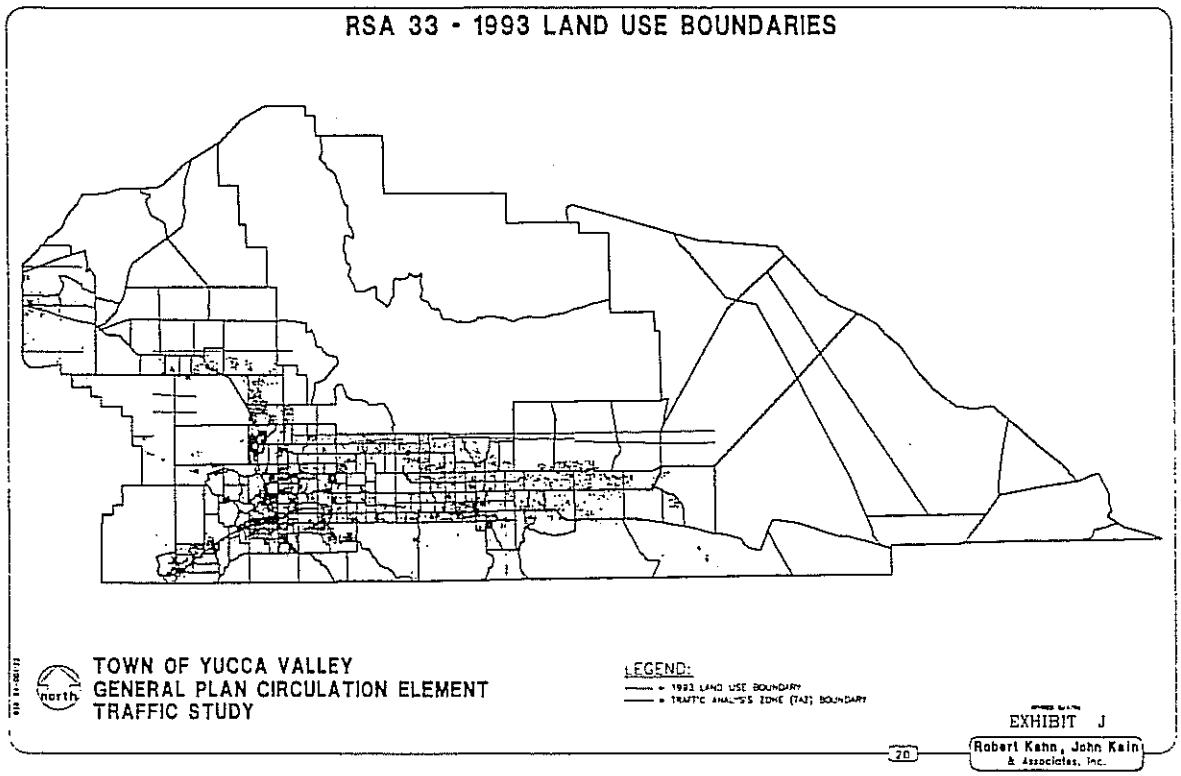
TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

LEGEND:
- MAJOR ROADWAY
- SECONDARY ROADWAY
- LOCAL COLLECTOR
- CENTROID CONNECTOR

EXHIBIT I

19

Robert Kahn, John Kain & Associates, Inc.



RKJK Zone/Network Integration Process

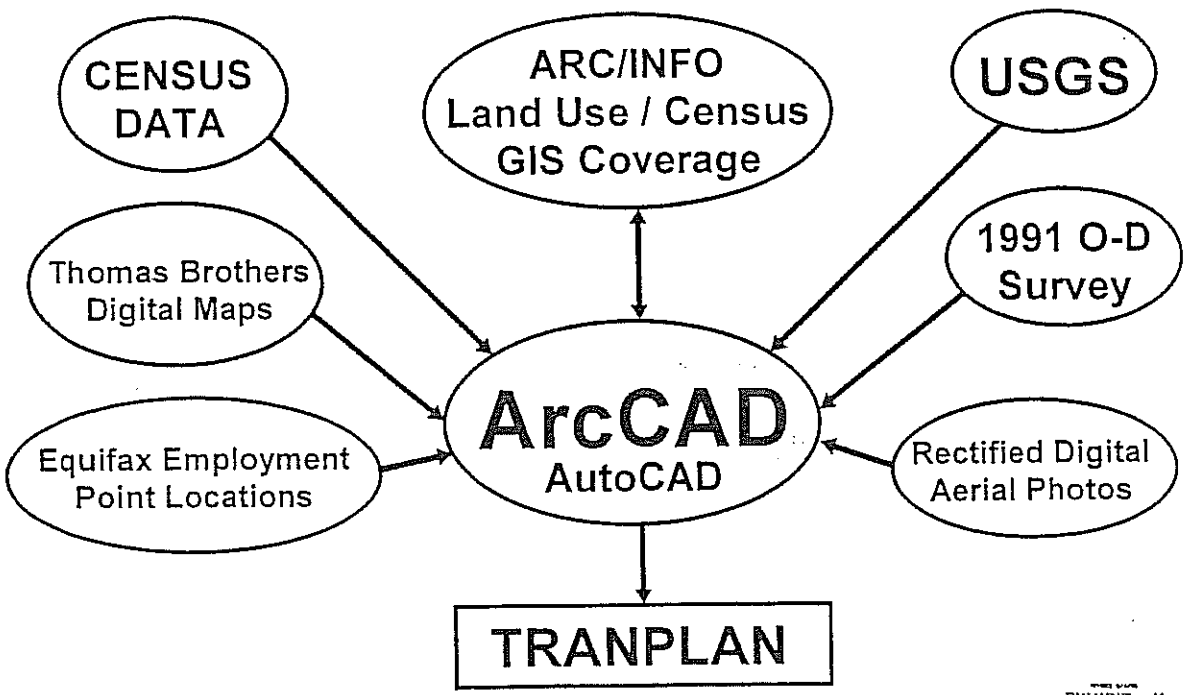


EXHIBIT K
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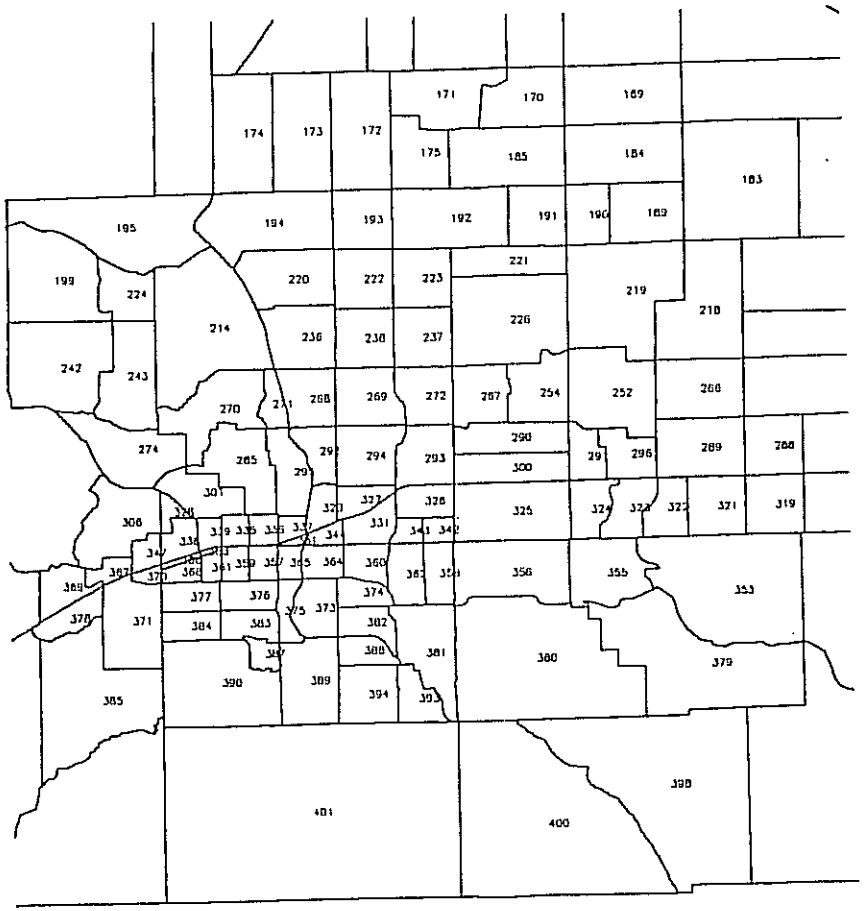
Each TAZ represents the area where traffic is generated (expressed as a number of trip "productions" and "attractions") by the land uses in that TAZ. During the trip distribution stage of the process, traffic is distributed from each "production" zone to all other zones of the modeling area based on the "attractiveness" of each other zone. In this way, the zones interact with each other. To insure that there is adequate interaction, the zone system must be subdivided into areas which are small enough to accurately represent the distribution process and the manner in which traffic loads to the roadway network. The Town of Yucca Valley area of the RSA 33 traffic model has been subdivided into zones which are depicted on Exhibit L.

The study area is tied to the outside world through external zones called cordon stations. Traffic enters and leaves the study area through the cordon stations. In addition, traffic which passes through the study area, but does not interact with it, (termed "through" traffic) is represented as traffic which passes directly from one cordon station to another. These "cordons" are assigned trip "productions" and "attractions" for the external ends of internally generated trips which leave the model area. The Morongo Basin (RSA 33) traffic model has 14 cordon stations.

RKJK overlaid the traffic analysis zone boundaries with SCAG 1993 Land Use coverage to generate a detailed correspondence list containing the four-digit modified Anderson land use codes, traffic analysis zone number and the associated acreages. The resulting land use data for the Town of Yucca Valley is summarized in Table 2. Appendix "A" provides a zone-by-zone breakdown of existing (1993) land uses within the Town.

YUCCA VALLEY TRAFFIC ANALYSIS ZONES



Legend:

353 = Traffic Analysis Zone (TAZ) Number

— = Traffic Analysis Zone (TAZ) Boundary

north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

638-94-001054

REVISED 8/4/95

EXHIBIT L

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TABLE 2

YUCCA VALLEY 1993 LAND USE SUMMARY

ANDERSON_CODE	ACRES	ANDERSON_CODE DESCRIPTION
1111	1,732	High Density Single Family Residential
1112	1,059	Low Density Single Family Residential
1121	7	Mixed Multi-Family Residential
1122	36	Duplexes, Triplexes and 2- or 3-Unit Condominiums and Townhouses
1123	65	Low-Rise Apartments, Condominiums, and Townhouses
1131	94	Trailer Parks and Mobile Home Courts, High Density
1140	80	Mixed Residential
1151	274	Rural Residential High Density
1152	1,833	Rural Residential Low Density
1211	7	Low- and Medium-Rise Major Office Use
1222	65	Retail Centers
1223	231	Modern Strip Development
1231	11	Commercial Storage
1232	12	Commercial Recreation
1233	10	Hotels and Motels
1241	2	Government Offices
1243	4	Fire Stations
1244	4	Major Medical Health Care Facilities
1245	38	Religious Facilities
1246	7	Other Public Facilities
1252	11	Special Care Facilities
1253	7	Other Special Use Facilities
1262	16	Elementary Schools
1263	10	Junior or Intermediate High Schools
1264	51	Senior High Schools
1311	85	Manufacturing, Assembly, and Industrial Services
1323	28	Open Storage
1331	2	Mineral Extraction - Other Than Oil and Gas
1411	34	Airports
1415	4	Bus Terminals and Yards
1431	3	Electrical Power Facilities
1434	11	Water Storage Facilities
1437	34	Improved Flood Waterways and Structures
1440	20	Maintenance Yards
1500	4	Mixed Commercial and Industrial
1700	60	Under Construction
1810	106	Golf Courses
1820	40	Local Parks and Recreation
1821	1	Local Park, Developed
1880	2	Other Open Space and Recreation
1900	675	Urban Vacant

TABLE 2

YUCCA VALLEY 1993 LAND USE SUMMARY

ANDERSON_CODE	ACRES	ANDERSON_CODE DESCRIPTION
2300	6	Nurseries
2700	13	Horse Ranches
3100	18,116	Vacant Undifferentiated
3300	9	Vacant With Limited Improvements
TOTAL	24,916	

Roadway Network

The roadway network generally excludes local level streets because it is impractical to model at that level of detail. The network is described in the model as a series of roadway links connected at node points. Traffic generated within each internal TAZ is introduced to the roadway network through one or more zone "centroid" connectors. These are fictitious roadway links which connect the zone center (the idealized point of zone trip generation) to the arterial roadway system. In a similar manner, cordon stations have special connectors termed cordon links.

Each roadway link is defined in terms of its link end points (nodes), a unique length and a facility code. The facility codes for the network, which define an initial link speed and capacity for each of 3 assignment periods (AM, PM and off-peak), are listed in Table 3.

Exhibit M illustrates the existing conditions model network drawn using digital street centerline data and road classifications. Tranplan networks were built to scale by RKJK in the UTM coordinate system (consistent with SCAG, USGS, Census Bureau and Thomas Brothers Data). All node points are explicitly defined, usually at existing intersection points. Attributes such as Area Type, Facility Code and Link Group are defined in ArcCAD and output to Tranplan (ASCII) format.

Trip Generation

In this initial application of the RSA 33 traffic model, the trip generation process is generally based on the trip generation process used in the CTP (RIVSAN) transportation model. The trip generation component of the model is independent of the TRANPLAN software used to process most of the other model components.

TABLE 3

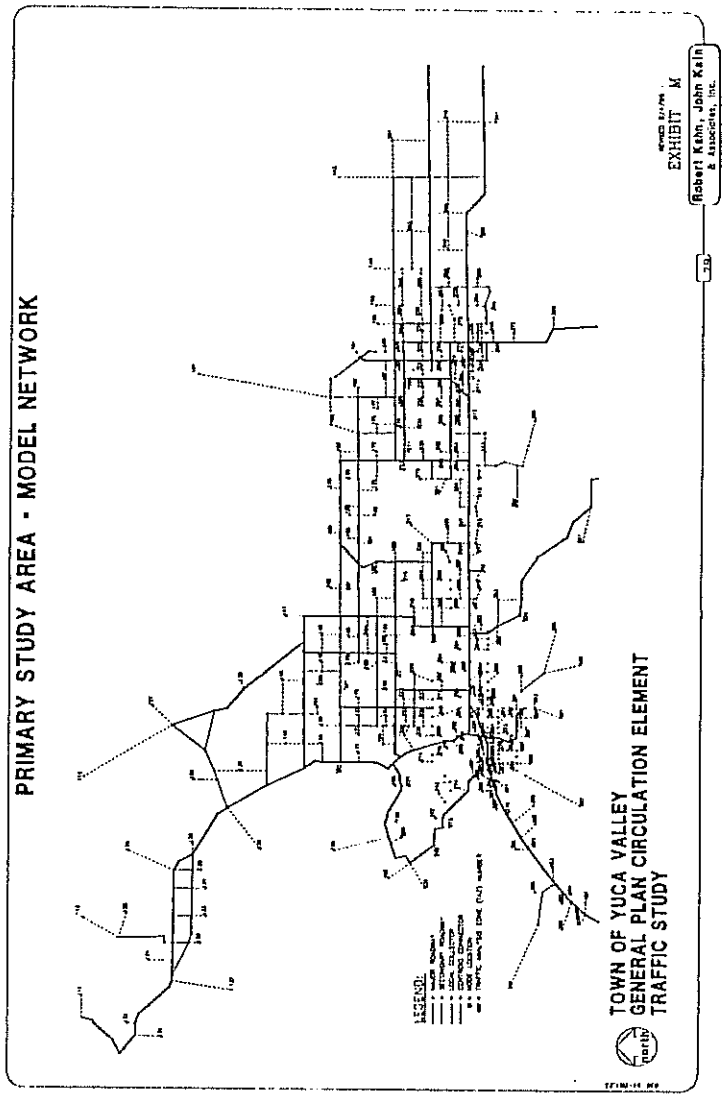
CTP MODEL NETWORK CHARACTERISTICS

FACILITY CODE	DESCRIPTION	AREA TYPE (LG1)	HRLY. CAP. PER LANE	SPEEDS				
				FREE FLOW	OBS. PEAK	OBS. OFF-PEAK	NT SPD 1	NT SPD 2
0	Dirt	1	500	20	15	20	20	20
		2	500	20	15	20	20	20
		3	500	20	15	20	20	20
		4	500	20	15	20	20	20
		5	500	20	15	20	20	20
1	Freeway	1	1900	60	25	40	40	60
		2	1950	60	35	45	45	60
		3	1950	60	40	50	55	60
		4	1950	60	55	55	60	60
		5	1950	65	55	55	60	65
2	Major (6D)	1	625	20	15	20	20	20
		2	650	25	20	25	25	30
		3	675	35	25	30	30	35
		4	800	40	40	40	40	40
		5	1250	50	50	55	50	50
3	Primary (4D)	1	575	20	15	20	20	20
		2	600	25	20	25	25	30
		3	625	35	25	30	30	35
		4	800	40	40	40	40	40
		5	900	45	50	55	45	45
4	Undivided	1	500	20	15	20	20	20
		2	525	25	20	25	25	25
		3	550	30	25	30	30	30
		4	800	35	40	40	35	35
		5	900	40	50	55	40	40
5	HOV Freeway Lanes	1	1900	65	55	55	55	65
		2	1950	65	55	55	55	65
		3	1950	65	55	55	60	65
		4	1950	65	55	55	60	65
		5	1950	70	55	55	60	70
6	Centroid Connectors	1	10000	15	15	20	20	20
		2	10000	20	20	25	25	25
		3	10000	20	25	30	25	25
		4	10000	30	35	40	30	30
		5	10000	35	35	40	35	35

TABLE 3 (CONT'D)

CTP MODEL NETWORK CHARACTERISTICS

FACILITY CODE	DESCRIPTION	AREA TYPE (LG1)	HRLY. CAP. PER LANE	SPEEDS				
				FREE FLOW	OBS. PEAK	OBS. OFF-PEAK	NT SPD 1	NT SPD 2
7	Fwy-Fwy Connectors	1	1900	60	25	40	40	60
		2	1950	60	35	45	45	60
		3	1950	60	40	50	50	60
		4	1950	60	55	55	55	60
		5	1950	65	55	55	60	65
8	Freeway Ramps	1	10000	25	20	25	25	25
		2	10000	25	20	25	25	25
		3	10000	20	20	25	25	25
		4	10000	25	20	25	25	25
		5	10000	25	20	25	25	25



However, the output structure from trip generation, zonal productions and attractions, has been designed for compatibility with TRANPLAN data format requirements.

The trip generation model estimates the number of person-trips generated by the residents of each traffic analysis zone on an average weekday. Trips are estimated by five trip types or purposes: (1) home-to-other, (2) other-to-other, (3) other-to-work, (4) home-to-work, and (5) home-to-shop.

The RIVSAN trip generation model was derived through multiple linear regression methods using base year data for the estimation of tripmaking units. The tripmaking units were defined as: (1) housing units with no vehicles, (2) housing units with one vehicle, and (3) housing units with two or more vehicles. The trip generation model assumes that the number of tripmaking units in each of the three categories can be estimated as a function of zonal median household income, proportion of single-family housing units to total housing units, and the population per housing unit. The equations representing these relationships are presented in Table 4.

Trip generation is expressed in terms of "productions" and "attractions". Each trip made in the model has two "trip ends", a production end and an attraction end. The majority of production trip ends in the model are related to residential dwelling units; residences have relatively few attraction trip ends. Regardless of whether the direction of the trip is from the residence to a shopping location, or from the shopping location to the residence, it is expressed as a home-based production at the residence end of the trip. Retail land uses on the other hand, have relatively few production trip ends; they primarily attract trips made from other land uses.

Person-trip productions for each zone are estimated by applying trip generation rates to tripmaking units in each zone. The trip generation rates were developed from

TABLE 4

RSA 33 TRIP GENERATION MODEL TRIP-MAKING UNIT ESTIMATION

$$Z = B_0 + B_1 (S) + B_2 LN (P) + B_3 (1/I) + B_4 (1/I^2)$$

where: Z = ratio of zero vehicle to total housing units
S = ratio of single housing units to total units
P = ratio of population to total units
I = median household income in $1,000's
B_0-B_4 = regression coefficients:

B_0	B_1	B_2	B_3	B_4
0.02	-0.12	0.02	1.53	-1.06

$$LN (R) = C_0 + C_1 (S) + C_2 (1/P) + C_3 (1/I) + C_4 (1/I^2)$$

where: R = ratio of one to two+ vehicle housing units
S = ratio of single housing units to total units
P = ratio of population to total units
I = median household income in $1,000's
C_0-C_4 = regression coefficients:

C_0	C_1	C_2	C_3	C_4
0.14	-1.79	-0.60	8.41	-9.68

survey data using cross-classification techniques. Table 5 shows the person-trip production trip generation rates. Productions are estimated based on housing type and level of vehicle ownership for five trip purposes. The result is a set of five two-by-three person-trip matrices for each zone. All person-trip productions are initially generated at the home zone and represent the most accurate estimate of total productions for all purposes, including non-home-based trip purposes. A second set of equations are employed to reallocate the non-home-based trip productions on the basis of both population and employment intensity in each zone. The non-home-based person-trip productions are essentially regenerated for each zone using the equations presented in Table 6.

Finally, trip attraction factors are estimated for each zone for each trip type. The quantity of person-trip attractions is a function of intensity of activity, which is represented as a linear combination of total employment, retail employment, and population. Table 7 presents the regression equations for estimating attraction factors for each trip purpose. Unlike the previous regional model person-trip attraction equations, the RIVSAN person-trip attraction equations contain no constant coefficient.

Trip Distribution

Once the trip generation within each TAZ has been calculated, the distribution of trips between zones where trips are produced and zones where trips are attracted must be determined. In the traffic model, this function is achieved using a "gravity" distribution model. The gravity model is utilized because it has been demonstrated to perform reasonably well and is widely accepted.

TABLE 5

RSA 33 PERSON-TRIP PRODUCTION GENERATION RATES

	SAN BERNARDINO AND RIVERSIDE COUNTY					
	HS0	HS1	HS2*	HM0	HM1	HM2*
Home-Other	1.03290	2.92710	4.34380	0.72380	2.13510	3.16850
Other-Other	0.36630	1.79410	2.66240	0.75240	1.42340	2.11230
Other-Work	0.03300	0.41910	0.62190	0.00000	0.59510	0.88310
Home-Work	0.26620	1.05710	1.56870	0.11550	1.10000	1.63240
Home-Shop	0.18370	1.15940	1.72050	0.46310	0.80190	1.19000

Notes:

HS denotes single-family households.
HM denotes multiple-family households.
0, 1 or 2 denote the number of vehicles (0, 1 or 2+ vehicles) in the household.
* = Adjusted to account for 1991 Southern California Origin-Destination Survey data.

TABLE 6

RSA 33 PERSON-TRIP PRODUCTION REALLOCATION EQUATIONS

R (trip type 2) $= A_0 + A_1 (P) + A_2 (RE)$
R (trip type 3) $= B_0 + B_1 (RE) + B_2 (NR)$

where: R = person trip reallocation factor
P = population
RE = retail employment
NR = non-retail employment
$A_0 - A_2$ and $B_0 - B_2$ = regression coefficients:

A_0	A_1	A_2	B_0	B_1	B_2
0	0.229	6.702	0	1.842	0.483

TABLE 7

RSA 33 ESTIMATION OF PERSON-TRIP ATTRACTIONS

$A = C_0 + C_1 (P) + C_2 (E) + C_3 (RE)$

where: A = person-trip attractions
P = population
E = total employment
RE = retail employment
$C_0 - C_3$ = regression coefficients:

TRIP TYPE	C0	C1	C2	C3
San Bernardino County				
1 (home-other)	0	0.640	-	6.681
2 (other-other)	0	0.256	-	4.408
3 (other-work)	0	-	0.596	-
4 (home-work)	0	-	1.675	-
5 (home-shopping)	0	-	-	6.178

The gravity distribution model is based on the well known gravity formula, where the distribution of trips is proportional to the attractiveness of a land use and the distance (or travel time) from the point of trip production. The propensity to favor trips over shorter distances as opposed to trips over longer distances in the distribution process is expressed in terms of a travel time distribution function or curve. A unique distribution curve is utilized for each of the five trip purposes. These curves reflect the tendency of trips to be made over longer distances for employment purposes, while trips for non-employment purposes, such as shopping, are generally shorter.

Each distribution curve is represented in the gravity formula through travel time friction factors which identify the curve for different elements of time.

The distribution process is performed uniquely for each trip purpose. The end result of the process is a trip table or matrix for each trip purpose which records the trip interaction between zones on a production/attraction basis. Because the production/attraction trip table is not directional, it must be transformed to an origin/destination table through the matrix processes of transposition and factoring. The time period directional factors used in the model are shown in Table 8.

Traffic Assignment

Traffic assignment is the process by which trip interchanges between zones, determined in the distribution process, are assigned to specific route paths in the roadway network. The end result is a forecast of daily traffic volume on each roadway link.

The traffic assignment process for RSA 33 has also been adapted from the procedures used in the CTP model. The equilibrium assignment procedure available in the

TABLE 8

TIME PERIOD DIRECTIONAL FACTORS

FACTORS	PURPOSE					
	HOME-WORK		OTHER-WORK		NON-WORK	
	P ==> A	A ==> P	P ==> A	A ==> P	P ==> A	A ==> P
AM Peak	0.3403	0.0152	0.1492	0.0166	0.0939	0.0210
PM Peak	0.0196	0.3215	0.0343	0.3089	0.1309	0.1962
Off-Peak	0.1730	0.1304	0.2455	0.2455	0.2680	0.2900
SUM BY PURPOSE	0.5329	0.4671	0.4290	0.5710	0.4928	0.5072
TOTAL		1.0000		1.0000		1.0000

PM, and off-peak) included in the RSA 33 model. The CTP model uses the equilibrium assignment procedure for all periods of the day except the nighttime period. The RSA 33 model off-peak period, which combines the CTP model mid-day and nighttime periods, uses the equilibrium assignment procedure. The more detailed RSA 33 model zone structure "spreads" traffic more evenly, and the use of the equilibrium assignment procedure also allows for more flexibility in performing specialized model analyses.

Post Processing

Regardless of the level of detail incorporated into a modeling tool, further refinement is almost always required. The RSA 33 model is no exception to this rule. The RSA 33 model provides fairly accurate daily traffic volume forecasts. It is recommended that the highest volume reported by the model for any particular roadway segment be used for purposes of daily traffic volume forecast reporting.

The relatively rare roadway segments which do not meet the validation/consistency criteria outlined later in this section may be candidates for daily volume adjustment using the incremental additive approach. This approach is described in the document Highway Traffic Data for Urbanized Area Project Planning and Design (National Cooperative Highway Research Program Report 255, Transportation Research Board, National Research Council). This document is commonly referred to as NCHRP-255.

The first step for producing any peak hour forecasts using the RSA 33 model is to collect existing peak hour data at all desired forecast locations. Failure to collect existing traffic count data should cause any resulting traffic volume forecasts to be used with great caution.

The post processing procedure utilized by RKJK can be described in three very broad steps:

Step 1) Perform additive incremental adjustment to future model forecasts to account for differences between the existing conditions model and actual traffic count data.

Step 2) Verify reasonableness of relationship between peak hour forecasts and daily traffic volume forecasts. Adjust growth if necessary.

Step 3) Review resulting forecasts for conservation of flow, or other factors such as anticipated development patterns, etc. Adjust forecasts to provide reasonable conservation of flow, etc., as necessary.

CIRCULATION ELEMENT REFINEMENT PROCESS

This section of the report discusses the development process for the Circulation Element. Previous land use and circulation plans which have been evaluated are discussed. The section is concluded with a discussion of the process for determining the Preferred Circulation Plan of July 12, 1995.

Future Land Use Scenarios

Exhibit N illustrates the Previously Circulated Land Use Plan for the Town of Yucca Valley. Table 9 summarizes the quantities of various land use types depicted on the previously circulated land use map. The estimated acres for each land use classification were extracted from a GIS map layer created by RKJK staff using ArcCAD software.

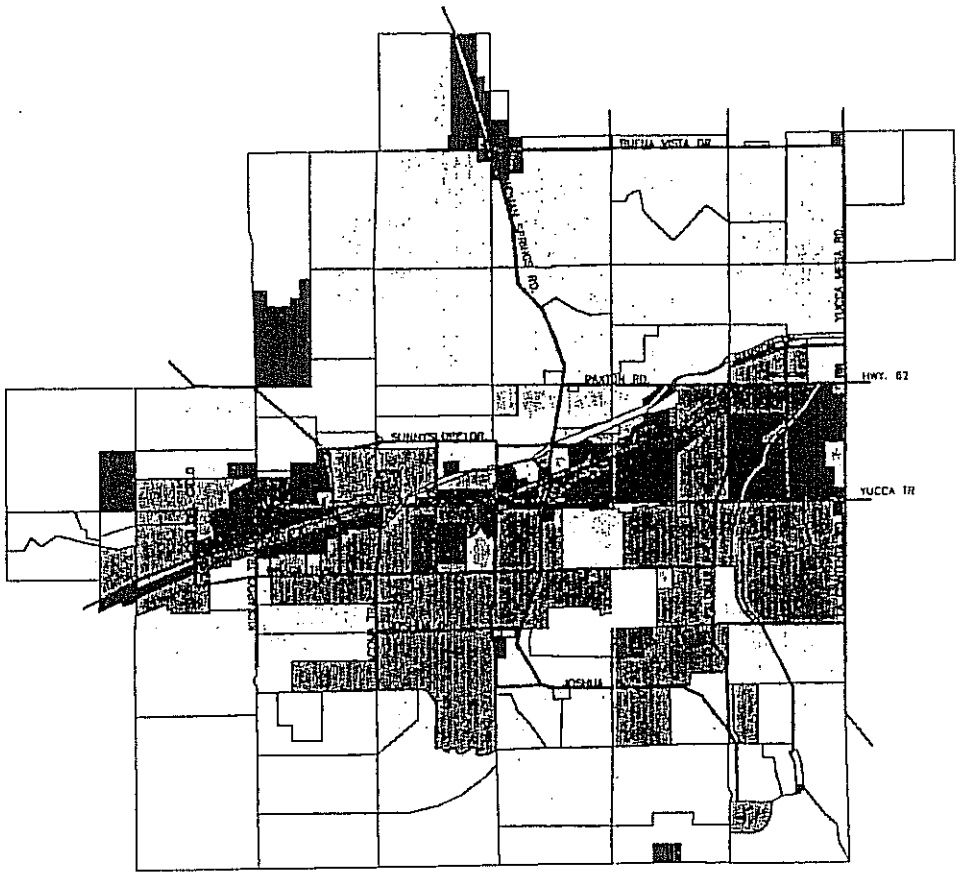
Exhibit O depicts the new Preferred Land Use Plan for the Town. The estimated acres for each land use classification are shown on Table 10.

The following numbered items correspond to changes incorporated in the new Preferred Land Use Plan.

#1: Section 15

Existing land use designations are R-L-5 and R-HR. The proposed changes include the northerly 1/3, or 213 acres, to be changed to R-L 2.5; the next 1/6 or approximately 106 acres amended to RM-14; the final 1/2 or 320 acres changed to R-HR-10.

YUCCA VALLEY GENERAL PLAN (PREVIOUSLY CIRCULATED LAND USE MAP)



Legend:

- R-MR Mobile Reserve (1 du/20 ac.)
- R-L Rural Living (1 du/1, 2.5, 5, 10, 20 ac.)
- R-S Residential Single Family (0-2, 0-3.5, 0-5 du/ac.)
- R-M Residential Multi-Family (0-10, 0-14 du/ac.)
- C-S Service Commercial
- C-N Neighborhood Commercial
- C-G General Commercial
- C-C Community Commercial
- C-O Office Commercial
- C-MU Mixed Use Commercial
- C-RR Resort Recreation Commercial
- I Industrial
- O-S Open Space
- P/QP Public/Quasi Public
- AP Airport
- CC Civic Center
- FS Fire Station
- S School
- HS High School
- L Library
- FW Freeway

north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT N

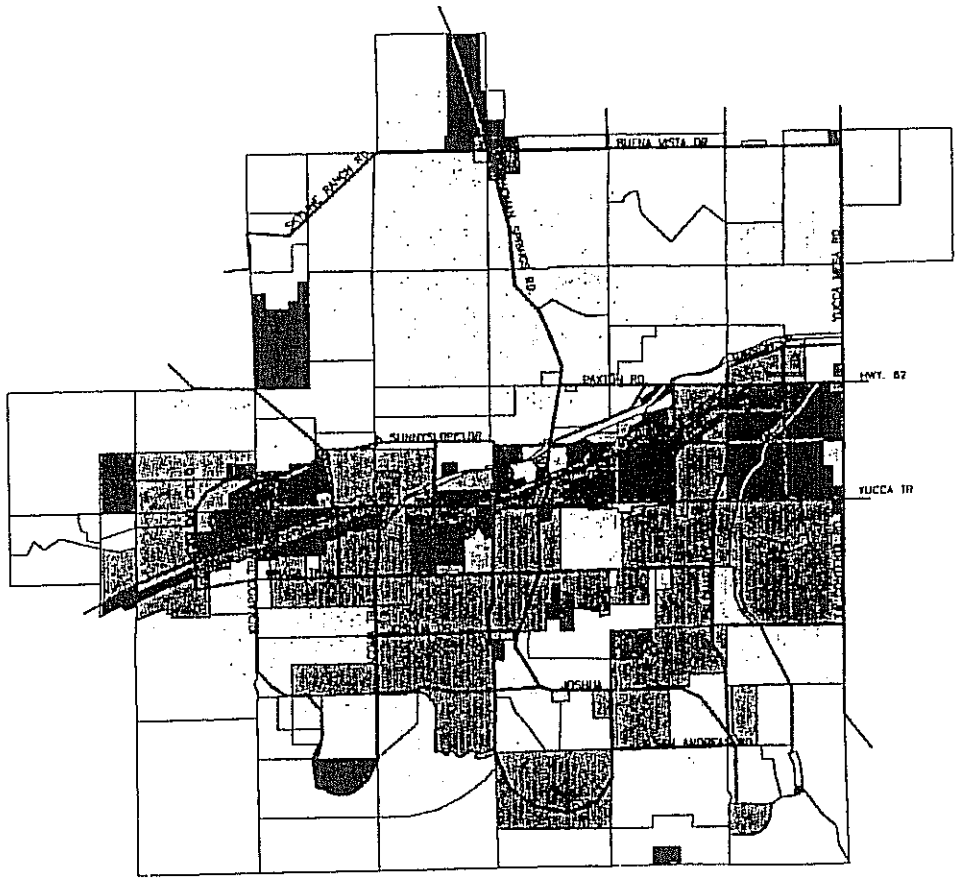
Robert Kahn, John Kain & Associates, Inc.

TABLE 9

YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY

ANDERSON_CODE	LUCLASS	ACRES	TOWN TYPE
1112	R-L-1	1,907	Rural Living (1 du/1 ac.)
1113	R-S-3.5	460	Residential, Single Family (0-3.5 du/ac.)
1114	R-S-5	811	Residential, Single Family (0-5 du/ac.)
1122	R-M-10	347	Residential, Multi Family (0-10 du/ac.)
1123	R-MF	10	Residential, Multi Family (0-12 du/ac.)
1151	R-S-2	3,263	Residential, Single Family (0-2 du/ac.)
1153	R-HR	4,024	Hillside Reserve (1 du/20 ac.)
1153	R-HR-20	276	Hillside Reserve (1 du/20 ac.)
1154	R-L-10	479	Rural Living (1 du/10 ac.)
1155	R-L-5	5,311	Rural Living (1 du/5 ac.)
1156	R-L-2.5	5,199	Rural Living (1 du/2.5 ac.)
1211	C-MU	281	Mixed Use Commercial (varies)
1211	C-O	45	Office Commercial
1222	C-C	20	Community Commercial
1222	C-N	102	Neighborhood Commercial
1223	C-G	505	General commercial
1223	C-S	63	Service Commercial
1233	C-RR	97	Resort Recreation Commercial
1241	CC/L	21	Civic Center / Library
1243	FS	1	Firestation
1262	S	49	School
1264	HS	56	High School
1311	I	845	Industrial
1411	AP	56	Airport
1437	FW	109	Floodway
1800	P/QP	78	Public/Quasi Public
1880	O-S	488	Open Space
1900	SR-62	15	Highway
TOTAL		24,916	

YUCCA VALLEY GENERAL PLAN (PREFERRED LAND USE MAP)



Legend:

- R-RR Rimrock Reserve (1 du/20 ac.)
- R-1 Rural Living (1 du/1, 2.5, 5, 10, 20 ac.)
- R-S Residential Single Family (0-2, 0-3.5, 0-5 du/ac.)
- R-M Residential Multi-Family (0-10, 0-14 du/ac.)
- C-S Service Commercial
- C-N Neighborhood Commercial
- C-G General Commercial
- C-C Community Commercial
- C-O Office Commercial
- C-MU Mixed Use Commercial
- C-RR Resort Recreation Commercial
- I Industrial
- O-S Open Space
- P/QP Public/Quasi Public
- AP Airport
- CC Civic Center
- FS Fire Station
- S School
- HS High School
- L Library
- Fw Freeway

north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

8/4/95
EXHIBIT O

Robert Kahn, John Kain & Associates, Inc.

TABLE 10

YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE MAP SUMMARY

ANDERSON_CODE	LUCLASS	ACRES	TOWN TYPE
1112	R-L-1	2,387	Rural Living (1 du/1 ac.)
1113	R-S-3.5	17	Residential, Single Family (0-3.5 du/ac.)
1114	R-S-4	25	Residential, Single Family (0-4 du/ac.)
1114	R-S-5	1,254	Residential, Single Family (0-5 du/ac.)
1122	R-M-10	335	Residential, Multi Family (0-10 du/ac.)
1123	R-MF	9	Residential, Multi Family (0-12 du/ac.)
1124	R-M-14	97	Residential, Multi Family (0-14 du/ac.)
1125	R-M-4	12	Residential, Multi Family (0-8 du/ac.)
1125	R-M-8	30	Residential, Multi Family (0-8 du/ac.)
1151	R-S-2	3,821	Residential, Single Family (0-2 du/ac.)
1153	R-HR	3,901	Hillside Reserve (1 du/20 ac.)
1153	R-HR-20	276	Hillside Reserve (1 du/20 ac.)
1154	R-L-10	139	Rural Living (1 du/10 ac.)
1155	R-L-5	4,675	Rural Living (1 du/5 ac.)
1156	R-L-2.5	5,049	Rural Living (1 du/2.5 ac.)
1211	C-MU	281	Mixed Use Commercial (varies)
1211	C-O	49	Office Commercial
1222	C-C	20	Community Commercial
1222	C-N	102	Neighborhood Commercial
1223	C-G	497	General commercial
1223	C-S	63	Service Commercial
1233	C-RR	121	Resort Recreation Commercial
1241	CC/L	21	Civic Center / Library
1243	FS	1	Firestation
1262	S	49	School
1264	HS	56	High School
1311	I	860	Industrial
1411	AP	56	Airport
1437	FW	109	Floodway
1800	P/QP	78	Public/Quasi Public
1880	O-S	512	Open Space
1900	SR-62	15	Highway
TOTAL		24,916	

- Reduce R-L-5 by 320 acres
- Increase R-L - 2.5 by 214 acres
- Increase R-M-14 by 106 acres
- Reduce R-HR 20 by 320 acres
- Increase R-HR 10 by 320 acres

#2: Section 13

Existing land use designations are R-L-2.5 and R-L-5. The proposed changes includes the northerly 420 acres being designated RS-2 and the southerly 220 acres being designated R-L-5. This project will also include an 18 hole golf course, a 200 room hotel, a 60,000 square foot equestrian center, and a 10,000 square foot restaurant.

- Reduce R-L - 2.5 by 440 acres
- Increase RS-2 by 440 acres
- Increase by ancillary land uses

#3: Section 5

Existing land use designations are R-S-3.5, Seniors only. The proposed change includes increasing this to R-S 5.

- R-S-3.5 reduced by 435 acres
- R-S-5 increase by 435 acres

#4: Section 12

Existing land use designation is R-L 2.5. The proposed change includes increasing this designation to R-M 4.

- R-L-2.5 reduced by 36 acres
- R-S-4 increased by 36 acres

#5: Section 33

Existing land use designations are R-L-10, R-L-5, nd R-M-10. The proposed change includes increasing this designation to the following.

- Reduce R-L-10 by 320 acres
- Reduce R-M-10 by 25 acres
- Reduce R-S-2 by 12 acres
- Reduce R-L 5 by 140 acres
- Increase R-L-1 by 320 acres
- Increase R-S-2 by 140 acres
- Increase R-M-8 by 37 acres

#6: Section 5

Existing land use designation for this property is R-L-5. The proposed change includes amending this to R-L-1.

- Reduce R-L-5 by 100 acres
- Increase R-L-1 by 100 acres

#7: Section 22

Existing land use designation for this property is R-HR. The proposed amendment changes this to R-L-5.

- Reduce R-HR 20 by 53 acres
- Increase R-L-5 by 53 acres

#8: Section 10

Existing land use designation of this property is R-HR. The proposed amendment changes this to R-L 2.5.

- Reduce R-HR by 80 acres
- Increase R-L-2.5 by 80 acres

#9: Section 23

Existing land use designation for this property is C-G. The proposed amendment changes this to R-L-2.5.

- Reduce C-G by 9.26 acres
- Increase R-L-2.5 by 9.26 acres

#10: Section 36

Existing land use designation for this property is R-L-1. The proposed amendment changes this to O-S, P (Open Space, Public).

- Decrease R-L-1 by 23 acres
- Increase O-S(P) by 23 acres

#11: Section 14

Existing land use designation for this property is R-L-5. The proposed amendment changes this to I, Industrial.

- Reduce R-L-5 by 15 acres
- Increase Industrial by 15 acres

#12: Section 36

Existing land use is R-L-1. The proposed amendment changes this to G-C.

- Reduce R-L-1 by 3.5 acres
- Increase G-C by 3.5 acres

#13: Section 31

Existing land use is designated R-S-2. The proposed amendment changes this to R-M-4.

- Reduce R-S-2 by 9.22 acres
- Increase R-M-4 by 9.22 acres

#14: Section 6

Existing land use designation is R-HR. The proposed amendment includes changing approximately 20 acres to R-S-2.

- Reduce R-HR by 20 acres
- Increase R-S-2 by 20 acres

#15: Section #1

Existing land use designation is R-M 14. The proposed amendment includes changing approximately 2.5 acres to Office Commercial.

- Reduce R-M-14 by 2.5 acres
- Increase Office Commercial by 2.5 acres

#16: Section 1

Existing land use designation is R-S-2. The proposed amendment includes changing approximately 14 acres to R-M-14.

- Reduce R-S-2 by 14 acres
- Increase R-M-14 by 14 acres

#17: Section 1

Existing land use designation is R-S-2 and R-HR. The proposed amendment includes changing approximately 6 acres to Resort Recreation Commercial and 11 acres from R-HR to Resort Recreation Commercial

- Reduce R-S-2 by 6 acres
- Reduce R-HR by 11 acres
- Increase Resort Recreation Commercial by 17 acres

#18: Section 4

Existing land use designation is R-S-2. The proposed amendment includes changing this to R-M-10.

- Reduce R-S-2 by 4 acres
- Increase R-M-10 by 4 acres

#19: Section 2

Existing land use designations are C-G and R-S-5. The proposed amendment changes the R-S-5 designation to C-O, Office Commercial.

- Reduce R-S-5 by .5 acres
- Increase O-C by .5 acres

Previous Circulated Plan

The upgraded roadway network that was previously outlined for the Town of Yucca Valley to adequately circulate local and regional traffic is presented on Exhibit P. Previously Circulated Plan upgrades and proposed roadway improvements/ classifications are summarized as follows:

Highway Designation:

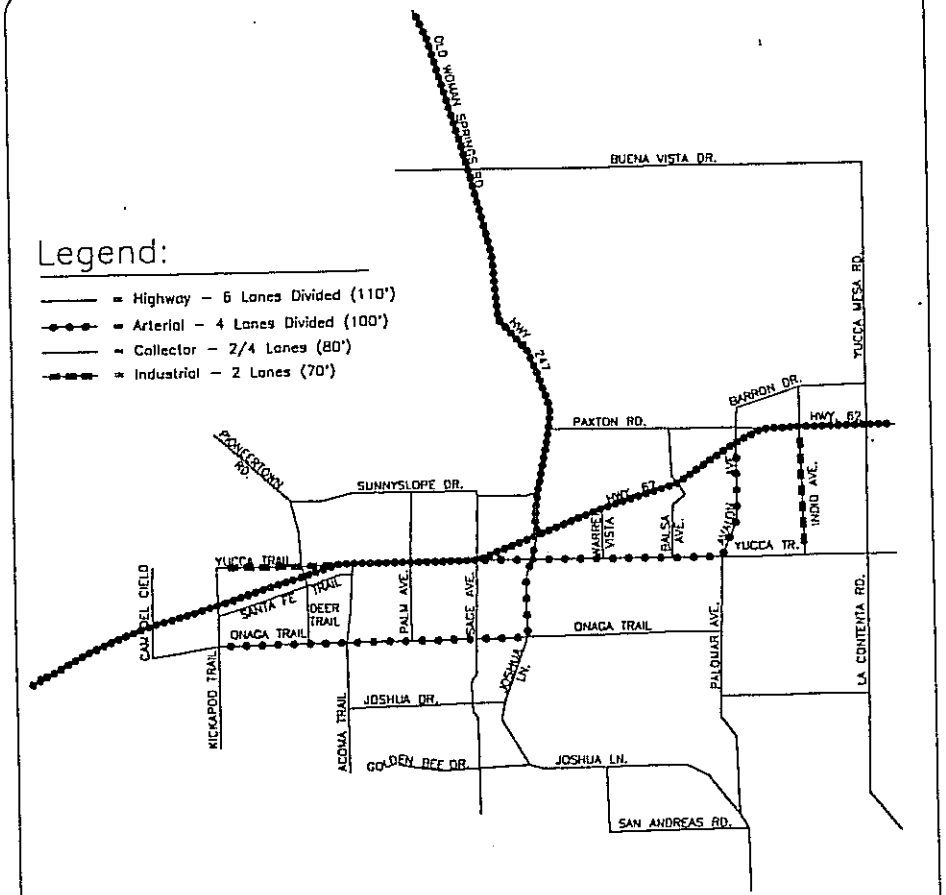
State Highway 62 and State Highway 247

State Highway 62 is recommended as a 6-lane highway divided by a landscaped median from the western Town limits to Yucca Mesa Road/La Contenta Road, the eastern Town limits. Highway 62 is intended to have limited access wherever possible. Driveways serving frontage businesses should be substantially limited and access shared by adjacent private properties should be encouraged.

The Highway designation is also recommended for Highway 247. This facility may provide four to six through travel lanes with separate left turn and right turn lanes. With buildout traffic, this roadway is to be divided by a landscaped median island with openings at intersections only. Access to and from private properties should be limited as much as possible.

The highway roadway mid-block link at its ultimate buildout has a right-of-way of 110 feet. It is a six lane facility (three travel lanes in each direction) with a center turn lane, no parking lanes and an adjacent landscaped buffer/parkway on either side measuring ten feet. The lane dimensions are as follows:

YUCCA VALLEY GENERAL PLAN (PREVIOUSLY CIRCULATED NETWORK MAP)



TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT P

Robert Kahn, John Kain & Associates, Inc.

- Four 12-foot lanes, two in each direction.
- Two 13-foot lanes, one in each direction.
- One 16-foot center turn lane that is a raised and landscaped median except at the turn pockets of intersections where the raised landscaped median will decrease to four feet in width.

Arterial Roadway Designation:

Onaga Trail:	Between Kickapoo Trail and Joshua Lane
Yucca Trail:	Between HWY 62 and Palomar Avenue/Avalon Avenue
Joshua Lane:	Between HWY 62 and Onaga Trail
Avalon Avenue:	Between HWY 62 and Yucca Trail

The arterial roadway link at its ultimate buildout has a right-of-way of 100 feet. It is a four lane facility, two travel lanes in each direction, with a center turn lane, two parking lanes and an adjacent landscaped buffer/parkway on either side. The lane dimensions are as follows:

- Four 12-foot lanes, two in each direction.
- One 16-foot center turn lane that is a raised and landscaped median except at the turn pockets of intersections where the raised landscaped median will decrease to four feet in width.
- Two 8-foot parking lanes, one on each side of the roadway.

Collector Roadway Designation:

Camino Del Cielo:	North of HWY 62/South of HWY 62 to Onaga Trail
Kickapoo Trail:	North of Hwy 62 to Yucca Trail
Kickapoo Trail:	South of HWY 62 to Onaga Trail
Pioneertown Road:	North of HWY 62
Deer Trail:	South of HWY 62 to Onaga Trail
Acoma Trail:	South of HWY 62 to Joshua Drive
Palm Avenue:	North of HWY 62 to Sunnyslope Drive/South of HWY 62 to Onaga Trail
Sage Avenue:	North of HWY 62 to Sunnyslope Drive/South of HWY 62 to Golden Bee Drive
Joshua Lane:	South of Onaga Trail
Warren Vista:	South of HWY 62 to Yucca Trail
Balsa Avenue:	North of HWY 62 to Paxton Road/South of HWY 62 to Yucca Trail
Indio Avenue:	North of HWY 62 to Barron Drive
La Contenta Road/ Yucca Mesa Road:	North of HWY 62 to the Town limits/South of HWY 62 to Joshua Drive
Palomar Avenue:	South of Yucca Trail/North of Joshua Lane
Skyline Ranch Road:	West of HWY 247
Buena Vista Drive:	East of HWY 247 to Yucca Mesa Road
Barron Drive:	East of Avalon Avenue to Yucca Mesa Road
Paxton Road:	East of HWY 247 to Avalon Avenue
Yucca Trail:	East of Avalon Avenue to La Contenta Road
Onaga Trail:	East of Joshua Lane to Palomar Avenue/West of Kickapoo Trail

Joshua Drive:	East of Acoma Trail to Joshua Lane/East of Palomar Avenue to La Contenta Road
Golden Bee Drive:	East of Sage Avenue to Joshua Lane
Sunnyslope Drive:	East of Pioneertown Road/West of HWY 247

The ultimate right-of-way for the collector roadway is eighty feet. The paved width section is sixty feet. At its ultimate buildout the collector can be either a two lane facility with a center turn lane and two parking lanes or a four lane facility with a center turn lane and no parking lanes. Either type of facility can be accommodated within the paved width section by restriping the roadway. The striping configuration of each type of collector are tentatively envisioned as follows:

Two Lane Collector:

- Two 12-foot travel lanes, one in each direction.
- One 16-foot center turn lane, no raised median.
- Two 10-foot parking lanes, one on each side of the roadway.

Four Lane Collector:

- Two 11-foot travel lanes, one in each direction.
- Two 13-foot travel lanes, one in each direction.
- One 12-foot center turn lane, no raised median.

Industrial Roadway Designation:

Indio Avenue:	South of HWY 62 to Yucca Trail
Yucca Trail:	West of HWY 62 to Kickapoo Trail

The ultimate roadway right-of-way is seventy feet. The ultimate paved section is fifty-four feet. The dimensions of the industrial roadway are described below:

- Two 12-foot travel lanes, one in each direction.
- One 14-foot center turn lane, no raised median.
- Two 3-foot parking lanes, one on each side of the roadway.

Preferred Circulation Plan

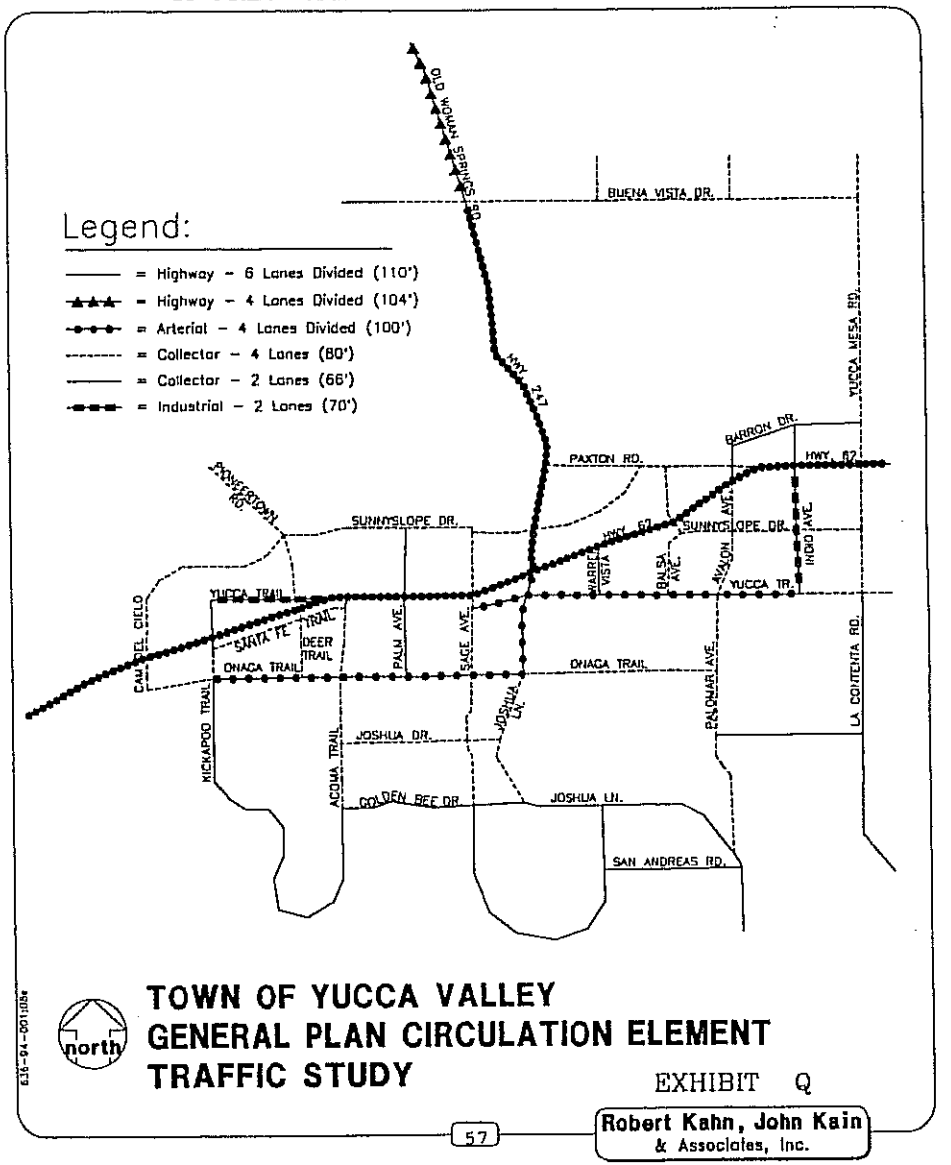
With the consideration of a new preferred land use scenario in the General Plan process, review of many aspects of circulation planning issues affecting the Town was initiated by City staff in conjunction with RKJK.

Alternative circulation and land use plan features were considered by the consultant team and City staff over a series of meetings. Exhibit Q depicts the resulting approximate alignments and classifications contained in the Preferred Circulation Plan.

Relative to the previously circulated plan, the following changes are recommended:

- Extend Kickapoo Trail southeast as a 2-lane Collector creating a linkage with a southern extension of Acoma Trail.
- Extend Sage Avenue South as a 2-lane Collector, connecting east to the southern extension of Warren Vista Avenue.
- Create an additional east/west corridor north of Highway 62 by linking Sunnyslope Drive east from Sage Avenue as a 4-lane Collector continuing north of the airport to Paxton Road. Sunnyslope Drive would

YUCCA VALLEY GENERAL PLAN [PREFERRD NETWORK MAP]



also extend west from Pioneertown Road as a 4-lane Collector to Camino Del Cielo.

- Add Sunnyslope Drive as 4-lane Collector from Balsa Avenue east to La Contenta Road.

- Extend Golden Bee Drive west from Palm Avenue as a 2-lane Collector to Acoma Trail.

Revise the classification of the following previously circulated network map General Plan roadways:

- Downgrade Old Woman Springs Road/Highway 247 North of Buena Vista Drive from a 6-lane divided highway to a 4-lane divided highway.

- Downgrade Avalon Avenue between Highway 62 and Yucca Trail to a 4-lane Collector classification from a 4-lane divided Arterial classification.

- Upgrade Yucca Trail east of Palomar Avenue to Indio Avenue to a 4-lane divided Arterial classification from a 2/4 lane Collector classification.

Revise the classification of the following General Plan roadway segments to a 4-lane Collector classification from a 2/4 lane Collector classification:

- Buena Vista Drive
- Paxton Road
- Sunnyslope Drive
- Yucca Trail between Palomar Avenue and Indio Avenue

- Yucca Trail east of Indio Avenue
- Onaga Trail between Camino Del Cielo and Kickapoo Trial
- Onaga Trail east of Sage to Palomar Avenue
- Joshua Drive between Acoma Trail and Joshua Lane
- Camino Del Cielo north of Onaga Trail
- Kickapoo Trail between Onaga Trail and Santa Fe Trail
- Santa Fe Trail
- Acoma Trail south of Highway 62 to the extension of Golden Bee Drive
- Sage Avenue south of Sunnyslope Drive to Golden Bee Drive
- Balsa Avenue
- Palomar Avenue
- Yucca Mesa Road North of Yucca Trail

GENERAL PLAN BUILDOUT PROJECTIONS

Population/Employment

The function of the Circulation Element of the General Plan is to serve as the blueprint for development of the circulation system much in the same way as the Land Use Element serves to guide development of land uses. Accordingly, the travel demand within the circulation system exhibited by traffic from the population and employment in a future forecast year (Post 2015) must be estimated to determine the adequacy of roadway classifications. The purpose of the traffic model is to provide an analysis tool which can forecast future traffic volumes within the circulation system. This section of the report presents the application of the Morongo Basin Transportation Model for this purpose with the new preferred land use plan.

Future population and employment data within the Town of Yucca Valley General Plan study area has been tabulated for buildout of the General Plan using the rates shown on Table 11. Population and employment projections derived from future land uses are summarized by category in Table 12. Population and employment projections included in the model, but outside of the Town of Yucca Valley, have been excluded from Table 12.

Trip Generation

At buildout, the Morongo Basin study area land uses are estimated to generate approximately 835,587 total trip-ends. Trip attractions for all trip purposes have been balanced against trip productions. External trips at the cordon stations are estimated to total approximately 115,642 trip-ends. Through trips between cordon stations at buildout are estimated to increase by 100% over existing conditions.

8/4/95

TABLE_11 RSA 33 POP/EMP Conversion Factors

Anderson Code	Population/ac	Total Emp/ac	Population/du	Single DU/ac	Multi DU/ac	Retail Emp/ac	Non-Retail Emp/ac
			2.5	2.5			
1111	6.25		2.5				
1112	2.8		2.8	1			
1113	8.75		2.5	3.5			
1114	12.5		2.5	5			
1121	27.6		2.3		12		
1122	24		2.4		10		
1123	28.4		2.2		12		
1124	30.8		2.2		14		
1125	19.2		2.4		8		
1131	12		2	6			
1140	14.4		2.4	2			
1151	5.4		2.7		4		
1152	0.945		2.7	0.35			
1153	0.135		2.7	0.05			
1154	0.27		2.7	0.1			
1155	0.54		2.7	0.2			
1156	1.08		2.7	0.4			
1211		54.6				2.1	52.6
1222		14.7				14.7	0
1223		16.1				16.1	0
1224		17.5				17.5	0
1231		3.5				0	3.5
1232		9.1				9.1	0
1233		3.5				3.5	0
1241		38.5				3.5	35
1242		21				0	21
1243		3.5				0	3.5
1244		39.2				4.2	35
1245		3.85				0.35	3.5
1246		7.7				0.7	7
1252		28				0	28
1253		7				3.5	3.5
1261		28				0	28
1262		7.7				0.7	7
1263		7.7				1.4	6.3
1264		7				1.4	5.6
1265		10.5				2.1	8.4
1271	7.4	9.2	2	1.1	2.6	0.2	9
1272		0				0	0
1311		11.2				0	11.2
1314		31.5				0	31.5
1323		1.4				0	1.4
1331		0.035				0	0.035

Anderson Code	Population/ac	Total Emp/ac	Population/du	Single DU/ac	Multi DU/ac	Retail Emp/ac	Non-Retail Emp/ac
1340		7				0	7
1411		3.5				1.4	2.1
1415		2.1				0.7	1.4
1420		3.5				0	3.5
1431		1.4				0	1.4
1432		0.7				0	0.7
1433		3.5				0	3.5
1434		0.07				0	0.07
1435		1.4				0	1.4
1437		0.07				0	0.07
1440		7				0	7
1500		28				7	21
1700		18.9				1.4	17.5
1810		0.21				0.07	0.14
1820		0.35				0	0.35
1821		0.07				0	0.07
1840		2.1				0.7	1.4
1850		0.42				0.07	0.35
1860		0.84				0.14	0.7
1880		0.07				0	0.07
1900		0				0	0
2110		1.4				0	1.4
2120		0.07				0	0.07
2200		0.7				0	0.7
2300		10.5				0	10.5
2600		0.35				0	0.35
2700		0.35				0	0.35
3100		0				0	0
3200		0				0	0
3300		0				0	0
4400		0.07				0	0.07
9999		0				0	0

TABLE 12

POPULATION/EMPLOYMENT/HOUSING SUMMARY

YUCCA VALLEY 1993 LAND USE

POPULATION	EMPLOYMENT	SINGLE-FAMILY DWELLING UNITS	MULTI-FAMILY DWELLING UNITS	RETAIL EMPLOYMENT	NON-RETAIL EMPLOYMENT
21,820	9,171	7,300	1,536	5,157	4,014

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE

POPULATION	EMPLOYMENT	SINGLE-FAMILY DWELLING UNITS	MULTI-FAMILY DWELLING UNITS	RETAIL EMPLOYMENT	NON-RETAIL EMPLOYMENT
54,526	32,547	17,503	3,590	13,229	19,317

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE

POPULATION	EMPLOYMENT	SINGLE-FAMILY DWELLING UNITS	MULTI-FAMILY DWELLING UNITS	RETAIL EMPLOYMENT	NON-RETAIL EMPLOYMENT
63,627	32,888	19,881	5,152	13,189	19,699

Traffic Projections

Daily traffic volumes projected by the model for the General Plan network appear on Exhibit R. The comparison of 1993 volumes to General Plan buildout volumes are shown on Table 13.

Projected General Plan buildout volumes on Highway 62 with the preferred land uses and network will range from approximately 46,000 daily vehicles east of Palomar Avenue to approximately 60,000 vehicles per day east of Acoma Trail. Existing volumes (shown on Exhibit B) on Highway 62 range from 23,600 to 32,000 daily vehicles at the same locations.

Intersection Analysis

The current technical guide to the evaluation of traffic operations is the 1994 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209). The 1994 HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

GENERAL PLAN DAILY TRAFFIC PROJECTIONS (PREFERRED LAND USES AND NETWORK)

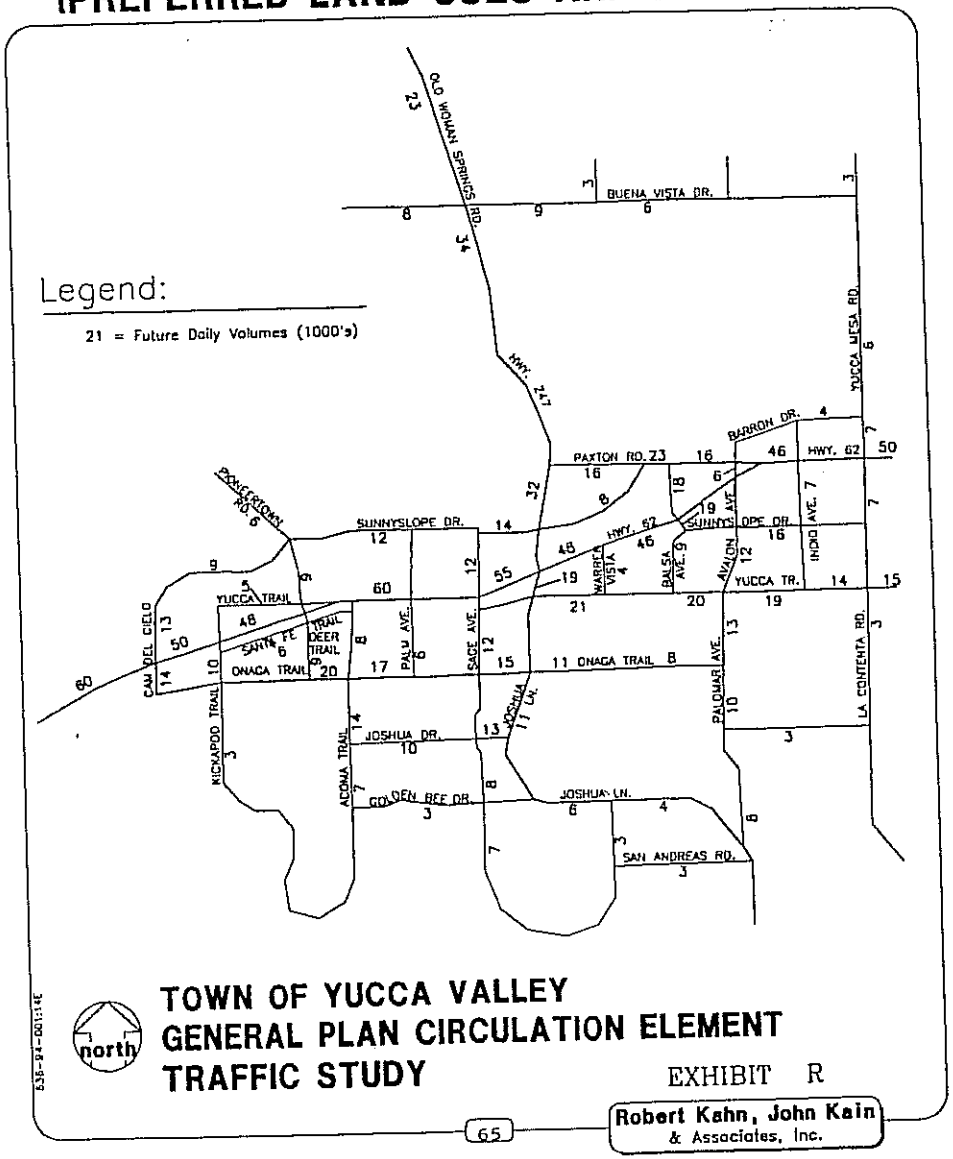


TABLE 13

COMPARISON OF EXISTING AND FUTURE VOLUMES
(PREFERRED LAND USES/PREFERRED NETWORK)

ROADWAY	1993 ADT	GENERAL PLAN DESIGNATION	GENERAL PLAN BUILDOUT (ADT)
Highway 62:			
• W of Camino Del Cielo	32,000	Highway - 6 Lanes	60,000
• W of Pioneertown Rd.	35,000	Highway - 6 Lanes	50,000
• W of Hwy. 247	39,000	Highway - 6 Lanes	55,000
• W of Yucca Mesa Rd.	27,000	Highway - 6 Lanes	46,000
Highway 247:			
• N of Buena Vista	5,400	Highway - 4 Lanes	23,000
• S of Buena Vista	7,900	Highway - 6 Lanes	34,000
• N or Hwy. 62	10,200	Highway - 6 Lanes	32,000
Yucca Trail:			
• E of Joshua Lane	7,400	Arterial - 4 Lanes	21,000
• W of Avalon/Palomar	6,300	Arterial - 4 Lanes	19,000
• W of La Contenta Road	4,500	Collector - 4 Lanes	14,000
Onaga Trail:			
• W of Avalon/Palomar Ave.	700	Collector - 4 Lanes	8,000
• W of Joshua Lane	3,600	Arterial - 4 Lanes	15,000
• E of Acoma Trail	4,600	Arterial - 4 Lanes	17,000
• E of Deer Trail	2,900	Arterial - 4 Lanes	20,000
Pioneertown Rd.:			
• N or Yucca Trail	800	Collector - 4 Lanes	9,000
Sunnyslope Dr.:			
• E of Pioneertown Rd./N of Hwy. 62	800	Collector - 4 Lanes	12,000
Sage Avenue:			
• N of Onaga Trail	3,700	Collector - 4 Lanes	12,000
• N of Hwy. 62	1,500	Collector - 4 Lanes	12,000
Acoma Trail:			
• S of Onaga Trail	1,200	Collector - 4 Lanes	14,000
• S of Hwy. 62	2,500	Collector - 4 Lanes	8,000
Joshua Drive:			
• W of Joshua Lane	2,000	Collector - 4 Lanes	13,000
• E of Palomar Ave.	2,200	Collector - 2 Lanes	3,000
Joshua Lane:			
• N of Joshua Dr.	3,700	Collector - 4 Lanes	11,000
• S of Hwy. 62	4,400	Arterial - 4 Lanes	19,000

TABLE 13 (CONT'D)

COMPARISON OF EXISTING AND FUTURE VOLUMES
(PREFERRED LAND USES/PREFERRED NETWORK)

ROADWAY	1993 ADT	GENERAL PLAN DESIGNATION	GENERAL PLAN BUILDOUT (ADT)
Avalon/Palomar Ave.:			
• N of Yucca Trail	2,200	Collector - 4 Lanes	12,000
• N of Onaga Trail	2,300	Collector - 4 Lanes	13,000
• S of Onaga Trail	2,600	Collector - 4 Lanes	10,000
• N of Hwy. 62	1,500	Collector - 4 Lanes	6,000
Yucca Mesa/La Contenta Rd.:			
• N of Hwy. 62	3,300	Collector - 4 Lanes	7,000
• S of Hwy. 62	1,500	Collector - 4 Lanes	7,000
Skyline Ranch Rd.:			
• W of Hwy. 247	1,500	Collector - 4 Lanes	8,000
Buena Vista Dr.:			
• E of Hwy. 247	1,700	Collector - 4 Lanes	9,000
Kickapoo Trail:			
• S of Hwy. 62	2,300	Collector - 4 Lanes	10,000
Camino Del Cielo:			
• S of Hwy. 62	--	Collector - 4 Lanes	14,000
• N of Hwy. 62	900	Collector - 4 Lanes	13,000
Santa Fe Trail:			
• E of Kickapoo Trail	1,400	Collector - 4 Lanes	6,000
Deer Trail:			
• S of Hwy. 62/N of Onaga Trail	2,000	Collector - 4 Lanes	9,000
Palm Ave.:			
• S of Hwy. 62	1,000	Collector - 2 Lanes	6,000
Baron Dr.:			
• W of Yucca Mesa Rd./E of Avalon Rd.	1,900	Collector - 2 Lanes	4,000
Balsa Ave.:			
• S of Hwy. 62/N of Yucca Trail	1,900	Collector - 4 Lanes	19,000
• N of Hwy. 62/S of Paxton Rd.	2,600	Collector - 4 Lanes	18,000
Indio Ave.:			
• N of Hwy. 62/S of Baron Rd.	1,000	Collector - 2 Lanes	4,000
Paxton Rd:			
• W of Avalon Dr.	600	Collector - 4 Lanes	16,000

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.

- LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.

- LOS "D" represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.

- LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas. The level of service is based on the HCM, Table 3-1.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

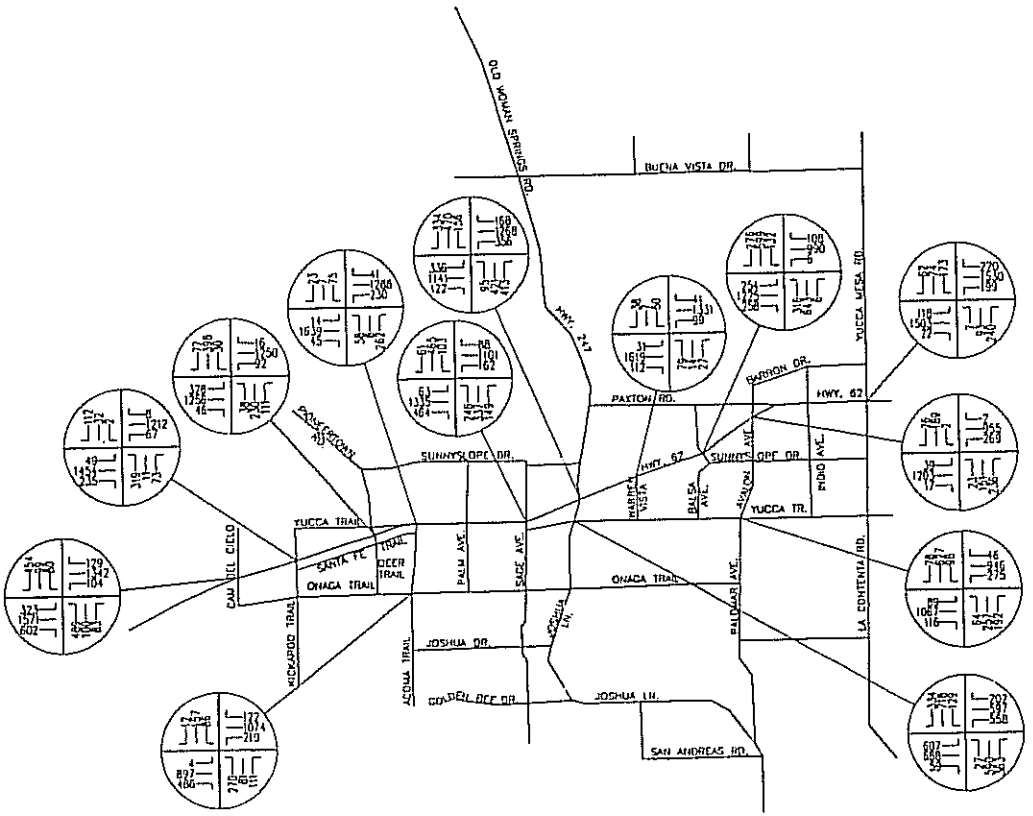
The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The 1994 Highway Capacity Manual (HCM) methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control. The levels of service determined in this study are determined using the HCM methodology.

For signalized intersections, average delay per vehicle is used to determine level of service as follows:

LEVEL OF SERVICE	AVERAGE STOPPED DELAY PER VEHICLE (SECONDS)
A	0 to 5.00
B	5.01 to 15.00
C	15.01 to 25.00
D	25.01 to 40.00
E	40.01 to 60.00
F	60.01 and up

A level of service analysis has been conducted for General Plan buildout conditions at key intersections (see Exhibit S) on the Town of Yucca Valley roadway network. The LOS analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of three seconds per phase

YUCCA VALLEY GENERAL PLAN PM PEAK HOUR TURNING MOVEMENTS (PREFERRED LAND USES AND NETWORK)



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TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

REVISED 8/4/95
EXHIBIT S

Robert Kahn, John Kain & Associates, Inc.

In accordance with 1994 HCM recommended default values. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings have also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all HCM runs:

[(Curb to Curb distance - 6) / 4] + 7

Saturation flow rates of 1,900 vehicles per hour of green (vphg) have been assumed for all capacity analysis.

The intersection operations analysis for buildout conditions with the Preferred Land Use and Circulation Plan and with recommended ultimate improvements are summarized in Table 14. The operations analysis worksheets for these future conditions with improvements are included in Appendix "F". As shown in Table 14, the key Town intersections are expected to experience LOS "D" or better peak hour operations with future improvements which include the widening of Highway 62 to three through travel lanes in each direction.

Exhibit T identifies the intersection improvement requirements at selected locations. The 13 signalized intersections will require the following improvements:

<u>Highway 62 (EW) at Camino Del Cielo</u>

- Two northbound left turn lanes
- One northbound shared through/right turn lane
- One southbound left turn lane
- One southbound shared through/right turn lane
- One eastbound left turn lane

TABLE 14

INTERSECTION ANALYSIS FOR GENERAL PLAN BUILDOUT WITH IMPROVEMENTS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1] NORTH-BOUND L	T	R	SOUTH-BOUND L	T	R	EAST-BOUND L	T	R	WEST-BOUND L	T	R	DELAY (SECS.)[2] PM	LEVEL OF SERVICE PM
Highway 62 (EW) at:															
• Cam. Del Cielo (NS)	TS	2	2	0	1	2	0	2	3	1	1	3	0	35.4	D
• Kickapoo Trail (NS)	TS	0	1	0	0	1	0	1	3	0	1	3	0	9.8	B
• Deer Trail (NS)	TS	0	2	0	0	2	0	1	3	0	1	3	0	37.4	D
• Acoma Trail (NS)	TS	0	1	0	0	1	0	1	3	0	1	3	0	22.7	C
• Sage Ave. (NS)	TS	1	2	0	1	2	0	1	3	1	1	3	0	38.8	D
• Highway 247 (NS)	TS	1	2	1	1	2	0	2	3	0	2	3	0	22.4	C
• Warren Vista Ave. (NS)	TS	0	1	0	0	1	0	1	3	0	1	3	0	9.9	B
• Balsa Ave. (NS)	TS	1	2	0	1	2	0	1	3	0	1	3	0	38.1	D
• Avalon Ave. (NS)	TS	1	2	0	0	1	0	1	3	0	1	3	0	15.8	C
• Yucca Mesa Rd. (NS)	TS	0	2	0	0	2	0	1	3	0	1	3	0	32.1	D
Yucca Trail (EW) at:															
• Joshua Lane (NS)	TS	1	2	0	1	2	0	2	2	0	2	2	0	37.9	D
• Palomar Ave. (NS)	TS	0	2	0	0	2	0	1	2	0	1	2	0	25.0	C
Onaga Trail (EW) at:															
• Acoma Trail (NS)	TS	0	2	0	0	2	0	1	2	0	1	2	0	32.3	D

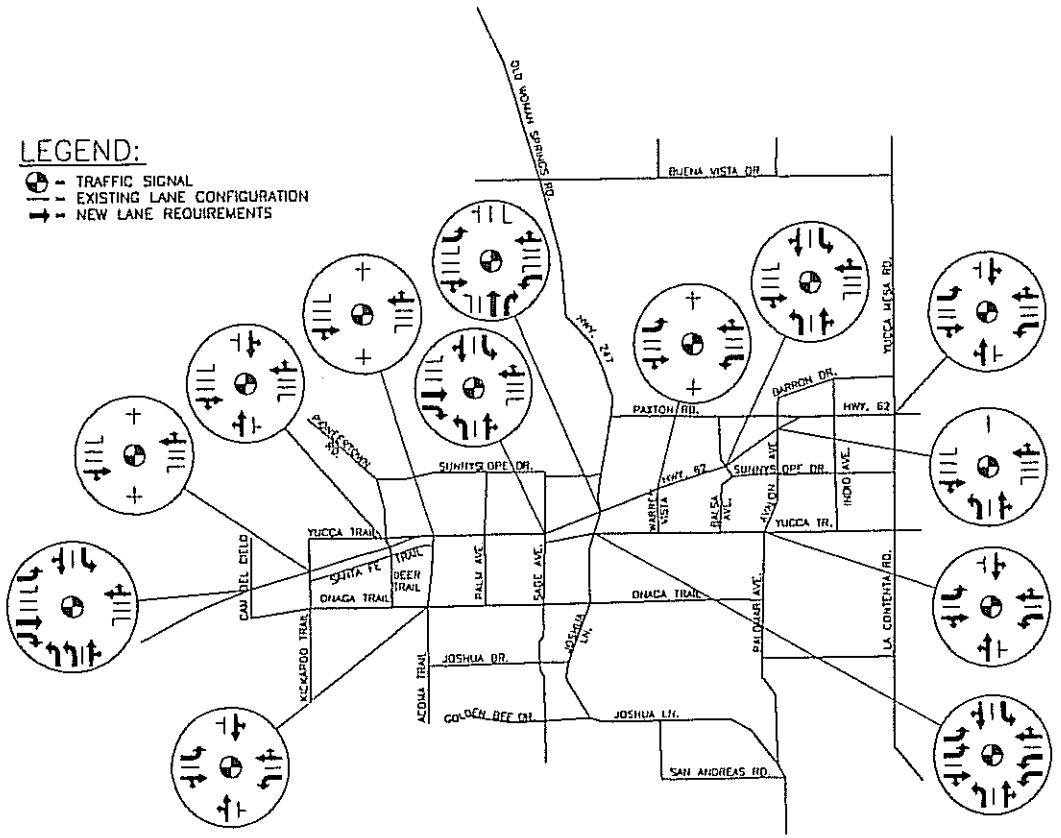
[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turn vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right

[2] Source: Dowling Associates, Traffix Version 6.8 (1995).

[3] TS = Traffic Signal

INTERSECTION IMPROVEMENT REQUIREMENTS AT SELECTED LOCATIONS



north

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

REVISED 8/03/95
EXHIBIT T

Robert Kahn, John Kain & Associates, Inc.

- One eastbound through lane
- One eastbound right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Kickapoo Trail (NS)

- One eastbound shared through/right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Deer Trail (NS)

- One northbound shared left turn/through lane
- One southbound shared left turn/through lane
- One eastbound shared through/right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Acoma Trail (NS)

- One eastbound shared through/right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Sage Avenue (NS)

- One northbound left turn lane
- One northbound shared through/right turn lane
- One southbound left turn lane
- One southbound shared through/right turn lane
- One eastbound through lane
- One eastbound right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Highway 247 (NS)

- One northbound through lane
- One northbound right turn lane
- One eastbound left turn lane
- One eastbound shared through/right turn lane
- One westbound left turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Warren Vista Avenue (NS)

- One eastbound left turn lane
- One eastbound shared through/right turn lane
- One westbound left turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Balsa Avenue (NS)

- One northbound left turn lane
- One northbound shared through/right turn lane
- One southbound left turn lane
- One southbound shared through/right turn lane
- One eastbound shared through/right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Avalon Avenue (NS)

- One northbound left turn lane
- One northbound shared through/right turn lane
- One eastbound shared through/right turn lane
- One westbound shared through/right turn lane

Highway 62 (EW) at Yucca Mesa Road (NS)

- One northbound shared left turn/through lane
- One southbound shared left turn/through lane
- One eastbound shared left turn lane
- One eastbound shared through/right turn lane
- One westbound shared left turn lane
- One westbound shared through/right turn lane

Yucca Trail (EW) at Joshua Lane (NS)

- One northbound left turn lane
- One northbound shared through/right turn lane
- One southbound left turn lane
- One southbound shared through/right turn lane
- Two eastbound left turn lanes
- One eastbound shared through/right turn lane
- Two westbound left turn lanes
- One westbound shared through/right turn lane

Yucca Trail (EW) at Palomar Avenue (NS)

- One northbound shared through/left turn lane
- One southbound shared through/left turn lane
- One eastbound left turn lane
- One eastbound shared through/right turn lane
- One westbound left turn lane
- One westbound shared through/right turn lane

Onaga Trail (EW) at Acoma Trail (NS)

- One northbound shared left turn/through lane

- One southbound shared left turn/through lane
- One eastbound left turn lane
- One eastbound shared through/right turn lane
- One westbound left turn lane
- One westbound shared through/right turn lane

Circulation System Requirements

Based on the traffic assignment shown in Exhibit R for the Preferred Circulation Plan, roadway sizing and classifications have been verified. These requirements are shown on Exhibit Q which depicts the recommended circulation system classifications.

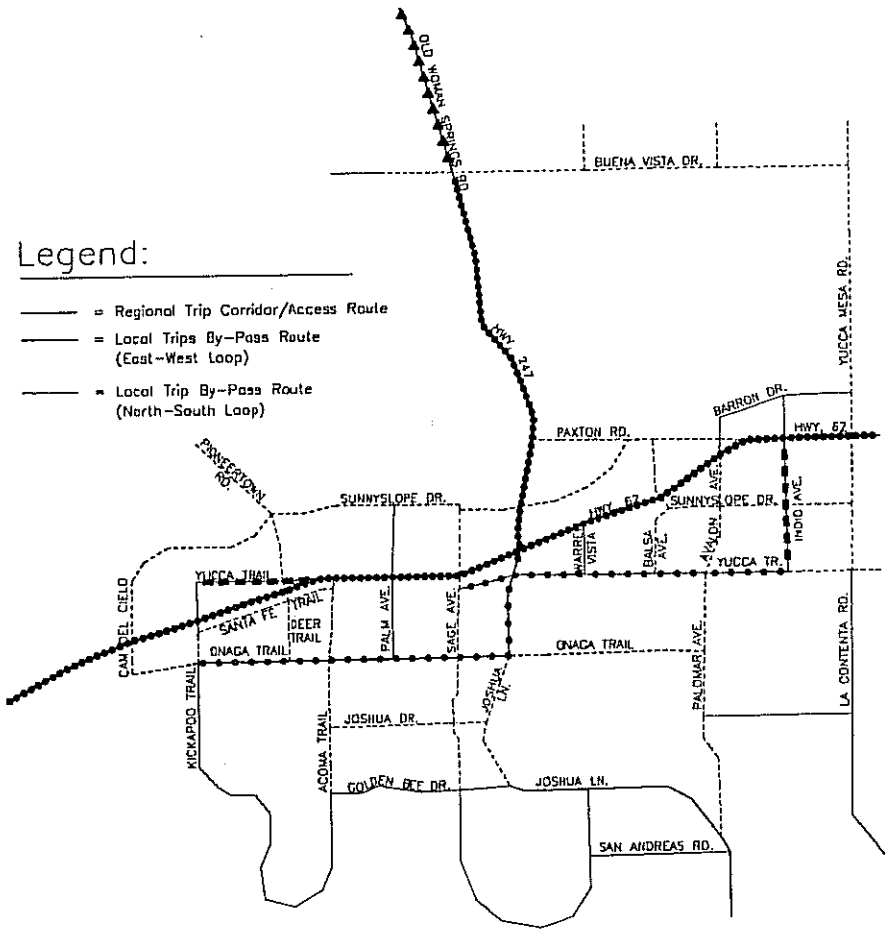
Exhibit U illustrates some of the significant features of the recommended roadway network for the Town of Yucca Valley.

The Preferred General Plan Buildout Network provides several town corridor features to help alleviate traffic congestion throughout the City. Sunnyslope Drive and Onaga Trail are identified as an alternative east-west corridor for local trips attempting to by-pass Highway 62. Additional local by-pass routes are also provided by Sage Avenue and Yucca Mesa Road as a north-south corridor.

Exhibit V presents the recommended roadway cross-sections. The recommended cross-sections provide for a variety of street widths which can be used to serve projected traffic demands.

Roadways classified as a 6-lane divided highway contain right-of-way width of 110 feet. Highways have a theoretical daily capacity of approximately 56,300 vehicles. Table 1 provides the daily roadway capacity values by roadway type.

TOWN CORRIDOR FEATURES



TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT U

636-94-001:25

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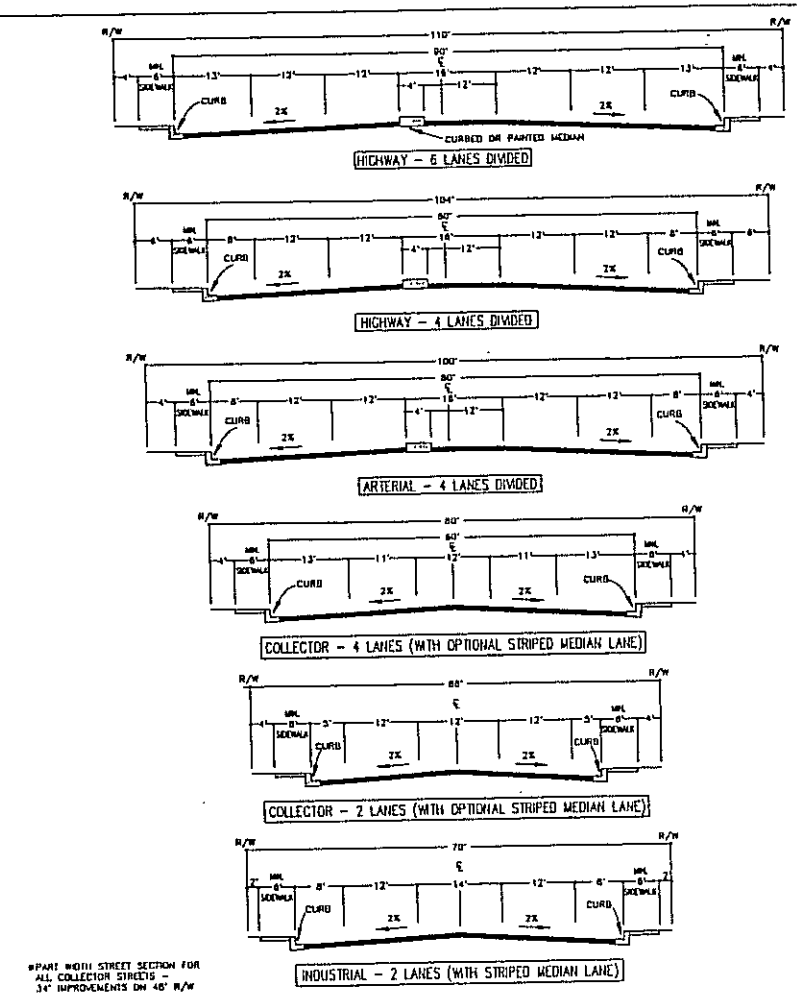
PREFERRED PLAN ROADWAY CROSS-SECTION



*PART WIDTH STREET SECTION FOR ALL COLLECTOR STREETS – 34' IMPROVEMENTS ON 46' R/W

TOWN OF YUCCA VALLEY
GENERAL PLAN CIRCULATION ELEMENT
TRAFFIC STUDY

EXHIBIT V

636-94-001:13A

Robert Kahn, John Kain & Associates, Inc.

Four-lane divided highways and Arterials with a 104 and 100 foot right-of-ways have an operational capacity of approximately 37,500 daily vehicles.

The previously circulated General Plan network classified Collectors as both 2 and 4-lane roadways. For the preferred network, two independent Collector classifications were created. Collector 4-lanes and Collector 2-lanes. Roadways classified as an undivided 4-lane Collector have an operational capacity of 25,000, while roadways classified as an undivided 2-lane collector have an operational capacity of 12,500.

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ (TOWN LIMITS)

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
214	1152	112.25
214	1223	4.43
214	1311	2.14
214	1323	4.82
214	1434	3.56
214	3100	687.40
226	1152	5.78
226	3100	69.98
236	1152	35.80
236	1223	10.16
236	1311	7.40
236	1323	6.26
236	3100	135.13
237	1151	1.38
237	1152	7.28
237	1900	1.30
237	3100	41.19
238	1152	27.27
238	1900	0.54
238	3100	47.81
243	3100	0.14
254	3100	0.34
267	1152	14.41
267	3100	579.43
268	1152	218.88
268	1245	1.05
268	3100	350.12
269	1152	64.78
269	1434	1.30
269	3100	629.28
269	3300	4.59
270	1152	177.74
270	1900	8.33
270	3100	833.50
271	1152	98.08
271	1434	1.21
271	1900	10.89
271	3100	114.14
272	1151	17.76
272	1152	218.16
272	1245	1.76
272	1900	2.35
272	3100	343.74

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
273	1112	25.01
273	3100	630.23
274	3100	188.53
285	1112	15.27
285	1152	66.79
285	3100	789.16
290	3100	3.41
292	1111	23.34
292	1112	99.31
292	1152	21.45
292	1437	5.66
292	1900	11.76
292	3100	200.01
293	1111	29.78
293	1112	47.23
293	1121	4.00
293	1122	13.12
293	1140	59.75
293	1152	86.42
293	1223	4.33
293	1245	1.46
293	1820	2.80
293	1900	4.46
293	3100	363.16
294	1111	2.08
294	1112	0.40
294	1122	0.01
294	1140	0.13
294	1152	47.91
294	1434	1.55
294	3100	643.68
295	1111	7.64
295	1112	157.76
295	1152	20.47
295	1223	1.41
295	1264	3.25
295	1437	0.21
295	1900	19.37
295	3100	320.01
301	1111	1.77
301	1112	18.93
301	1123	0.05
301	1152	5.93

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
301	1245	3.16
301	1820	4.48
301	3100	509.59
306	1111	16.41
306	1112	1.50
306	1152	2.50
306	1900	1.78
306	3100	884.44
306	3300	4.90
320	1111	27.68
320	1112	66.07
320	1211	0.30
320	1222	17.20
320	1223	11.32
320	1245	1.36
320	1411	23.09
320	1437	5.17
320	1440	12.66
320	1500	4.22
320	1900	27.75
320	3100	32.80
325	1263	0.29
325	1264	0.00
325	1440	0.02
325	3100	1.69
326	1264	4.80
326	1311	3.15
326	1415	0.05
326	1440	4.91
326	3100	341.72
327	1111	33.07
327	1112	2.81
327	1122	1.64
327	1222	12.10
327	1231	4.63
327	1232	2.94
327	1244	0.35
327	1411	10.69
327	1900	0.39
327	3100	195.41
328	1131	0.02
328	1152	4.43
328	1810	1.80

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
328	3100	115.02
329	3100	0.14
331	1111	127.44
331	1112	13.56
331	1244	3.51
331	1900	18.52
331	3100	181.18
335	1111	40.30
335	1112	22.07
335	1123	7.13
335	1131	17.12
335	1222	0.51
335	1223	16.00
335	1231	3.82
335	1245	5.20
335	1262	0.06
335	1311	2.42
335	1437	2.39
335	1900	18.84
335	3100	24.04
336	1111	17.48
336	1112	55.42
336	1122	0.01
336	1123	2.02
336	1222	0.13
336	1223	16.21
336	1311	2.08
336	1437	9.98
336	1820	9.29
336	1900	37.02
336	3100	20.03
337	1111	11.63
337	1112	0.09
337	1122	5.10
337	1123	1.42
337	1222	15.45
337	1223	25.37
337	1232	9.07
337	1243	0.08
337	1246	7.41
337	1437	0.03
337	1820	11.86
337	1900	3.29

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
337	3100	24.96
338	1111	0.01
338	1131	14.12
338	1152	6.14
338	1223	9.49
338	1233	4.54
338	1252	1.98
338	1311	41.73
338	1323	16.95
338	1810	28.54
338	1820	1.21
338	1900	34.88
338	3100	88.88
339	1111	39.39
339	1112	5.67
339	1123	4.27
339	1223	16.19
339	1231	2.37
339	1252	0.11
339	1253	1.88
339	1262	0.64
339	1311	5.48
339	1900	20.81
339	3100	40.31
342	1111	0.27
342	1112	0.32
342	1263	9.75
342	1311	9.44
342	1415	4.31
342	1700	8.01
342	1900	0.32
342	3100	112.27
343	1111	1.48
343	1112	1.57
343	1900	0.96
343	3100	134.21
344	1111	3.47
344	1112	2.28
344	1121	2.80
344	1122	2.65
344	1123	11.00
344	1211	2.75
344	1223	16.56

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
344	1241	2.01
344	1243	2.03
344	1253	0.38
344	1700	7.35
344	1900	36.87
344	3100	40.20
347	1111	9.89
347	1112	11.31
347	1123	5.02
347	1131	21.12
347	1152	4.11
347	1223	3.12
347	1233	0.25
347	1437	3.71
347	1810	75.53
347	1900	6.77
347	3100	36.65
351	1123	1.59
351	1222	8.18
351	1223	16.85
351	1241	0.08
351	1243	1.89
351	1440	2.33
351	1900	3.53
357	1111	2.65
357	1112	0.02
357	1131	22.88
357	1222	7.60
357	1223	5.83
357	1245	1.04
357	1264	42.80
357	1900	110.57
357	3100	0.02
358	1111	17.46
358	1112	9.44
358	1152	0.37
358	1900	5.32
358	3100	306.62
359	1111	70.36
359	1112	2.32
359	1122	13.08
359	1131	18.43
359	1211	2.00

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
359	1222	3.67
359	1223	16.84
359	1245	2.73
359	1900	49.06
359	3100	2.62
360	1111	183.97
360	1112	16.02
360	1152	1.26
360	1245	1.92
360	1700	18.13
360	1900	44.36
360	3100	46.90
361	1111	63.46
361	1112	13.56
361	1122	0.05
361	1140	17.32
361	1223	4.58
361	1245	1.36
361	1900	8.53
362	1111	45.92
362	1112	34.56
362	1152	2.38
362	1434	0.99
362	1900	13.40
362	2700	12.62
362	3100	305.76
363	1140	0.84
363	1223	11.14
363	1245	0.37
363	1900	2.24
364	1111	34.39
364	1112	152.26
364	1123	2.74
364	1223	1.96
364	1245	2.07
364	1253	0.87
364	1900	46.08
364	3100	21.67
365	1111	116.06
365	1112	0.38
365	1123	15.91
365	1223	2.08
365	1900	14.74

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
365	3100	0.02
366	1111	3.89
366	1112	9.09
366	1123	0.59
366	1131	0.02
366	1140	1.12
366	1223	21.56
366	1245	0.30
366	1252	0.48
366	1900	2.04
367	1111	88.66
367	1112	11.81
367	1123	5.32
367	1131	0.00
367	1233	5.12
367	1821	1.29
367	1900	4.37
367	3100	55.84
368	1111	73.13
368	1112	36.02
368	1123	4.55
368	1140	0.39
368	1223	1.10
368	1245	1.40
368	1252	3.22
368	1262	10.67
368	1820	5.56
368	1900	8.08
368	3100	3.63
369	1111	0.01
369	1112	15.75
369	1223	0.34
369	3100	171.28
370	1112	0.10
370	1123	2.14
370	1152	4.19
370	1223	8.78
370	1252	0.07
370	1262	2.79
370	1900	0.09
370	3100	60.74
371	1111	0.01
371	1112	5.32

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
371	1123	1.25
371	1152	69.47
371	1211	1.62
371	3100	886.76
373	1111	13.39
373	1112	63.65
373	1151	0.07
373	1245	2.58
373	1252	0.69
373	1311	5.17
373	1700	0.43
373	3100	373.48
374	1112	0.58
374	1151	1.13
374	1152	15.96
374	1700	16.47
374	3100	220.25
375	1111	71.59
375	1112	3.21
375	1151	1.95
375	1437	6.43
375	1700	3.05
375	1900	22.35
375	3100	99.53
376	1111	149.08
376	1112	8.66
376	1245	4.47
376	1262	1.89
376	1431	2.81
376	1900	28.33
376	2300	5.54
376	3100	113.79
377	1111	114.95
377	1112	110.67
377	1245	1.85
377	1900	13.20
377	3100	81.79
378	1223	4.92
378	1311	5.76
378	3100	14.97
380	3100	11.14
381	1151	18.43
381	1152	96.31

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
381	1331	2.22
381	1820	4.18
381	1900	0.18
381	3100	807.47
382	1151	101.65
382	1152	107.56
382	1900	6.02
382	3100	128.40
383	1111	211.78
383	1151	0.01
383	1253	0.02
383	1900	16.73
383	3100	89.99
384	1112	16.54
384	1151	38.38
384	1152	13.79
384	1900	0.90
384	3100	248.96
385	3100	647.23
387	1111	77.43
387	1112	1.82
387	1253	3.35
387	1434	0.82
387	1900	5.99
387	3100	81.96
388	1151	91.37
388	1152	85.37
388	3100	106.54
389	1111	0.87
389	1112	0.23
389	1151	1.86
389	1152	26.26
389	1245	4.27
389	1252	4.09
389	1434	0.12
389	1700	6.10
389	3100	875.83
390	1152	1.52
390	1253	0.76
390	1434	0.05
390	3100	1,729.40
393	1152	131.86
393	1820	0.12

APPENDIX A

YUCCA VALLEY 1993 LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	ACRES
393	1880	0.00
393	1900	1.81
393	3100	244.61
394	1152	30.47
394	1434	1.26
394	1880	1.63
394	3100	611.15
397	3100	12.97
401	1880	0.38
401	3100	0.69
TOTAL		24,916

APPENDIX B

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED
LAND USE MAP SUMMARY BY TAZ (TOWN LIMITS)

APPENDIX B

YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
214	1223	C-G	7.56
214	1311	I	128.52
214	1153	R-HR	205.31
214	1156	R-L-2.5	0.44
214	1155	R-L-5	472.65
226	1222	C-N	0.03
226	1153	R-HR	34.57
226	1155	R-L-5	41.15
236	1223	C-G	0.76
236	1222	C-N	11.09
236	1211	C-O	8.30
236	1311	I	61.73
236	1156	R-L-2.5	56.80
236	1155	R-L-5	55.93
237	1222	C-N	9.02
237	1156	R-L-2.5	8.39
237	1155	R-L-5	33.74
238	1156	R-L-2.5	75.59
243	1153	R-HR	0.15
254	1153	R-HR	0.34
267	1153	R-HR	431.56
267	1155	R-L-5	162.28
268	1223	C-G	14.66
268	1222	C-N	17.30
268	1211	C-O	0.01
268	1156	R-L-2.5	538.09
269	1153	R-HR-20	275.68
269	1156	R-L-2.5	381.10
269	1155	R-L-5	43.14
270	1153	R-HR	140.32
270	1156	R-L-2.5	471.76
270	1155	R-L-5	408.15
271	1223	C-G	14.46
271	1156	R-L-2.5	209.21
271	1155	R-L-5	0.64
272	1222	C-N	0.03
272	1156	R-L-2.5	189.98
272	1155	R-L-5	393.64
274	1880	O-S	145.78

APPENDIX B

YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
274	1153	R-HR	45.08
285	1153	R-HR	87.16
285	1112	R-L-1	8.63
285	1156	R-L-2.5	20.07
285	1155	R-L-5	755.36
290	1153	R-HR	3.30
292	1112	R-L-1	0.19
292	1156	R-L-2.5	361.35
293	1223	C-G	19.40
293	1437	FW	31.10
293	1112	R-L-1	73.33
293	1156	R-L-2.5	53.02
293	1155	R-L-5	317.32
293	1114	R-S-5	122.43
294	1437	FW	7.51
294	1112	R-L-1	68.08
294	1156	R-L-2.5	254.43
294	1155	R-L-5	365.71
294	1114	R-S-5	0.04
295	1112	R-L-1	157.84
295	1156	R-L-2.5	280.58
295	1155	R-L-5	91.69
301	1880	O-S	88.21
301	1153	R-HR	336.30
301	1154	R-L-10	18.06
301	1155	R-L-5	101.54
306	1880	O-S	100.69
306	1153	R-HR	107.83
306	1112	R-L-1	27.03
306	1154	R-L-10	337.81
306	1156	R-L-2.5	35.53
306	1155	R-L-5	137.14
306	1122	R-M-10	19.03
306	1151	R-S-2	147.85
320	1411	AP	22.74
320	1223	C-G	13.96
320	1222	C-N	14.16
320	1437	FW	0.03
320	1311	I	24.71

APPENDIX B

YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
320	1800	P/OP	39.12
320	1112	R-L-1	99.51
320	1156	R-L-2.5	5.07
320	1114	R-S-5	10.31
325	1311	I	0.67
325	1262	S	1.31
326	1223	C-G	79.39
326	1233	C-RR	38.13
326	1437	FW	14.52
326	1311	I	213.89
326	1151	R-S-2	0.24
326	1114	R-S-5	0.18
326	1262	S	8.31
327	1411	AP	33.38
327	1222	C-C	19.69
327	1223	C-G	56.82
327	1211	C-MU	0.15
327	1222	C-N	15.81
327	1437	FW	0.02
327	1311	I	29.20
327	1800	P/OP	2.90
327	1112	R-L-1	45.32
327	1156	R-L-2.5	0.25
327	1151	R-S-2	42.76
327	1114	R-S-5	17.78
328	1153	R-HR	20.49
328	1154	R-L-10	92.42
328	1155	R-L-5	1.35
328	1151	R-S-2	7.01
331	1222	C-C	0.17
331	1223	C-G	28.83
331	1211	C-MU	60.06
331	1123	C-MU	45.05
331	1223	C-MU	45.05
331	1222	C-N	0.02
331	1311	I	0.34
331	1151	R-S-2	164.68
335	1223	C-G	0.21
335	1211	C-MU	2.24

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YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
335	1123	C-MU	1.68
335	1223	C-MU	1.68
335	1223	C-S	29.71
335	1437	FW	6.25
335	1155	R-L-5	16.68
335	1114	R-S-5	98.04
335	1900	SR-62	3.43
336	1211	C-MU	13.62
336	1123	C-MU	10.21
336	1223	C-MU	10.21
336	1437	FW	9.48
336	1264	HS	1.30
336	1880	O-S	9.21
336	1112	R-L-1	75.20
336	1155	R-L-5	0.02
336	1122	R-M-10	0.06
336	1114	R-S-5	40.33
337	1223	C-G	18.00
337	1222	C-N	8.30
337	1241	CC/L	20.54
337	1437	FW	7.48
337	1112	R-L-1	33.29
337	1122	R-M-10	28.15
338	1223	C-G	0.22
338	1223	C-S	10.03
338	1311	I	123.19
338	1880	O-S	30.68
338	1154	R-L-10	30.54
338	1122	R-M-10	48.83
338	1151	R-S-2	4.94
339	1223	C-G	6.15
339	1223	C-S	23.20
339	1880	O-S	0.02
339	1155	R-L-5	1.47
339	1151	R-S-2	100.68
339	1114	R-S-5	5.60
342	1311	I	119.20
342	1262	S	25.47
343	1437	FW	9.37

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YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
343	1311	I	118.00
343	1151	R-S-2	10.84
344	1223	C-G	50.65
344	1211	C-O	11.10
344	1243	FS	1.37
344	1800	P/QP	3.72
344	1122	R-M-10	63.46
347	1880	O-S	76.74
347	1122	R-M-10	40.63
347	1151	R-S-2	60.05
351	1223	C-G	15.52
351	1222	C-N	11.55
351	1211	C-O	7.36
357	1223	C-G	44.02
357	1211	C-MU	3.80
357	1123	C-MU	2.85
357	1223	C-MU	2.85
357	1222	C-N	8.39
357	1264	HS	54.31
357	1122	R-M-10	56.84
357	1151	R-S-2	13.57
357	1900	SR-62	6.77
358	1222	C-N	6.70
358	1156	R-L-2.5	0.54
358	1151	R-S-2	51.87
358	1113	R-S-3.5	280.12
359	1223	C-G	25.05
359	1211	C-MU	0.03
359	1211	C-O	7.76
359	1437	FW	4.60
359	1122	R-M-10	54.58
359	1151	R-S-2	0.30
359	1114	R-S-5	84.20
359	1900	SR-62	4.58
360	1211	C-MU	0.67
360	1800	P/QP	6.89
360	1153	R-HR	3.51
360	1112	R-L-1	12.08
360	1151	R-S-2	289.31

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YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
361	1223	C-G	5.01
361	1211	C-MU	8.75
361	1123	C-MU	6.56
361	1223	C-MU	6.56
361	1223	C-S	0.08
361	1114	R-S-5	81.88
362	1156	R-L-2.5	64.29
362	1151	R-S-2	188.57
362	1113	R-S-3.5	162.78
363	1223	C-G	14.56
363	1223	C-S	0.03
364	1211	C-O	4.39
364	1800	P/QP	1.29
364	1112	R-L-1	183.08
364	1122	R-M-10	6.60
364	1123	R-MF	9.97
364	1151	R-S-2	56.85
365	1223	C-G	3.79
365	1211	C-MU	0.26
365	1211	C-O	6.41
365	1264	HS	0.48
365	1122	R-M-10	4.08
365	1151	R-S-2	134.18
366	1223	C-G	39.17
367	1233	C-RR	4.06
367	1112	R-L-1	0.30
367	1122	R-M-10	0.08
367	1151	R-S-2	164.26
367	1114	R-S-5	3.75
368	1211	C-MU	23.32
368	1123	C-MU	17.49
368	1223	C-MU	17.49
368	1112	R-L-1	11.77
368	1114	R-S-5	63.91
368	1262	S	13.72
369	1156	R-L-2.5	0.42
369	1155	R-L-5	163.89
369	1151	R-S-2	23.08
370	1223	C-G	44.11

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YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
370	1211	C-MU	0.14
370	1112	R-L-1	34.66
371	1223	C-G	2.83
371	1153	R-HR	177.43
371	1112	R-L-1	70.89
371	1156	R-L-2.5	576.48
371	1155	R-L-5	0.30
371	1122	R-M-10	24.23
371	1151	R-S-2	20.99
371	1114	R-S-5	94.17
373	1233	C-RR	0.10
373	1153	R-HR	165.85
373	1112	R-L-1	126.70
373	1151	R-S-2	166.85
374	1800	P/OP	9.96
374	1153	R-HR	126.41
374	1156	R-L-2.5	10.17
374	1151	R-S-2	107.86
375	1880	O-S	9.63
375	1800	P/OP	4.92
375	1112	R-L-1	85.41
375	1155	R-L-5	2.09
375	1151	R-S-2	106.06
376	1151	R-S-2	266.06
376	1114	R-S-5	48.41
377	1112	R-L-1	180.44
377	1156	R-L-2.5	0.13
377	1155	R-L-5	0.55
377	1151	R-S-2	0.77
377	1114	R-S-5	140.43
377	1262	S	0.05
378	1311	I	25.49
378	1151	R-S-2	0.15
380	1155	R-L-5	11.16
381	1437	FW	18.39
381	1880	O-S	2.78
381	1112	R-L-1	229.62
381	1156	R-L-2.5	188.03
381	1155	R-L-5	392.46

APPENDIX B

YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
381	1151	R-S-2	84.43
381	1113	R-S-3.5	13.30
382	1233	C-RR	54.50
382	1153	R-HR	0.23
382	1112	R-L-1	62.82
382	1151	R-S-2	225.98
382	1113	R-S-3.5	0.05
383	1880	O-S	0.08
383	1112	R-L-1	0.17
383	1155	R-L-5	0.01
383	1151	R-S-2	318.41
384	1156	R-L-2.5	0.07
384	1155	R-L-5	201.87
384	1151	R-S-2	116.72
385	1153	R-HR	645.95
385	1155	R-L-5	0.22
387	1155	R-L-5	1.79
387	1151	R-S-2	169.57
388	1112	R-L-1	117.54
388	1156	R-L-2.5	1.14
388	1151	R-S-2	161.37
388	1113	R-S-3.5	3.26
389	1800	P/OP	9.04
389	1153	R-HR	0.69
389	1112	R-L-1	82.29
389	1156	R-L-2.5	551.84
389	1155	R-L-5	275.86
390	1153	R-HR	731.36
390	1156	R-L-2.5	345.03
390	1155	R-L-5	654.13
390	1151	R-S-2	1.38
393	1880	O-S	0.02
393	1112	R-L-1	120.37
393	1155	R-L-5	205.97
393	1151	R-S-2	53.83
394	1880	O-S	24.31
394	1153	R-HR	201.33
394	1112	R-L-1	0.59
394	1156	R-L-2.5	409.54

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YUCCA VALLEY GENERAL PLAN
PREVIOUSLY CIRCULATED LAND USE MAP SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
394	1155	R-L-5	0.15
394	1151	R-S-2	1.39
397	1153	R-HR	557.89
397	1156	R-L-2.5	109.55
397	1155	R-L-5	0.92
401	1153	R-HR	0.47
	TOTAL		24,916

APPENDIX C

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE SUMMARY BY TAZ (TOWN LIMITS)

APPENDIX C

YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
214	1153	R-HR	205.31
214	1155	R-L-5	472.68
214	1156	R-L-2.5	0.50
214	1223	C-G	7.48
214	1311	I	128.52
226	1153	R-HR	34.57
226	1155	R-L-5	41.15
226	1222	C-N	0.03
236	1155	R-L-5	40.47
236	1156	R-L-2.5	56.80
236	1211	C-O	8.30
236	1222	C-N	11.09
236	1223	C-G	0.76
236	1311	I	77.20
237	1155	R-L-5	33.74
237	1156	R-L-2.5	8.39
237	1222	C-N	9.02
238	1156	R-L-2.5	75.59
243	1153	R-HR	0.15
254	1153	R-HR	0.34
267	1153	R-HR	431.56
267	1155	R-L-5	162.28
268	1156	R-L-2.5	538.09
268	1211	C-O	0.01
268	1222	C-N	17.30
268	1223	C-G	14.66
269	1153	R-HR-20	275.68
269	1155	R-L-5	43.19
269	1156	R-L-2.5	381.10
270	1153	R-HR	140.33
270	1155	R-L-5	408.15
270	1156	R-L-2.5	471.71
271	1155	R-L-5	0.64
271	1156	R-L-2.5	215.92
271	1223	C-G	7.76
272	1155	R-L-5	393.75
272	1156	R-L-2.5	189.98
272	1222	C-N	0.03
274	1153	R-HR	45.08

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YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
274	1880	O-S	145.78
285	1112	R-L-1	8.63
285	1153	R-HR	87.16
285	1155	R-L-5	755.36
285	1156	R-L-2.5	20.07
290	1153	R-HR	3.30
292	1112	R-L-1	0.19
292	1156	R-L-2.5	361.35
293	1112	R-L-1	73.33
293	1114	R-S-5	122.43
293	1155	R-L-5	317.22
293	1156	R-L-2.5	53.02
293	1223	C-G	19.40
293	1437	FW	31.10
294	1112	R-L-1	68.08
294	1114	R-S-5	0.04
294	1155	R-L-5	365.66
294	1156	R-L-2.5	254.43
294	1437	FW	7.51
295	1112	R-L-1	156.72
295	1155	R-L-5	91.69
295	1156	R-L-2.5	280.59
295	1223	C-G	1.12
301	1112	R-L-1	2.24
301	1153	R-HR	336.30
301	1154	R-L-10	15.82
301	1155	R-L-5	101.54
301	1880	O-S	88.21
306	1112	R-L-1	364.87
306	1125	R-M-8	19.03
306	1151	R-S-2	284.96
306	1153	R-HR	107.83
306	1156	R-L-2.5	35.53
306	1880	O-S	100.69
320	1112	R-L-1	99.51
320	1114	R-S-5	10.31
320	1156	R-L-2.5	5.07
320	1222	C-N	14.16
320	1223	C-G	13.96

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YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
320	1311	I	24.71
320	1411	AP	22.74
320	1437	FW	0.03
320	1800	P/QP	39.12
325	1262	S	1.31
325	1311	I	0.67
326	1114	R-S-5	0.18
326	1151	R-S-2	0.24
326	1223	C-G	79.39
326	1233	C-RR	38.13
326	1262	S	8.31
326	1311	I	213.89
326	1437	FW	14.52
327	1112	R-L-1	45.32
327	1114	R-S-5	17.78
327	1151	R-S-2	42.76
327	1156	R-L-2.5	0.25
327	1211	C-MU	0.15
327	1222	C-C	19.69
327	1222	C-N	15.81
327	1223	C-G	56.82
327	1311	I	29.20
327	1411	AP	33.38
327	1437	FW	0.02
327	1800	P/QP	2.90
328	1125	R-M-8	7.01
328	1153	R-HR	20.49
328	1154	R-L-10	92.42
328	1155	R-L-5	1.35
331	1125	R-M-4	12.46
331	1151	R-S-2	152.22
331	1211	C-MU	150.15
331	1222	C-C	0.17
331	1222	C-N	0.02
331	1223	C-G	28.83
331	1311	I	0.34
335	1114	R-S-5	98.04
335	1155	R-L-5	16.68
335	1211	C-MU	5.61

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YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
335	1223	C-G	0.21
335	1223	C-S	29.71
335	1437	FW	6.25
335	1900	SR-62	3.43
336	1112	R-L-1	75.20
336	1114	R-S-5	40.33
336	1122	R-M-10	0.06
336	1155	R-L-5	0.02
336	1211	C-MU	34.04
336	1264	HS	1.30
336	1437	FW	9.48
336	1880	O-S	9.21
337	1112	R-L-1	9.67
337	1122	R-M-10	28.15
337	1222	C-N	8.30
337	1223	C-G	18.03
337	1241	CC/L	20.54
337	1437	FW	7.48
337	1880	O-S	23.60
338	1122	R-M-10	48.83
338	1125	R-M-8	3.59
338	1151	R-S-2	1.35
338	1154	R-L-10	30.54
338	1223	C-G	0.22
338	1223	C-S	10.03
338	1311	I	123.19
338	1880	O-S	30.68
339	1114	R-S-5	5.60
339	1151	R-S-2	100.68
339	1155	R-L-5	1.47
339	1223	C-G	6.15
339	1223	C-S	23.20
339	1880	O-S	0.02
342	1262	S	25.47
342	1311	I	119.20
343	1151	R-S-2	10.85
343	1311	I	118.02
343	1437	FW	9.38
344	1122	R-M-10	63.47

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YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
344	1211	C-O	11.10
344	1223	C-G	50.65
344	1243	FS	1.37
344	1800	P/QP	3.72
347	1122	R-M-10	47.78
347	1125	R-M-8	0.50
347	1151	R-S-2	52.41
347	1233	C-RR	0.02
347	1880	O-S	76.74
351	1211	C-O	7.36
351	1222	C-N	11.55
351	1223	C-G	15.52
357	1122	R-M-10	56.84
357	1151	R-S-2	13.57
357	1211	C-MU	9.51
357	1222	C-N	8.39
357	1223	C-G	44.02
357	1264	HS	54.31
357	1900	SR-62	6.77
358	1114	R-S-5	280.15
358	1151	R-S-2	51.87
358	1156	R-L-2.5	0.54
358	1222	C-N	6.70
359	1114	R-S-5	84.20
359	1122	R-M-10	54.58
359	1151	R-S-2	0.30
359	1211	C-MU	0.03
359	1211	C-O	10.40
359	1223	C-G	22.41
359	1437	FW	4.60
359	1900	SR-62	4.58
360	1112	R-L-1	12.08
360	1151	R-S-2	291.01
360	1153	R-HR	1.83
360	1211	C-MU	0.67
360	1800	P/QP	6.89
361	1114	R-S-5	81.88
361	1211	C-MU	21.88
361	1223	C-G	5.01

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YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
361	1223	C-S	0.08
362	1114	R-S-5	162.78
362	1151	R-S-2	188.54
362	1156	R-L-2.5	64.29
363	1223	C-G	14.56
363	1223	C-S	0.03
364	1112	R-L-1	183.08
364	1122	R-M-10	6.60
364	1123	R-MF	8.70
364	1151	R-S-2	56.85
364	1211	C-O	5.65
364	1800	P/QP	1.29
365	1122	R-M-10	4.08
365	1151	R-S-2	134.18
365	1211	C-MU	0.26
365	1211	C-O	6.41
365	1223	C-G	3.79
365	1264	HS	0.48
366	1223	C-G	39.17
367	1112	R-L-1	0.30
367	1114	R-S-5	3.75
367	1122	R-M-10	0.04
367	1151	R-S-2	164.25
367	1233	C-RR	4.07
368	1112	R-L-1	11.77
368	1114	R-S-5	63.91
368	1211	C-MU	58.31
368	1262	S	13.72
369	1112	R-L-1	163.89
369	1151	R-S-2	23.08
369	1156	R-L-2.5	0.42
370	1112	R-L-1	34.66
370	1211	C-MU	0.14
370	1223	C-G	44.11
371	1112	R-L-1	70.89
371	1114	R-S-5	94.17
371	1122	R-M-10	24.23
371	1151	R-S-2	20.99
371	1153	R-HR	177.43

APPENDIX C

YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
371	1155	R-L-5	0.30
371	1156	R-L-2.5	576.48
371	1223	C-G	2.83
373	1112	R-L-1	126.70
373	1124	R-M-14	17.34
373	1151	R-S-2	145.71
373	1153	R-HR	145.74
373	1233	C-RR	24.01
374	1151	R-S-2	164.22
374	1153	R-HR	70.05
374	1156	R-L-2.5	10.17
374	1800	P/OP	9.95
375	1112	R-L-1	85.41
375	1151	R-S-2	106.06
375	1155	R-L-5	2.09
375	1800	P/OP	4.92
375	1880	O-S	9.63
376	1114	R-S-5	48.41
376	1151	R-S-2	266.21
377	1112	R-L-1	180.44
377	1114	R-S-5	140.43
377	1151	R-S-2	0.77
377	1155	R-L-5	0.55
377	1156	R-L-2.5	0.13
377	1262	S	0.05
378	1151	R-S-2	0.15
378	1311	I	25.49
380	1155	R-L-5	11.16
381	1112	R-L-1	229.62
381	1113	R-S-3.5	13.30
381	1151	R-S-2	84.43
381	1155	R-L-5	392.46
381	1156	R-L-2.5	188.03
381	1437	FW	18.39
381	1880	O-S	2.78
382	1112	R-L-1	62.82
382	1113	R-S-3.5	0.05
382	1151	R-S-2	225.98
382	1153	R-HR	0.23

APPENDIX C

YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
382	1233	C-RR	54.50
383	1112	R-L-1	0.17
383	1151	R-S-2	318.27
383	1155	R-L-5	0.01
383	1880	O-S	0.08
384	1151	R-S-2	116.71
384	1155	R-L-5	201.88
384	1156	R-L-2.5	0.07
385	1153	R-HR	645.95
385	1156	R-L-2.5	0.22
387	1151	R-S-2	169.61
387	1155	R-L-5	1.77
388	1112	R-L-1	117.52
388	1113	R-S-3.5	3.26
388	1114	R-S-4	0.85
388	1151	R-S-2	161.37
388	1156	R-L-2.5	0.29
389	1112	R-L-1	82.28
389	1114	R-S-4	24.06
389	1151	R-S-2	412.44
389	1153	R-HR	0.69
389	1155	R-L-5	275.86
389	1156	R-L-2.5	115.35
389	1800	P/OP	9.04
390	1124	R-M-14	79.64
390	1151	R-S-2	3.28
390	1153	R-HR	687.12
390	1155	R-L-5	335.92
390	1156	R-L-2.5	625.76
393	1112	R-L-1	120.38
393	1151	R-S-2	53.83
393	1155	R-L-5	205.97
393	1880	O-S	0.02
394	1112	R-L-1	0.59
394	1151	R-S-2	1.39
394	1153	R-HR	201.33
394	1155	R-L-5	0.15
394	1156	R-L-2.5	409.54
394	1880	O-S	24.31

APPENDIX C

YUCCA VALLEY GENERAL PLAN
PREFERRED LAND USE SUMMARY BY TAZ

TAZ_NUM	ANDERSON_CODE	LUCLASS	ACRES
397	1112	R-L-1	0.92
397	1153	R-HR	557.89
397	1156	R-L-2.5	109.55
401	1153	R-HR	0.47
	TOTAL		24,916

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE POPULATION/EMPLOYMENT/HOUSING SUMMARY BY TAZ (RSA 33)

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
101	2,500	0	1,000	0	0	0
102	186	0	66	2	0	0
103	682	0	262	48	0	0
104	0	0	0	0	0	0
105	2	0	2	0	0	0
106	4	0	2	0	0	0
107	0	0	0	0	0	0
108	212	0	82	14	0	0
109	10	0	4	0	0	0
110	162	35	60	0	0	35
111	6	0	2	0	0	0
112	4	0	2	0	0	0
113	52	12	20	0	0	12
114	124	0	48	8	0	0
115	134	0	52	10	0	0
116	208	0	80	14	0	0
117	258	234	96	0	0	234
118	10	0	4	0	0	0
119	4	0	2	0	0	0
120	374	90	176	0	2	89
121	320	1,629	50	80	2	1,628
122	62	0	22	4	0	0
123	2	0	0	2	0	0
124	0	0	0	0	0	0
125	14	0	4	0	0	0
126	0	0	0	0	0	0
127	0	0	0	0	0	0
128	536	12	198	0	0	12
129	102	0	38	6	0	0
130	190	0	70	0	0	0
131	12	0	4	0	0	0
132	68	0	24	0	0	0
133	166	12	62	0	5	8
134	76	51	28	0	20	32
135	428	0	158	0	0	0
136	0	0	0	0	0	0
137	130	84	48	0	0	84
138	290	336	108	0	174	162
139	1,218	3	450	0	2	2
140	0	0	0	0	0	0
141	120	0	28	8	0	0
142	0	0	0	0	0	0
143	608	72	224	0	0	72
144	166	0	62	0	0	0
145	440	102	162	0	83	20
146	1,344	734	498	0	159	575

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
147	0	0	0	0	0	0
148	66	0	24	0	0	0
149	182	0	68	0	0	0
150	4	98	2	0	0	98
151	96	2	36	0	2	0
152	162	99	60	0	9	90
153	538	161	200	0	89	72
154	1,142	466	424	0	446	20
155	136	2	50	0	0	2
156	270	5	100	0	0	5
157	122	0	46	0	0	0
158	20	0	8	0	0	0
159	114	15	42	0	6	9
160	38	0	14	0	0	0
161	18,630	14,478	2,770	6,546	315	14,163
162	112	54	28	20	2	53
163	44	225	16	0	84	141
164	164	17	60	0	0	17
165	264	0	98	0	0	0
166	116	6	42	0	0	6
167	220	0	82	0	0	0
168	60	0	22	0	0	0
169	112	0	42	0	0	0
170	18	0	6	0	0	0
171	10	0	4	0	0	0
172	446	0	166	0	0	0
173	24	0	8	0	0	0
174	180	135	66	0	135	0
175	28	0	10	0	0	0
176	376	0	140	0	0	0
177	52	14	18	0	0	14
178	224	0	82	0	0	0
179	300	0	112	0	0	0
180	20	0	8	0	0	0
181	38	0	14	0	0	0
182	6	0	2	0	0	0
183	552	0	204	0	0	0
184	56	0	20	0	0	0
185	26	0	10	0	0	0
186	182	164	28	62	3	161
187	86	3	30	0	0	3
188	14	3	6	0	0	0
189	88	0	32	0	0	0
190	76	0	28	0	0	0
191	42	0	16	0	0	0
192	360	222	134	0	15	207

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
193	328	0	122	0	0	0
194	224	0	82	0	0	0
195	60	3	22	0	0	3
196	362	0	92	46	0	0
197	322	12	120	0	0	12
198	76	0	28	0	0	0
199	44	8	16	0	0	8
200	160	0	60	0	0	0
201	782	0	290	0	0	0
202	76	0	28	0	0	0
203	654	422	242	0	3	419
204	4	0	2	0	0	0
205	16	233	6	0	0	233
206	24	0	8	0	0	0
207	150	398	62	0	257	141
208	34	29	12	0	0	29
209	98	33	38	0	0	33
210	202	2	74	0	0	2
211	116	2	42	0	0	2
212	22	0	10	0	0	0
213	118	14	44	0	0	14
214	283	1,561	105		122	1,439
215	18	0	6	0	0	0
216	16	2	6	0	0	2
217	0	0	0	0	0	0
218	198	0	74	0	0	0
219	1,582	2	586	0	0	2
220	434	2	160	0	0	2
221	104	2	38	0	0	2
222	318	138	118	0	12	126
223	362	0	134	0	0	0
224	6	0	2	0	0	0
225	72	0	28	0	0	0
226	27	1	10		1	0
227	436	122	90	112	104	18
228	22	0	8	0	0	0
229	716	0	286	0	0	0
230	60	134	24	0	65	69
231	416	459	172	4	203	257
232	4	0	2	0	0	0
233	42	0	16	0	0	0
234	74	0	28	0	0	0
235	12	0	4	0	0	0
236	92	1,320	34		193	1,127
237	27	133	10		133	0
238	82		30			

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
239	64	0	24	0	0	0
240	32	0	12	0	0	0
241	44	0	16	0	0	0
242	166	498	16	54	338	161
243	0		0			
244	194	6	72	0	5	2
245	158	0	58	0	0	0
246	506	47	188	0	44	3
247	0	24	0	0	0	24
248	228	14	84	0	0	14
249	292	102	108	0	0	102
250	158	0	58	0	0	0
251	56	161	20	0	65	96
252	220	2	82	0	0	2
253	184	89	82	0	12	77
254	0		0			
255	1,204	1,053	480	0	386	668
256	1,200	543	362	134	465	78
257	1,980	107	788	0	33	74
258	252	0	100	0	0	0
259	0	0	0	0	0	0
260	34	0	12	0	0	0
261	34	0	12	0	0	0
262	60	0	22	0	0	0
263	608	395	224	0	116	279
264	104	0	38	0	0	0
265	18	20	6	0	0	20
266	274	66	102	0	2	65
267	146		54			
268	581	491	215		490	1
269	472		175			
270	749		277			
271	226	233	84		233	0
272	418	0	155		0	0
273	304	66	114	0	6	60
274	6	10	2		0	10
275	44	0	16	0	0	0
276	108	216	36	4	21	195
277	2,626	1,413	546	554	1,214	200
278	3,222	645	482	914	575	71
279	1,588	83	632	0	72	11
280	938	882	314	76	359	524
281	2,670	126	940	98	66	60
282	180	74	66	0	74	0
283	230	0	86	0	0	0
284	66	78	24	0	65	14

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
285	464		172			
286	82	135	30	0	9	126
287	38	17	14	0	0	17
288	26	218	10	0	75	143
289	586	329	60	190	104	225
290	0		0			
291	60	492	22	0	281	212
292	391		145			
293	1,950	314	770		312	2
294	650	1	243		0	1
295	763		288			
296	2,588	1,313	682	422	686	627
297	48	281	18	0	56	225
298	6	0	2	0	0	0
299	1,360	1,446	244	320	680	767
300	0	1,206	0	0	705	501
301	105	6	39		0	6
302	222	746	82	0	299	447
303	40	93	14	0	0	93
304	6	182	2	0	35	147
305	658	12	216	46	2	11
306	1,544	7	404	190	0	7
307	1,248	587	278	238	308	279
308	450	545	82	102	540	5
309	1,242	975	348	170	725	251
310	1,062	224	424	0	149	75
311	1,794	810	718	0	501	309
312	644	756	264	0	200	557
313	404	159	150	0	159	0
314	976	126	360	0	54	72
315	44	0	16	0	0	0
316	298	168	80	34	48	120
317	18	2	6	0	0	2
318	66	0	24	0	0	0
319	132	1,932	48	0	183	1,749
320	393	789	153		465	325
321	14	27	4	0	27	0
322	486	138	208	0	8	131
323	4,574	657	1,512	330	630	27
324	706	380	248	30	278	102
325		18			1	17
326	4	3,872	1		1,418	2,455
327	671	1,869	220		1,484	405
328	66		25			
329	312	6	116	0	0	6
330	4	0	2	0	0	0

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
331	2,079	4,475	329	541	1,318	3,157
332	54	323	20	0	30	293
333	814	0	288	22	0	0
334	308	180	120	0	146	35
335	1,279	632	494	20	513	118
336	971	918	277	123	195	724
337	762	1,203	33	282	484	719
338	1,207	1,547	13	488	165	1,382
339	614	472	230		472	0
340	66	15	24	0	0	15
341	126	0	46	0	0	0
342		1,531			18	1,513
343	59	1,322	22		0	1,322
344	1,523	1,427		635	839	588
345	650	0	70	208	0	0
346	102	20	38	0	0	20
347	1,299	5	120	406	0	5
348	1,150	0	426	0	0	0
349	94	0	36	0	0	0
350	2	2	2	0	0	2
351		822			435	386
352	10	150	4	0	14	137
353	368	0	136	0	0	0
354	454	0	222	8	0	0
355	1,560	0	612	0	0	0
356	2,170	0	856	0	0	0
357	1,513	1,466	27	603	962	504
358	2,732	99	1,084		99	0
359	2,364	829	422	546	420	409
360	1,594	37	591		1	35
361	1,197	665	409	79	206	459
362	2,512		973			
363		235			235	0
364	1,204	240	297	186	9	231
365	822	428	268	41	76	353
366		631			631	0
367	936	14	348	1	14	0
368	1,291	1,661	331	210	340	1,320
369	214		79			
370	90	718	35		710	7
371	2,703	46	823	242	46	0
372	30	0	12	0	0	0
373	1,253	0	469		0	0
374	610		226			
375	796	1	298		0	1
376	2,042		774			

APPENDIX D

YUCCA VALLEY GENERAL PLAN PREVIOUSLY CIRCULATED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
377	2,229	0	884		0	0
378	1	286	0		0	286
379	290	0	108	0	0	0
380	6		2			
381	1,584	1	599		0	1
382	1,384	191	515		191	0
383	1,720	0	637		0	0
384	739		274			
385	87		32			
386	70	0	26	0	0	0
387	917		340			
388	1,207		452			
389	959		358			
390	832		308			
391	0	0	0	0	0	0
392	336	2	124	0	0	2
393	715	0	269		0	0
394	479	2	177		0	2
395	690	0	256	0	0	0
396	0	0	0	0	0	0
397	194		72			
398	2	0	2	0	0	0
399	360	0	136	0	0	0
400	0	0	0	0	0	0
401	0		0			
402	590	60	246	0	50	11
403	326	111	144	0	111	0
404	392	191	156	0	140	51
405	936	732	368	0	579	153
406	1,842	0	726	0	0	0
407	204	336	82	0	324	12

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND
USE POPULATION/EMPLOYMENT/HOUSING SUMMARY BY TAZ (RSA 33)

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
101	2,500	0	1,000	0	0	0
102	186	0	66	2	0	0
103	682	0	262	48	0	0
104	0	0	0	0	0	0
105	2	0	2	0	0	0
106	4	0	2	0	0	0
107	0	0	0	0	0	0
108	212	0	82	14	0	0
109	10	0	4	0	0	0
110	162	35	60	0	0	35
111	6	0	2	0	0	0
112	4	0	2	0	0	0
113	52	12	20	0	0	12
114	124	0	48	8	0	0
115	134	0	52	10	0	0
116	208	0	80	14	0	0
117	258	234	96	0	0	234
118	10	0	4	0	0	0
119	4	0	2	0	0	0
120	374	90	176	0	2	89
121	320	1,629	50	80	2	1,628
122	62	0	22	4	0	0
123	2	0	0	2	0	0
124	0	0	0	0	0	0
125	14	0	4	0	0	0
126	0	0	0	0	0	0
127	0	0	0	0	0	0
128	536	12	198	0	0	12
129	102	0	38	6	0	0
130	190	0	70	0	0	0
131	12	0	4	0	0	0
132	68	0	24	0	0	0
133	166	12	62	0	5	8
134	76	51	28	0	20	32
135	428	0	158	0	0	0
136	0	0	0	0	0	0
137	130	84	48	0	0	84
138	290	336	108	0	174	162
139	1,218	3	450	0	2	2
140	0	0	0	0	0	0
141	120	0	28	8	0	0
142	0	0	0	0	0	0
143	608	72	224	0	0	72
144	166	0	62	0	0	0
145	440	102	162	0	83	20
146	1,344	734	498	0	159	575

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
147	0	0	0	0	0	0
148	66	0	24	0	0	0
149	182	0	68	0	0	98
150	4	98	2	0	2	0
151	96	2	36	0	9	90
152	162	99	60	0	89	72
153	538	161	200	0	446	20
154	1,142	465	424	0	0	2
155	136	2	50	0	0	5
156	270	5	100	0	0	0
157	122	0	46	0	0	0
158	20	0	8	0	6	9
159	114	15	42	0	0	0
160	38	0	14	0	315	14,163
161	18,630	14,478	2,770	6,546	2	53
162	112	54	28	20	84	141
163	44	225	16	0	0	17
164	164	17	60	0	0	0
165	264	0	98	0	0	6
166	116	6	42	0	0	0
167	220	0	82	0	0	0
168	60	0	22	0	0	0
169	112	0	42	0	0	0
170	18	0	6	0	0	0
171	10	0	4	0	0	0
172	446	0	166	0	0	0
173	24	0	8	0	135	0
174	180	135	66	0	0	0
175	28	0	10	0	0	0
176	376	0	140	0	0	14
177	52	14	18	0	0	0
178	224	0	82	0	0	0
179	300	0	112	0	0	0
180	20	0	8	0	0	0
181	38	0	14	0	0	0
182	6	0	2	0	0	0
183	552	0	204	0	0	0
184	56	0	20	0	0	0
185	26	0	10	0	0	0
186	182	164	28	62	3	161
187	86	3	30	0	0	3
188	14	3	6	0	0	3
189	88	0	32	0	0	0
190	76	0	28	0	0	0
191	42	0	16	0	0	0
192	360	222	134	0	15	207

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
193	328	0	122	0	0	0
194	224	0	82	0	0	0
195	60	3	22	0	0	3
196	362	0	92	46	0	0
197	322	12	120	0	0	12
198	76	0	28	0	0	0
199	44	8	16	0	0	8
200	160	0	60	0	0	0
201	782	0	290	0	0	0
202	76	0	28	0	0	0
203	654	422	242	0	3	419
204	4	0	2	0	0	0
205	16	233	6	0	0	233
206	24	0	8	0	0	0
207	150	398	62	0	257	141
208	34	29	12	0	0	29
209	98	33	38	0	0	33
210	202	2	74	0	0	2
211	116	2	42	0	0	2
212	22	0	10	0	0	0
213	118	14	44	0	0	14
214	284	1,560	105		121	1,439
215	18	0	6	0	0	0
216	16	2	6	0	0	2
217	0	0	0	0	0	0
218	198	0	74	0	0	0
219	1,582	2	586	0	0	2
220	434	2	160	0	0	2
221	104	2	38	0	0	2
222	318	138	118	0	12	126
223	362	0	134	0	0	0
224	6	0	2	0	0	0
225	72	0	28	0	0	0
226	27	1	10		1	0
227	436	122	90	112	104	18
228	22	0	8	0	0	0
229	716	0	286	0	0	0
230	60	134	24	0	65	69
231	416	459	172	4	203	257
232	4	0	2	0	0	0
233	42	0	16	0	0	0
234	74	0	28	0	0	0
235	12	0	4	0	0	0
236	83	1,493	31		193	1,300
237	27	133	10		133	0
238	82		30			

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
239	64	0	24	0	0	0
240	32	0	12	0	0	0
241	44	0	16	0	0	0
242	166	498	16	54	338	161
243	0		0			
244	194	6	72	0	6	2
245	158	0	58	0	0	0
246	506	47	188	0	44	3
247	0	24	0	0	0	24
248	228	14	84	0	0	14
249	292	102	108	0	0	102
250	158	0	58	0	0	0
251	56	161	20	0	65	96
252	220	2	82	0	0	2
253	184	89	82	0	12	77
254	0		0			
255	1,204	1,053	480	0	386	668
256	1,200	543	362	134	466	78
257	1,980	107	788	0	33	74
258	252	0	100	0	0	0
259	0	0	0	0	0	0
260	34	0	12	0	0	0
261	34	0	12	0	0	0
262	60	0	22	0	0	0
263	608	396	224	0	116	279
264	104	0	38	0	0	0
265	18	20	6	0	0	20
266	274	66	102	0	2	65
267	146		54			
268	581	491	215		490	0
269	472		175			
270	749		277			
271	234	125	86		125	0
272	418	0	155		0	0
273	304	66	114	0	6	60
274	6	10	2		0	10
275	44	0	16	0	0	0
276	108	216	36	4	21	195
277	2,626	1,413	546	554	1,214	200
278	3,222	645	482	914	575	71
279	1,588	83	632	0	72	11
280	938	882	314	76	359	524
281	2,570	126	940	98	66	60
282	180	74	66	0	74	0
283	230	0	86	0	0	0
284	66	78	24	0	65	14

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
285	464		172			
286	82	135	30	0	9	126
287	38	17	14	0	0	17
288	26	218	10	0	75	143
289	586	329	60	190	104	225
290	0		0			
291	60	492	22	0	281	212
292	391		145			
293	1,950	314	770		312	2
294	650	1	243		0	1
295	760	18	287		18	0
296	2,588	1,313	682	422	686	627
297	48	281	18	0	56	225
298	6	0	2	0	0	0
299	1,360	1,446	244	320	680	767
300	0	1,206	0	0	705	501
301	110	6	41		0	6
302	222	746	82	0	299	447
303	40	93	14	0	0	93
304	6	182	2	0	35	147
305	658	12	216	46	2	11
306	2,906	7	954	152	0	7
307	1,248	587	278	238	308	279
308	450	545	82	102	540	5
309	1,242	975	348	170	725	251
310	1,062	224	424	0	149	75
311	1,794	810	718	0	501	309
312	644	756	264	0	200	557
313	404	159	150	0	159	0
314	976	126	360	0	54	72
315	44	0	16	0	0	0
316	298	168	80	34	48	120
317	18	2	6	0	0	2
318	66	0	24	0	0	0
319	132	1,932	48	0	183	1,749
320	393	789	153		465	325
321	14	27	4	0	27	0
322	486	138	208	0	8	131
323	4,574	657	1,512	330	630	27
324	706	380	248	30	278	102
325		18			1	17
326	4	3,872	1		1,418	2,455
327	571	1,889	220		1,484	405
328	163		11	56		
329	312	6	116	0	0	6
330	4	0	2	0	0	0

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

taz_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
331	2,252	4,478	304	641	1,319	3,159
332	54	323	20	0	30	293
333	814	0	288	22	0	0
334	308	180	120	0	146	35
335	1,279	632	494	20	513	118
336	971	918	277	123	195	724
337	701	1,205	10	282	484	721
338	1,256	1,547	6	517	165	1,382
339	614	472	230		472	0
340	66	15	24	0	0	15
341	126	0	46	0	0	0
342		1,531			18	1,513
343	59	1,322	22		0	1,322
344	1,523	1,427		635	839	588
345	550	0	70	208	0	0
346	102	20	38	0	0	20
347	1,439	5	105	482	0	5
348	1,150	0	426	0	0	0
349	94	0	36	0	0	0
350	2	2	2	0	0	2
351		822			435	386
352	10	150	4	0	14	137
353	368	0	136	0	0	0
354	454	0	222	8	0	0
355	1,560	0	612	0	0	0
356	2,170	0	856	0	0	0
357	1,513	1,466	27	603	962	504
358	3,783	99	1,505		99	0
359	2,364	931	422	546	383	548
360	1,603	37	594		1	35
361	1,197	665	409	79	206	459
362	3,122		1,217			
363		235			235	0
364	1,171	309	297	170	12	297
365	822	428	268	41	76	353
366		631			631	0
367	936	14	348	0	14	0
368	1,291	1,661	331	210	340	1,320
369	551		210			
370	90	718	35		710	7
371	2,703	46	823	242	46	0
372	30	0	12	0	0	0
373	1,670	84	425	243	84	0
374	907		336			
375	796	1	298		0	1
376	2,043		774			

APPENDIX E

YUCCA VALLEY GENERAL PLAN PREFERRED LAND USE
POPULATION/EMPLOYMENT/HOUSING SUMMARY

tax_num	population	tot emp	sfdu	mfdu	retail emp	non-retail
377	2,229	0	884		0	0
378	1	286	0		0	286
379	290	0	108	0	0	0
380	6		2			
381	1,584	1	599		0	1
382	1,384	191	515		191	0
383	1,719	0	637		0	0
384	739		274			
385	87		32			
386	70	0	26	0	0	0
387	917		340			
388	1,217		456			
389	3,015		1,129			
390	3,421		358	1,115		
391	0	0	0	0	0	0
392	336	2	124	0	0	2
393	715	0	269		0	0
394	479	2	177		0	2
395	690	0	256	0	0	0
396	0	0	0	0	0	0
397	196		73			
398	2	0	2	0	0	0
399	360	0	136	0	0	0
400	0	0	0	0	0	0
401	0		0			
402	590	60	246	0	50	11
403	326	111	144	0	111	0
404	392	191	156	0	140	51
405	936	732	368	0	579	153
406	1,842	0	726	0	0	0
407	204	336	82	0	324	12

APPENDIX F

LEVEL OF SERVICE COMPUTATIONS, PREFERRED GENERAL PLAN WITH IMPROVEMENTS

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #1 CAM DEL CIELO (NS) / HWY. 62 (EW)

Cycle (sec): 120 Critical Vol./Cap. (X): 0.991
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 35.4
Optimal Cycle: 120 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected		Include	Protected		Include	Protected		Include	Protected		Include
Rights:												
Min. Green:	10	28	28	10	28	28	10	21	21	10	21	21
Lanes:	2	0 1	1 0	1	0 1	1 0	2	0 3	0 1	1	0 2	1 0
Volume Module:												
Base Vol:	489	100	83	80	99	454	323	1571	602	104	1342	129
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	489	100	83	80	99	454	323	1571	602	104	1342	129
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	515	105	87	84	104	478	340	1654	634	109	1413	136
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	515	105	87	84	104	478	340	1654	634	109	1413	136
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	515	105	87	84	104	478	340	1654	634	109	1413	136
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.99
Lanes:	2.00	1.09	0.91	1.00	1.00	1.00	2.00	3.00	1.00	1.00	2.74	0.26
Final Sat.:	3610	1933	1601	1805	1900	1615	3610	5700	1615	1805	5148	495
Capacity Analysis Module:												
Vol/Sat:	0.14	0.05	0.05	0.05	0.05	0.30	0.09	0.29	0.39	0.06	0.27	0.27
Crit Moves:	****					****			****	****		
Green/Cycle:	0.14	0.32	0.32	0.11	0.29	0.29	0.12	0.39	0.39	0.08	0.35	0.35
Volume/Cap:	1.02	0.17	0.17	0.41	0.19	1.02	0.79	0.75	1.02	0.72	0.79	0.79
Level Of Service Module:												
Delay/Veh:	68.8	19.1	19.1	32.7	20.6	61.1	39.5	21.7	56.2	45.2	24.2	24.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	68.8	19.1	19.1	32.7	20.6	61.1	39.5	21.7	56.2	45.2	24.2	24.2
Queue:	24	3	2	3	3	22	12	49	29	4	43	5

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1985 HCM Operations Method (Base Volume Alternative)

Intersection #2 KICKAPOO TRAIL (NS) / HWY. 62 (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.741
Loss Time (sec): 6 Average Delay (sec/veh): 9.6
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted		Include	Permitted		Include	Permitted		Include	Permitted		Include
Rights:												
Min. Green:	28	28	28	28	28	28	16	16	16	16	16	1
Lanes:	0	0 1!	0 0	0	0 1!	0 0	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	319	11	73	2	32	112	49	1454	235	67	1212	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	
Initial Bse:	319	11	73	2	32	112	49	1454	235	67	1212	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.9
PHF Volume:	336	12	77	2	34	118	52	1531	247	71	1276	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	336	12	77	2	34	118	52	1531	247	71	1276	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.
Final Vol.:	336	12	77	2	34	118	52	1531	247	71	1276	
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	18
Adjustment:	0.71	0.71	0.71	0.80	0.80	0.80	0.19	0.98	0.98	0.15	1.00	1.
Lanes:	0.79	0.03	0.18	0.01	0.22	0.77	1.00	2.58	0.42	1.00	2.98	0.
Final Sat.:	1014	36	232	19	318	1103	342	4557	735	270	5366	
Capacity Analysis Module:												
Vol/Sat:	0.33	0.33	0.33	0.11	0.11	0.11	0.15	0.34	0.34	0.26	0.24	0.
Crit Moves:		****						****				
Green/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.43	0.43	0.43	0.43	0.43	0.
Volume/Cap:	0.71	0.71	0.71	0.23	0.23	0.23	0.35	0.78	0.78	0.61	0.55	0.
Level Of Service Module:												
Delay/Veh:	12.4	12.4	12.4	7.3	7.3	7.3	9.2	12.2	12.2	15.9	9.8	
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1
ProgAdjFctr:	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	1.00	0.85	0
AdjDel/Veh:	10.5	10.5	10.5	6.2	6.2	6.2	9.2	10.4	10.4	15.9	8.3	
Queue:	6	6	6	2	2	2	1	26	26	1	16	

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #3 DEER TRAIL (NS) / HWY. 62 (EW)

Cycle (sec): 64 Critical Vol./Cap. (X): 0.722
Loss Time (sec): 9 (Y+R = 4 sec) Average Delay (sec/veh): 37.4
Optimal Cycle: 64 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted Include			Permitted Include			Protected Include			Protected Include		
Rights:												
Min. Green:	28	28	28	28	28	28	10	17	17	10	17	17
Lanes:	0	1	0 1	0	1	0 1	0	2	1 0	1	0	2 1 0
Volume Module:												
Base Vol:	38	230	111	30	398	77	328	1256	46	92	1250	16
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	38	230	111	30	398	77	328	1256	46	92	1250	16
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	40	242	117	32	419	81	345	1322	48	97	1316	17
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	242	117	32	419	81	345	1322	48	97	1316	17
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.05	1.05	1.05	1.05	1.00	1.10	1.10	1.00	1.10	1.10
Final Vol.:	42	254	123	33	440	85	345	1454	53	97	1447	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.85	0.85	0.85	0.95	0.99	0.99	0.95	1.00	1.00
Lanes:	0.20	1.21	0.59	0.12	1.58	0.30	1.00	2.89	0.11	1.00	2.96	0.04
Final Sat.:	289	1747	846	192	2555	494	1805	5445	198	1805	5626	74
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.17	0.17	0.17	0.19	0.27	0.27	0.05	0.26	0.26
Crit Moves:					****		****				****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.18	0.27	0.27	0.16	0.24	0.24
Volume/Cap:	0.33	0.33	0.33	0.39	0.39	0.39	1.06	1.01	1.01	0.34	1.06	1.06
Level Of Service Module:												
Delay/Veh:	7.7	7.7	7.7	8.0	8.0	8.0	75.6	34.3	34.3	15.9	52.8	52.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.7	7.7	7.7	8.0	8.0	8.0	75.6	34.3	34.3	15.9	52.8	52.8
Queue:	1	3	1	0	5	1	13	36	3	2	45	2

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #4 ACOMA TR. (NS) / HWY. 62 (EW)

Cycle (sec): 68 Critical Vol./Cap. (X): 0.801
Loss Time (sec): 9 (Y+R = 4 sec) Average Delay (sec/veh): 22.7
Optimal Cycle: 68 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted Include			Permitted Include			Protected Include			Protected Include		
Rights:												
Min. Green:	28	28	28	28	28	28	10	21	21	10	21	21
Lanes:	0	0	1! 0	0	0	1! 0	1	0	2 1	0	1	0 2 1 0
Volume Module:												
Base Vol:	58	8	262	75	7	23	14	1639	45	230	1288	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	58	8	262	75	7	23	14	1639	45	230	1288	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	61	8	276	79	7	24	15	1725	47	242	1356	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	61	8	276	79	7	24	15	1725	47	242	1356	43
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	61	8	276	79	7	24	15	1725	47	242	1356	43
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.73	0.73	0.45	0.45	0.45	0.95	1.00	1.00	0.95	1.00	1.00
Lanes:	0.18	0.02	0.80	0.72	0.06	0.22	1.00	2.92	0.08	1.00	2.91	0.09
Final Sat.:	244	32	1105	617	55	188	1805	5549	151	1805	5525	175
Capacity Analysis Module:												
Vol/Sat:	0.25	0.25	0.25	0.13	0.13	0.13	0.01	0.31	0.31	0.13	0.25	0.25
Crit Moves:		****						****		****		
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.15	0.32	0.32	0.14	0.31	0.31
Volume/Cap:	0.61	0.61	0.61	0.31	0.31	0.31	0.06	0.98	0.98	0.98	0.79	0.79
Level Of Service Module:												
Delay/Veh:	11.5	11.5	11.5	8.9	8.9	8.9	16.1	26.6	26.6	56.5	15.8	15.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.5	11.5	11.5	8.9	8.9	8.9	16.1	26.6	26.6	56.5	15.8	15.8
Queue:	1	0	4	1	0	0	0	40	2	8	25	1

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

:ersection #5 SAGE AVE. (NS) / HWY. 62 (EW)

****

:le (sec):	81						Critical Vol./Cap. (X):						0.809						
;s Time (sec):	12			(Y+R =	4	sec)	Average Delay (sec/veh):						38.8						
timal Cycle:	81						Level Of Service:						D						

****

proach:	North Bound						South Bound						East Bound						West Bound					
vement:	L		T		-	R	L		T		-	R	L		T		-	R	L		T		-	R
ntrol:	Protected						Protected						Protected						Protected					
ghts:	Include						Include						Include						Include					
n. Green:	10		28			28	10		28			28	10		21			21	10		21			21
nes:	1	0	1	1		0	1	0	1	1		0	1	0	3	0		1	1	0	2	1		0
lume Module:																								
se Vol:	246		337			149	103		465			61	63		1335			464	162		1101			88
owth Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
sserByVol:	0		0			0	0		0			0	0		0			0	0		0			0
itial Bse:	246		337			149	103		465			61	63		1335			464	162		1101			88
er Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
P Adj:	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95			0.95
P Volume:	259		355			157	108		489			64	66		1405			488	171		1159			93
duct Vol:	0		0			0	0		0			0	0		0			0	0		0			0
duced Vol:	259		355			157	108		489			64	66		1405			488	171		1159			93
E Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
F Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
nal Vol.:	259		355			157	108		489			64	66		1405			488	171		1159			93
turation Flow Module:																								
t/Lane:	1900		1900			1900	1900		1900			1900	1900		1900			1900	1900		1900			1900
justment:	0.95		0.95			0.95	0.95		0.98			0.98	0.95		1.00			0.85	0.95		0.99			0.99
nes:	1.00		1.39			0.61	1.00		1.77			0.23	1.00		3.00			1.00	1.00		2.78			0.22
nal Sat.:	1805		2503			1107	1805		3293			431	1805		5700			1615	1805		5224			419
pacity Analysis Module:																								
l/Sat:	0.14		0.14			0.14	0.06		0.15			0.15	0.04		0.25			0.30	0.09		0.22			0.22
it Moves:	****								****									****	****					
een/Cycle:	0.12		0.35			0.35	0.12		0.35			0.35	0.12		0.26			0.26	0.12		0.26			0.26
lume/Cap:	1.16		0.41			0.41	0.48		0.43			0.43	0.30		0.95			1.16	0.77		0.86			0.86
vel Of Service Module:																								
lay/Veh:	139.6		13.2			13.2	22.7		13.3			13.3	21.1		28.9			120.7	32.2		22.2			22.2
er DelAdj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
jDel/Veh:	139.6		13.2			13.2	22.7		13.3			13.3	21.1		28.9			120.7	32.2		22.2			22.2
eue:	15		6			3	2		9			1	1		36			27	5		27			3

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YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #6 HWY. 247 (NS) / HWY. 62 (EW)

****

Cycle (sec):	97						Critical Vol./Cap. (X):						0.890						
Loss Time (sec):	9			(Y+R =	4	sec)	Average Delay (sec/veh):						22.4						
Optimal Cycle:	97						Level Of Service:						C						

****

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L		T		-	R	L		T		-	R	L		T		-	R	L		T		-	R
Control:	Permitted						Permitted						Protected						Protected					
Rights:	Include						Include						Include						Include					
Min. Green:	28		28			28	28		28			28	10		26			26	10		26			26
Lanes:	1	0	2	0		1	1	0	1	1		0	2	0	2	1		0	2	0	2	1		0
Volume Module:																								
Base Vol:	95		421			413	156		470			334	336		1141			122	356		1268			168
Growth Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
PasserByVol:	0		0			0	0		0			0	0		0			0	0		0			0
Initial Bse:	95		421			413	156		470			334	336		1141			122	356		1268			168
User Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
PHF Adj:	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95			0.95
PHF Volume:	100		443			435	164		495			352	354		1201			128	375		1335			177
Reduct Vol:	0		0			0	0		0			0	0		0			0	0		0			0
Reduced Vol:	100		443			435	164		495			352	354		1201			128	375		1335			177
PCE Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
MLF Adj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
Final Vol.:	100		443			435	164		495			352	354		1201			128	375		1335			177
Saturation Flow Module:																								
Sat/Lane:	1900		1900			1900	1900		1900			1900	1900		1900			1900	1900		1900			1900
Adjustment:	0.12		1.00			0.85	0.35		0.94			0.94	0.95		0.99			0.99	0.95		0.98			0.98
Lanes:	1.00		2.00			1.00	1.00		1.17			0.83	2.00		2.71			0.29	2.00		2.65			0.35
Final Sat.:	228		3800			1615	665		2088			1484	3610		5100			543	3610		4932			654
Capacity Analysis Module:																								
Vol/Sat:	0.44		0.12			0.27	0.25		0.24			0.24	0.10		0.24			0.24	0.10		0.27			0.27
Crit Moves:	****												****								****			
Green/Cycle:	0.49		0.49			0.49	0.49		0.49			0.49	0.11		0.27			0.27	0.15		0.30			0.30
Volume/Cap:	0.89		0.24			0.55	0.50		0.48			0.48	0.89		0.88			0.88	0.71		0.89			0.89
Level Of Service Module:																								
Delay/Veh:	50.3		9.1			11.6	11.7		10.7			10.7	42.4		26.4			26.4	28.5		25.3			25.3
User DelAdj:	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00
AdjDel/Veh:	50.3		9.1			11.6	11.7		10.7			10.7	42.4		26.4			26.4	28.5		25.3			25.3
Queue:	4		7			8	3		9			6	12		33			5	10		37			6

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YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #7 WARREN VISTA AVE. (NS) / HWY. 62 (EW)

ycle (sec): 60 Critical Vol./Cap. (X): 0.511
oss Time (sec): 6 (Y+R = 4 sec) Average Delay (sec/veh): 9.9
ptimal Cycle: 60 Level Of Service: B

pproach:	North Bound			South Bound			East Bound			West Bound		
ovement:	L	T	R	L	T	R	L	T	R	L	T	R
ontrol:	Permitted Include			Permitted Include			Permitted Include			Permitted Include		
ights:												
in. Green:	28	28	28	28	28	28	17	17	17	17	17	17
anes:	0	0	1! 0	0	0	1! 0	0	2	1 0	1	2	1 0
olume Module:												
ase Vol:	79	14	27	50	7	38	31	1619	112	99	1331	41
rowth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
asserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
nitial Bse:	79	14	27	50	7	38	31	1619	112	99	1331	41
ser Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
HF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
HF Volume:	83	15	28	53	7	40	33	1704	118	104	1401	43
educt Vol:	0	0	0	0	0	0	0	0	0	0	0	0
educed Vol:	83	15	28	53	7	40	33	1704	118	104	1401	43
CE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
inal Vol.:	83	15	28	53	7	40	33	1704	118	104	1401	43
aturation Flow Module:												
at/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
djustment:	0.70	0.70	0.70	0.71	0.71	0.71	0.15	0.99	0.99	0.15	1.00	1.00
anes:	0.66	0.12	0.22	0.53	0.07	0.40	1.00	2.81	0.19	1.00	2.91	0.09
inal Sat.:	871	157	294	710	94	536	285	5278	365	285	5530	170
apacity Analysis Module:												
ol/Sat:	0.10	0.10	0.10	0.07	0.07	0.07	0.12	0.32	0.32	0.36	0.25	0.25
rit Moves:		****								****		
reen/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.43	0.43	0.43	0.43	0.43	0.43
olume/Cap:	0.20	0.20	0.20	0.16	0.16	0.16	0.27	0.75	0.75	0.84	0.58	0.58
evel Of Service Module:												
elay/Veh:	6.1	6.1	6.1	6.0	6.0	6.0	7.3	10.1	10.1	35.3	8.6	8.6
ser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
djDel/Veh:	6.1	6.1	6.1	6.0	6.0	6.0	7.3	10.1	10.1	35.3	8.6	8.6
ueue:	1	0	0	1	0	0	0	25	2	3	18	1

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #8 BALSA AVE. (NS) / HWY. 62 (EW)

Cycle (sec): 90 Critical Vol./Cap. (X): 0.837
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 38.1
Optimal Cycle: 90 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected Include			Protected Include			Protected Include			Protected Include		
Rights:												
Min. Green:	10	28	28	10	28	28	10	21	21	10	21	21
Lanes:	1	0 1	1 0	1	0 1	1 0	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	316	643	6	132	599	276	254	1225	258	6	990	108
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	316	643	6	132	599	276	254	1225	258	6	990	108
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	333	677	6	139	631	291	267	1289	272	6	1042	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	333	677	6	139	631	291	267	1289	272	6	1042	114
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	333	677	6	139	631	291	267	1289	272	6	1042	114
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.97	0.95	0.99	0.99
Lanes:	1.00	1.98	0.02	1.00	1.37	0.63	1.00	2.48	0.52	1.00	2.70	0.30
Final Sat.:	1805	3767	33	1805	2471	1139	1805	4566	963	1805	5087	556
Capacity Analysis Module:												
Vol/Sat:	0.18	0.18	0.18	0.08	0.26	0.26	0.15	0.28	0.28	0.00	0.20	0.20
Crit Moves:	****				****			****		****		
Green/Cycle:	0.18	0.36	0.36	0.13	0.31	0.31	0.15	0.27	0.27	0.11	0.23	0.23
Volume/Cap:	1.05	0.50	0.50	0.60	0.82	0.82	1.01	1.05	1.05	0.03	0.88	0.88
Level Of Service Module:												
Delay/Veh:	78.6	14.8	14.8	27.0	22.0	22.0	70.0	53.3	53.3	23.0	26.5	26.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	78.6	14.8	14.8	27.0	22.0	22.0	70.0	53.3	53.3	23.0	26.5	26.5
Queue:	15	13	0	4	16	8	11	48	12	0	27	4

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #9 AVALON AVE. (NS) / HWY. 62 (EW)

****

ycle (sec):	68	Critical Vol./Cap. (X):		0.617
oss Time (sec):	9 (Y+R = 4 sec)	Average Delay (sec/veh):		15.6
otimal Cycle:	68	Level Of Service:		C

****

pproach:	North Bound			South Bound			East Bound			West Bound		
ovement:	L	T	R	L	T	R	L	T	R	L	T	R
ontrol:	Permitted Include			Permitted Include			Protected Include			Protected Include		
ights:												
in. Green:	28	28	28	28	28	28	10	21	21	10	21	21
anes:	1	0 1	1 0	0	0 1!	0 0	1	0 2	1 0	1	0 2	1 0
olume Module:												
ase Vol:	23	151	236	2	189	26	39	1203	17	269	955	2
rowth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
asserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
nitial Bse:	23	151	236	2	189	26	39	1203	17	269	955	2
ser Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
HF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
HF Volume:	24	159	248	2	199	27	41	1266	18	283	1005	2
educt Vol:	0	0	0	0	0	0	0	0	0	0	0	0
educed Vol:	24	159	248	2	199	27	41	1266	18	283	1005	2
CE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
inal Vol.:	24	159	248	2	199	27	41	1266	18	283	1005	2
aturation Flow Module:												
at/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
djustment:	0.74	1.00	0.85	0.88	0.88	0.88	0.95	1.00	1.00	0.95	1.00	1.00
anes:	1.00	1.00	1.00	0.01	0.87	0.12	1.00	2.96	0.04	1.00	2.99	0.01
inal Sat.:	1406	1900	1615	15	1459	198	1805	5620	80	1805	5689	11
apacity Analysis Module:												
ol/Sat:	0.02	0.08	0.15	0.14	0.14	0.14	0.02	0.23	0.23	0.16	0.18	0.18
rit Moves:			****					****		****		
reen/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.15	0.27	0.27	0.19	0.31	0.31
olume/Cap:	0.04	0.20	0.37	0.33	0.33	0.33	0.15	0.84	0.84	0.84	0.57	0.57
evel Of Service Module:												
elay/Veh:	7.7	8.3	9.1	8.9	8.9	8.9	16.4	18.2	18.2	28.7	13.1	13.1
ser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
djDel/Veh:	7.7	8.3	9.1	8.9	8.9	8.9	16.4	18.2	18.2	28.7	13.1	13.1
ueue:	0	2	3	0	3	0	1	24	1	7	16	0

****

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #10 YUCCA MESA RD. (NS) / HWY. 62 (EW)

****

Cycle (sec):	68	Critical Vol./Cap. (X):		0.643
Loss Time (sec):	9 (Y+R = 4 sec)	Average Delay (sec/veh):		32.1
Optimal Cycle:	68	Level Of Service:		D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted Include			Permitted Include			Protected Include			Protected Include		
Rights:												
Min. Green:	28	28	28	28	28	28	10	21	21	10	21	21
Lanes:	0 1	0 1	0	0	1 0	1 0	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	7	93	240	173	74	62	118	1503	22	199	1530	220
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	7	93	240	173	74	62	118	1503	22	199	1530	220
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	7	98	253	182	78	65	124	1582	23	209	1611	232
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	98	253	182	78	65	124	1582	23	209	1611	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	7	98	253	182	78	65	124	1582	23	209	1611	232
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.98	0.98	0.85	0.60	0.93	0.93	0.95	1.00	1.00	0.95	0.98	0.98
Lanes:	0.07	0.93	1.00	1.00	0.55	0.45	1.00	2.96	0.04	1.00	2.62	0.38
Final Sat.:	124	1738	1615	1140	964	803	1805	5618	82	1805	4883	703
Capacity Analysis Module:												
Vol/Sat:	0.06	0.06	0.16	0.16	0.08	0.08	0.07	0.28	0.28	0.12	0.33	0.33
Crit Moves:				****			****				****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.15	0.31	0.31	0.15	0.31	0.31
Volume/Cap:	0.14	0.14	0.38	0.39	0.20	0.20	0.47	0.91	0.91	0.79	1.07	1.07
Level Of Service Module:												
Delay/Veh:	8.1	8.1	9.1	9.2	8.3	8.3	18.1	20.1	20.1	27.9	52.5	52.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.1	8.1	9.1	9.2	8.3	8.3	18.1	20.1	20.1	27.9	52.5	52.5
Queue:	0	1	3	2	1	1	2	32	1	5	52	10

****

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #11 JOSHUA LANE (NS) / YUCCA TRAIL (EW)

Cycle (sec): 90 Critical Vol./Cap. (X): 0.842
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 37.9
Optimal Cycle: 90 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	26	26	10	26	26	10	26	26	10	26	26
Lanes:	1	0	1 1	0	1	1 0	2	0	1 1	0	2	0 1 1 0
Volume Module:												
Base Vol:	27	590	363	129	718	334	607	688	59	558	597	202
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	27	590	363	129	718	334	607	688	59	558	597	202
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	28	621	382	136	756	352	639	724	62	587	628	213
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	28	621	382	136	756	352	639	724	62	587	628	213
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	28	621	382	136	756	352	639	724	62	587	628	213
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.95	0.95	0.95	0.99	0.99	0.95	0.96	0.96
Lanes:	1.00	1.24	0.76	1.00	1.36	0.64	2.00	1.84	0.16	2.00	1.49	0.51
Final Sat.:	1805	2212	1360	1805	2463	1147	3610	3465	297	3610	2724	924
Capacity Analysis Module:												
Vol/Sat:	0.02	0.28	0.28	0.08	0.31	0.31	0.18	0.21	0.21	0.16	0.23	0.23
Crit Moves:	****				****		****				****	
Green/Cycle:	0.11	0.29	0.29	0.11	0.30	0.30	0.17	0.29	0.29	0.17	0.29	0.29
Volume/Cap:	0.14	0.96	0.96	0.67	1.04	1.04	1.04	0.72	0.72	0.95	0.80	0.80
Level Of Service Module:												
Delay/Veh:	23.4	33.4	33.4	30.2	51.5	51.5	62.3	20.3	20.3	42.2	22.2	22.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.4	33.4	33.4	30.2	51.5	51.5	62.3	20.3	20.3	42.2	22.2	22.2
Queue:	1	19	13	4	29	15	25	17	2	19	16	6

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #12 PALOMAR AVE. (NS) / YUCCA TRAIL (EW)

Cycle (sec): 107 Critical Vol./Cap. (X): 0.902
Loss Time (sec): 9 (Y+R = 4 sec) Average Delay (sec/veh): 25.0
Optimal Cycle: 107 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	26	26	26	26	26	26	10	21	21	10	21	21
Lanes:	0	1	0 1 0	0	1	0 1 0	1	0	1 1 0	1	0	1 1 0
Volume Module:												
Base Vol:	64	257	192	98	627	78	89	1067	116	275	946	46
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	64	257	192	98	627	78	89	1067	116	275	946	46
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	67	271	202	103	660	82	94	1123	122	289	996	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	67	271	202	103	660	82	94	1123	122	289	996	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	67	271	202	103	660	82	94	1123	122	289	996	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.55	0.55	0.55	0.66	0.66	0.66	0.95	0.99	0.99	0.95	0.99	0.99
Lanes:	0.25	1.00	0.75	0.24	1.57	0.19	1.00	1.80	0.20	1.00	1.91	0.09
Final Sat.:	257	1040	775	307	1969	245	1805	3393	369	1805	3589	173
Capacity Analysis Module:												
Vol/Sat:	0.26	0.26	0.26	0.34	0.34	0.34	0.05	0.33	0.33	0.16	0.28	0.28
Crit Moves:					****			****		****		
Green/Cycle:	0.37	0.37	0.37	0.37	0.37	0.37	0.09	0.37	0.37	0.18	0.45	0.45
Volume/Cap:	0.70	0.70	0.70	0.90	0.90	0.90	0.56	0.90	0.90	0.90	0.62	0.62
Level Of Service Module:												
Delay/Veh:	20.5	20.5	20.5	29.0	29.0	29.0	33.0	26.9	26.9	47.0	14.9	14.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.5	20.5	20.5	29.0	29.0	29.0	33.0	26.9	26.9	47.0	14.9	14.9
Queue:	2	7	6	4	21	4	3	35	5	11	23	1

YUCCA VALLEY GENERAL PLAN UPDATE
PM PEAK HOUR
BUILDOUT 2015 - WITH IMPROVEMENTS

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #13 ACOMA TRAIL (NS) / ONAGA TRAIL (EW)

Cycle (sec): 120 Critical Vol./Cap. (X): 0.989
Loss Time (sec): 9 (Y+R = 4 sec) Average Delay (sec/veh): 32.3
Optimal Cycle: 120 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted Include			Permitted Include			Protected Include			Protected Include		
Rights:												
Min. Green:	26	26	26	26	26	26	10	21	21	10	21	21
Lanes:	0 1	0 1	0	0 1	0 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	270	81	111	86	157	12	4	897	486	219	1074	122
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Bse:	270	81	111	86	157	12	4	897	486	219	1074	122
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	284	85	117	91	165	13	4	944	512	231	1131	128
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	284	85	117	91	165	13	4	944	512	231	1131	128
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	284	85	117	91	165	13	4	944	512	231	1131	128
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.91	0.91	0.70	0.70	0.70	0.95	0.95	0.95	0.95	0.99	0.99
Lanes:	1.00	0.42	0.58	0.67	1.23	0.10	1.00	1.30	0.70	1.00	1.80	0.20
Final Sat.:	741	728	1001	904	1638	129	1805	2341	1269	1805	3380	382
Capacity Analysis Module:												
Vol/Sat:	0.38	0.12	0.12	0.10	0.10	0.10	0.00	0.40	0.40	0.13	0.33	0.33
Crit Moves:	****							****		****		
Green/Cycle:	0.39	0.39	0.39	0.39	0.39	0.39	0.08	0.41	0.41	0.13	0.45	0.45
Volume/Cap:	0.99	0.30	0.30	0.26	0.26	0.26	0.03	0.99	0.99	0.99	0.74	0.74
Level Of Service Module:												
Delay/Veh:	52.1	16.5	16.5	16.2	16.2	16.2	32.6	38.5	38.5	75.8	18.6	18.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	52.1	16.5	16.5	16.2	16.2	16.2	32.6	38.5	38.5	75.8	18.6	18.6
Queue:	13	2	3	2	4	0	0	38	22	11	32	4

APPENDIX F

ACOUSTICAL ANALYSIS REPORT

PREPARED FOR:

TOWN OF YUCCA VALLEY

PREPARED BY:

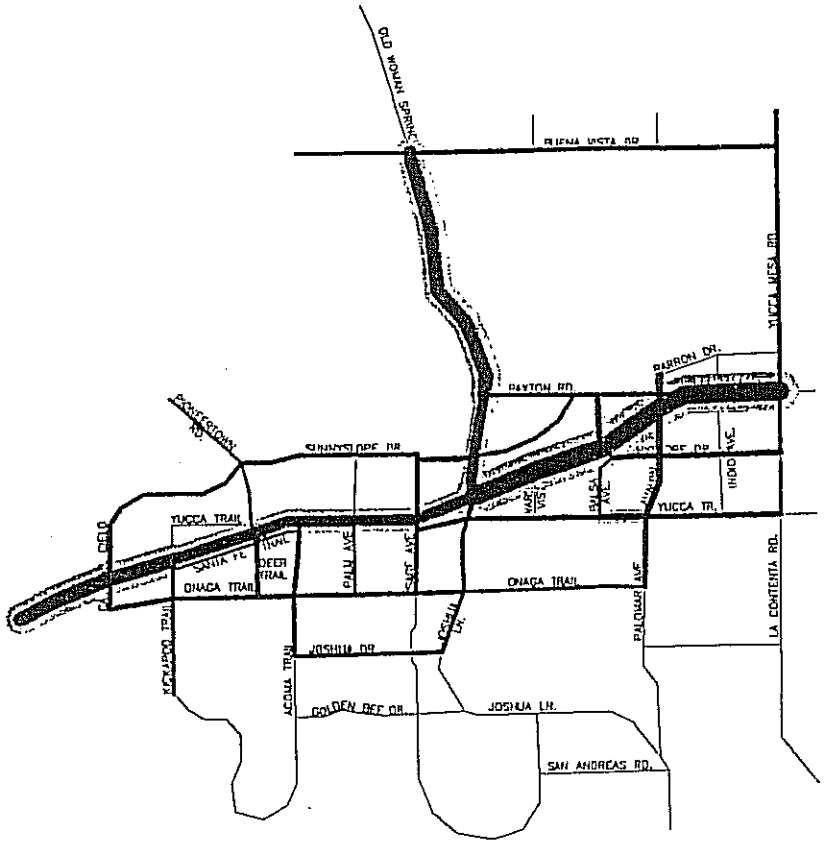
ROBERT KAHN, JOHN KAIN & ASSOCIATES

AUGUST, 1995

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

TOWN OF YUCCA VALLEY
GENERAL PLAN PROGRAM
NOISE ELEMENT ACOUSTICAL STUDY



Robert Kahn, John Kain
& Associates, Inc.

Robert Kahn, John Kain
& Associates, Inc.

Transportation Planning • Traffic/Acoustical Engineering

August 15, 1995

Mr. Shane Stueckle
TOWN OF YUCCA VALLEY
57090 Twentynine Palms Highway
Yucca Valley, CA 92284

Subject: Town of Yucca Valley General Plan Program Noise Element Acoustical Study

Dear Mr. Stueckle:

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC. (RKJK) is pleased to present this Noise Element Acoustical Study for the Town of Yucca Valley General Plan program. The object of this acoustical analysis is to evaluate existing and future noise sources impacting the City.

RKJK appreciates this opportunity to work with TOWN OF YUCCA VALLEY on this project. If you have any questions regarding this information or need further review, please do not hesitate to give me a call at (714) 474-0809.

Sincerely,

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC.

Robert Kahn, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
ROBERT KAHN
NO. 20285
EXP. 9/30/97
CIVIL
STATE OF CALIFORNIA

RK:BL:nam/5118

JN:636-94-002

Attachments

4101 Birch Street, Suite 100, Newport Beach, California 92660
(714) 474-0809 • FAX (714) 474-0902

TOWN OF YUCCA VALLEY
GENERAL PLAN PROGRAM
NOISE ELEMENT ACOUSTICAL STUDY

Prepared for:

Mr. Shane Stueckle
TOWN OF YUCCA VALLEY
57090 Twentynine Palms Highway
Yucca Valley, CA 92284

Prepared by:

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC.
4101 Birch Street, Suite 100
Newport Beach, CA 92660

Robert Kahn, P.E.
Bill Lawson

August 15, 1995

JN:636-94-002
RK:BL:nam/5118

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TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ASSESSMENT
YUCCA VALLEY, CALIFORNIA

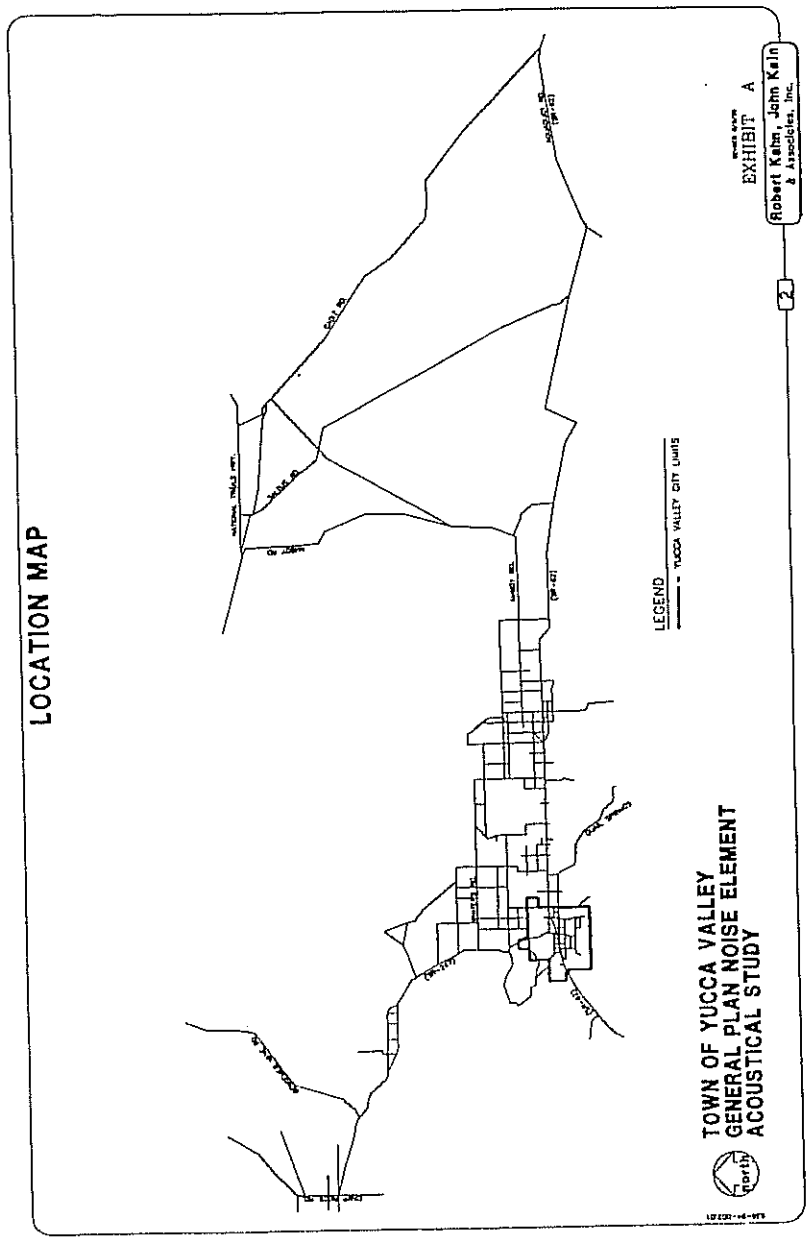
INTRODUCTION

This report presents the technical analysis of the noise environment for the Town of Yucca Valley General Plan program. The purpose of this noise assessment has been to: (1) revise the existing acoustical analysis report prepared by Walker, Celano & Associates on August 19, 1994 based upon the latest traffic analysis; (2) model existing noise impacts; (3) model future noise impacts based on the general plan daily traffic volumes contained in the August 7, 1995 Town of Yucca Valley Circulation Element Traffic Study; (4) provide additional discussion of noise standards, potential mitigation measures for construction noise, traffic noise and other impacts; and (5) produce Town of Yucca Valley noise contour maps for both the existing and future noise environments.

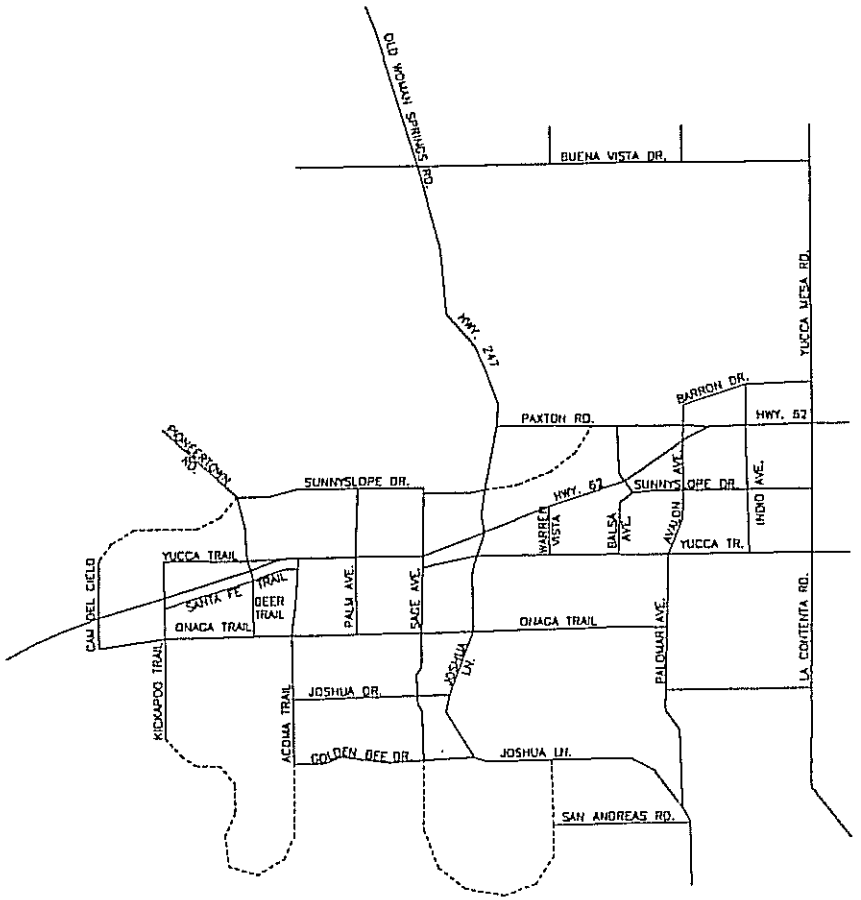
The Town of Yucca Valley is located in the west-central portion of the Morongo Basin and is served by State Routes 62 and 247. Exhibit A presents the Yucca Valley City limits and the surrounding regional roadways. The Town of Yucca Valley roadway network is shown on Exhibit B.

Background

The purpose of the general plan is to provide a comprehensive set of planning elements to guide the town in all aspects of future development. The noise element is directly related to the land use and circulation elements. The location of sensitive



TOWN OF YUCCA VALLEY
GENERAL PLAN ROADWAY NETWORK



north

TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT B

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Robert Kahn, John Kain & Associates, Inc.

land uses including housing, schools and medical facilities are also affected by issues addressed in the noise element.

Sources of noise can be divided into two basic categories: transportation related sources and non-transportation sources. The existing noise environment surrounding the Town of Yucca Valley is influenced primarily by transportation related noise sources. These transportation related noise sources include traffic noise from nearby roadways (i.e., State Routes 62 and 247). Secondary sources of noise include the impact of non-transportation or stationary noise sources (i.e., granite construction batch plant operations, water wells/pumps and overflights by general aviation).

In order to establish existing ambient noise conditions, nine noise measurements were conducted throughout the City. These noise measurements were conducted using a Rion type NA-29E Sound Level Meter. The noise meter was calibrated before the noise measurements were taken. This data was then utilized to evaluate existing and future conditions for the Town of Yucca Valley.

FINDINGS

The following findings have been determined for existing and future conditions for the Town of Yucca Valley:

1. The Town is impacted by a number of noise sources including roadways, granite construction batch plant operations, existing water wells/pumps and overflights from general aviation.

2. Aircraft noise levels generated from the Yucca Valley Airport and existing military aircraft overflights from the Twentynine Palms Air Ground Combat Center will have minimal impacts on the Town of Yucca Valley. In addition, railroad lines currently do not exist, and are not planned, in the vicinity of the Town.

3. Noise measurements were conducted at nine on-site locations within the proposed project. Leq (Equivalent Sound Level) noise levels (see Appendix "A" for Glossary of Acoustical Terms) ranged from 50.4 dBA CNEL to 69.0 dBA CNEL under current conditions. CNEL noise levels, at locations 1, 2 and 7 which are closer to the major transportation facilities (State Routes 62 and 247) and Yucca Trail, generate higher Leq values of 67.9 dBA CNEL to 69.0 dBA CNEL.

   Future residential development close to the State Routes 62 and 247 or Yucca Trail would require some type of noise mitigation. Detailed noise measurement computer printouts showing the time lines and statistical distribution of the overall A-weighted noise levels and the frequency spectra of the intrusive (L_1), ambient (Leq), and background (L_{90}) noise levels are included in Appendix "B".

4. The distribution of land uses throughout the property can be an effective means of noise mitigation. Noise sensitive uses such as residences, schools, etc. should be located away from noise generators and can be further mitigated by the use of distance separation and noise barriers (i.e., walls, berms, or combination thereof) to further mitigate noise site plan design can also help to mitigate noise impacts.

5. Traffic noise dominates the existing noise environment in the vicinity of the proposed project, resulting in ambient noise levels above 60 dBA CNEL at 100 feet from the centerline of the analyzed sections of State Routes 62 and 247, and Yucca Trail. Future noise levels along these analyzed roadway sections will remain in excess of 60 dBA CNEL at 100 feet for Buildout conditions.

6. A comparison of existing roadway noise impacts was made with future roadway noise impacts for Buildout. This comparison indicates that all future roadway impacts increase from 1.9 dBA to 16.0 dBA over existing roadway noise levels.

RECOMMENDATIONS

The following recommendations have been developed to minimize future noise impacts for buildout conditions of the preferred Town of Yucca Valley land use and circulation network plans.

1. Locate noise generators to ensure that future noise problems can be minimized. The appropriate placement of noise sensitive land uses away from major noise generators (i.e., State Routes 62 and 247, Yucca Trail construction operations, existing water wells/pumps, etc.) can greatly improve and reduce noise mitigation requirements in the future.

2. Noise studies should be prepared in conjunction with individual developments (tentative tract maps and building permits) in order to determine precise noise barrier heights and locations and building structure noise mitigation (i.e., upgraded windows, mechanical ventilation, etc.) required in conjunction with specific development projects.

3. Site plan design can also provide an effective means of noise mitigation for future development.

Construction Noise

1. Construction shall be limited to the hours of 7:00 AM to 7:00 PM on Monday through Saturday, and shall be prohibited on Sundays and Federal holidays in order to minimize disruption to existing residential neighborhoods.

2. All construction vehicles or equipment fixed or mobile operated shall be equipped with properly operating and maintained mufflers.

3. Stock piling and/or vehicle staging areas shall be located as far as practical from residential homes.

4. The noisiest operations shall be arranged to occur together in the construction program to avoid continuing periods of greater annoyance.

Traffic Noise

Noise mitigation measures for future residential development can be reduced by site design, such as set-backs from the roadways, grade separations and exterior living area orientation for future development. Noise barriers (i.e., walls, berms, etc.) can also provide the necessary noise mitigation to these future residential areas.

The measures below are presented to demonstrate feasibility, and should not be interpreted as design specifications. A more detailed noise analysis will be warranted when future noise sensitive development occurs.

1. For all areas within the Buildout 65 dBA CNEL roadway contours, future residential lots and dwellings shall be sound attenuated against present and projected noise, which shall be the sum of all noise impacting the project, so as not to exceed an exterior standard of 65 dBA CNEL in outdoor living areas and an interior standard of 45 dBA CNEL in all habitable rooms. An acoustical study shall be prepared under the supervision of a person experienced in the field of acoustical engineering. Evidence that above standards will be satisfied

in a manner consistent with applicable zoning regulations shall be submitted as follows:

a. Prior to the recordation of a final tract/parcel map or prior to the issuance of Grading Permits, at the sole discretion of the Town, an Acoustical Analysis Report shall be submitted to the Town for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy "b" below.

b. Prior to the issuance of any building permits, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted to the Town for approval along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report(s) have been incorporated into the design of the project.

c. Prior to the issuance of any Certificates of Use and Occupancy, field testing in accordance with California Administration Code Title 25 regulations may be required by the Town, to verify compliance with Sound Transmission Class (STC) and Impact Insulation Class (IIC) design standards.

Stationary Source Noise

1. Potential noise impacts due to stationary sources should be mitigated in the planning stage through preparation of an acoustical study. This study will quantify future noise levels and recommend specific mitigation measures.

New noise generators should not be located in the vicinity of noise sensitive receptors. Land use should be zoned such that high noise generators such as industrial or manufacturing activities are buffered from sensitive uses by moderate uses such as commercial or office uses.

2. Impacts from existing water wells/pumps within the site can be mitigated by constructing appropriate barriers or enclosures to reduce noise levels to adjoining residential areas.

3. Noise impacts from the construction operations can be reduced during the evening by eliminating back up bells and replacing them with backup strobe lights or other warning devices. Rock crushing operations and other larger noise generators should be minimized during evening hours.

4. All sources of stationary noise should comply with the Town's Noise Ordinance.

NOISE STANDARDS AND CRITERIA

Various noise rating scales, noise standards, community noise assessment criteria and noise mitigation measures are discussed in the following paragraphs. The purpose of this information is to provide a brief overview of how noise is evaluated and various standards used in the Town of Yucca Valley and San Bernardino County. Acoustical terms used this study is further summarized in Appendix "A".

Noise Rating Scales

A number of noise rating scales are used in California for land use compatibility assessment. These scales are: the Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Noise Level (CNEL). These scales are described in the following paragraphs:

- A-weighted decibels (dBA) are the most common units used for measuring the loudness of a noise event. The human ear has different sensitivity to different frequencies of sound (noise). A-weighting is an attempt to give the noise monitor the same frequency sensitivity as the human ear. Technically, it is the measurement of the energy being received when listening to (or monitoring) a source of noise. For example, the loudness of a highway may be 65 dBA when measured 50 feet away. The sound decreases as one moves away from the source, and the same highway would have a noise level of 62 dBA at 100 feet. The relationship between how one perceives a sound and the actual sound energy emitted by the source of noise is very complex. However, a good rule of thumb is that if a noise increases 10 dBA, its apparent loudness will double. Therefore, a noise that is 70 dBA will appear twice as loud as a 60 dBA noise.

- The LEQ scale represents the energy average noise level over a sample period of time. It represents the decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.

- The LDN scale represents a time weighted 24 hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise occurs during certain sensitive time periods is penalized for occurring at these times. For the LDN scale the nighttime period (10:00 PM and 7:00 AM) noises are penalized by 10 dBA.

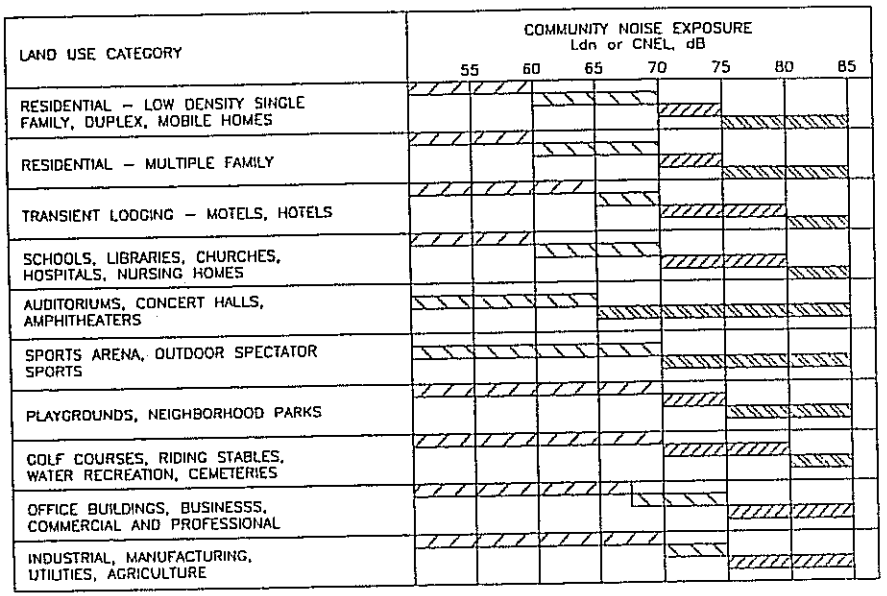
- The CNEL scale is similar to the LDN scale except that it includes an additional 5 dBA penalty for the evening time period (7:00 PM to 10:00 PM).

Noise Standards

The Town of Yucca Valley has adopted Development Code Noise Standards as the Town criterion for assessing the compatibility of residential land uses with transportation related noise sources. Development Code Section 85.020510 establishes an interior noise standard of 45 dBA CNEL and a conditional exterior standard of 65 dBA CNEL. The Town of Yucca Valley Development Code Noise Standards are provided in Appendix "C".

An exterior noise level of up to 65 dBA CNEL is permitted, if the exterior areas are substantially mitigated with a noise barrier of at least 6 feet in height and the interior noise exposures do not exceed 45 dBA CNEL with windows and doors closed. If windows and doors are required to be closed to achieve an acceptable interior noise level, then the use of air conditioning or mechanical ventilation will be required. These noise compatibility standards are shown in Exhibit C.

NOISE/LAND USE COMPATIBILITY MATRIX



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, 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 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: COTTON/BELAND/ASSOCIATES MODIFIED FROM U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND STATE OF CALIFORNIA GUIDELINES.

TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT C

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436-94-002:04

Noise control for stationary sources should also be controlled by the Town of Yucca Valley Development Code. This document should include the following standards for exterior areas of residential and other noise sensitive receivers:

TIMEFRAME	NOISE LEVEL
7:00 AM to 10:00 PM	55 dBA
10:00 PM to 7:00 AM	50 dBA

No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

(a) The noise standard for that receiving land use [as specified in Subsection (b) (1) of this section] for a cumulative period of more than thirty (30) minutes (L_{50}) in any hour; or

(b) The noise standard plus 5 dBA for a cumulative period of more than fifteen (15) minutes (L_{25}) in any hour; or

(c) The noise standard plus 10 dBA for a cumulative period of more than five (5) minutes (L_8) in any hour; or

(d) The noise standard plus 15 dBA for a cumulative period of more than one (1) minute (L_2) in any hour; or

(e) The noise standard plus 20 dBA for any period of time.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dBA.

If the measured ambient level exceeds any of the first four (4) noise limit categories above, the allowable noise exposure standard shall be increased to reflect said ambient noise level. If the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

Stationary sources are required to ensure that these standards are not exceeded at the location of the adjoining property which has noise sensitive uses (i.e. residential, etc.).

Community Noise Assessment Criteria

In community noise assessment changes in noise levels greater than 3 dBA are often identified as significant, while changes less than 1 dBA will not be discernible to the human ear. In the range of 1 dBA to 3 dBA people who are very sensitive to noise may perceive a slight change in noise level. No scientific evidence is available to support the use of 3 dBA as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dBA. However, in a community situation the noise exposure is extended over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA appears to be appropriate for most people.

NOISE MONITORING

As part of August 19, 1994 acoustical analysis report for the Town of Yucca Valley, existing noise conditions were identified at nine locations throughout the City. Monitoring locations were selected to be representative of existing noise sensitive land use or noise generators. The noise measurement locations for this project are shown in Exhibit D. Each site is described below:

Site 1: Northerly edge of 29 Palms Outer Highway North, at the easterly side of Fortuna Avenue. This location was representative of yards of existing single family residences fronting State Route 62 along the easterly approach to town.

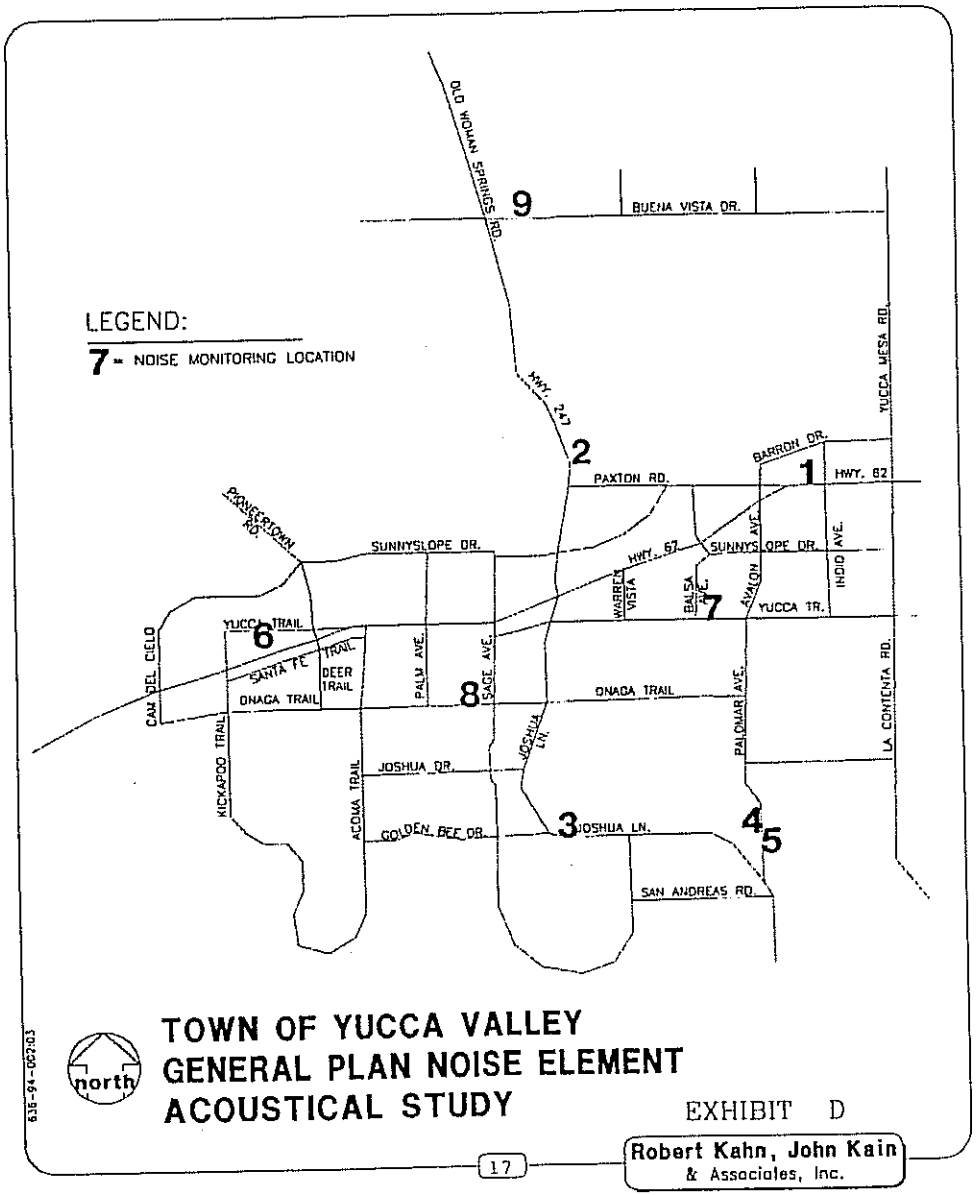
Site 2: Easterly side of State Route 247, 60 feet from the centerline, northerly of Farrelo Road. This location was adjacent to the northbound steep (8%) up grade and would be subject to the maximum truck noise exposure.

Site 3: Southerly side of Joshua Lane, 60 feet from the centerline, westerly of Hardesty Drive. This location was opposite the Moyle's Sky Harbor Healthcare Center which was identified as an existing noise sensitive land use.

Site 4: Westerly side of Palomar Avenue, 50 feet from the centerline, southerly of Lisbon Drive. This location was representative of front yards of existing single family residences.

Site 5: Southerly property line of water pumping station adjacent to residence located at 8543 Palomar Avenue. This location was an instance of an existing noise generator located in a residential area.

NOISE MONITORING LOCATIONS



TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT D

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Site 6: Southeasterly corner of Benicia Trail and Inca Trail. This location was opposite the southerly side of the Granite Construction batch plant.

Site 7: Southerly side of Yucca Trail, 50 feet from centerline, westerly of Emerson Avenue. This location was representative of front yards of existing single family residences.

Site 8: Southerly side of Onaga Trail, 50 feet from centerline, at westerly side of Yucca Valley High School.

Site 9: Northerly side of Buena Vista Drive, 50 feet from centerline, easterly of Terry Lane. This location was representative of front yards of existing residences adjacent to area proposed for future commercial development.

The measurements were taken with a Rion type NA-29E precision sound level meter octave band real time analyzer connector to a PC compatible portable computer. The measurement microphone was supported on a stand approximately 5 feet above the level of the adjacent pavement, and was fitted with Bruel & Kjaer (B&K) type UA 0237 foam windscreen. Typically, each of the measurement periods was 15 minutes total duration and consisted of a series of 900 consecutive 1 second time average samples. The analyzer simultaneously measured the overall A-weighted level and the A-weighted level in each of the octave bands over the range of 31 Hz to 8000 Hz. At the end of the 15 minute period, the analyzer calculated the statistical levels for the measurement period and all of the measured and calculated data were transferred to the computer for storage on magnetic disk. Prior to and periodically throughout the measurements, the overall calibration of the system was checked with a B&K type 4231 acoustic calibrator (certification June, 1993).

The results of the measurements are summarized in Table 1, and copies of the computer printouts showing the time lines and statistical distribution of the overall A-weighted noise levels and the frequency spectra of the intrusive (L_1), ambient (Leq) and background (L_{90}) noise levels are contained in Appendix "B".

The final column of Table 1 shows the approximate CNEL at the measurement sites computed from the measured data. However, the CNEL could not be estimated for Site 5 due to the unknown duty cycle of the pumping equipment, thus the n/a entry.

Note that the data in Table 1 is arranged in time-of-day order, regardless of the date of the measurement. It should also be noted that the 0.1 dBA level of precision shown in Table 1 is resolution of the digital display of the analyzer, and was only retained for illustrative purposes. The overall accuracy of the measurement system is approximately ±0.5 dBA. For reference, an increase of approximately 1 dBA is normally judged by an "average" listener to be just discernable, a 3 dBA change is definitely noticeable, and a change in level of 10 dBA is necessary for the difference to be judged to be half or twice as loud.

Discussion of Data

Site 1: The ambient (average) noise level at this location ranged from a low of approximately 59 dBA during late night hours (10:11 PM to 10:26 PM) to a high of approximately 65 dBA during early morning heavy traffic (6:53 AM to 7:08 AM). Midday ambient noise levels were in the 62 dBA to 64 dBA range. These noise levels were due to traffic on State Route 62. Intrusive noise levels where in the 72 dBA to 73 dBA range and were due to individual noisy vehicles passing near the measurement microphone. Background noise levels were in the 45 dBA to 58 dBA range, with the minimum levels occurring during lulls in traffic during late night hours.

TABLE 1

SUMMARY OF MEASURED NOISE LEVELS[1]

SITE	DATE	TIME	A-WEIGHTED NOISE LEVEL - (dBA)			
			INTRUSIVE L_1	AMBIENT Leq	BACKGROUND L_{90}	EST. CNEL
1	1/07/94	06:53-07:08	72.5	65.3	57.8	69.0
		11:27-11:42	70.3	61.9	53.1	
	10/21/93	14:47-15:02	71.9	64.4	57.0	
	10/29/93	15:31-15:46	69.7	61.6	54.4	
	1/06/94	17:41-17:56	69.7	62.1	55.0	
		22:11-22:26	67.4	58.6	44.9	
2	1/07/94	07:20-07:35	74.7	66.0	52.0	68.9
		11:56-12:11	76.0	66.5	47.7	
	10/21/93	15:37-15:52	81.7	70.6	51.2	
	10/29/93	16:14-16:29	74.7	66.6	50.9	
	1/06/94	18:24-18:39	74.1	64.8	47.8	
		22:40-22:55	71.8	60.2	28.6	
3	1/07/94	07:47-08:02	74.2	63.0	36.0	66.2
	10/29/93	11:17-11:32	69.8	59.5	35.7	
	1/06/94	15:23-15:38	72.3	63.1	44.7	
		20:39-20:54	69.0	57.3	32.0	
4	1/07/94	08:11-08:26	60.3	47.3	28.4	50.4
	10/29/93	11:58-12:13	62.4	46.9	32.4	
	1/06/94	16:41-16:56	61.9	49.1	33.8	
		21:41-21:56	57.9	53.0	27.5	
5	10/29/93	12:19-12:24	71.3	70.9	70.6	N/A
6	1/07/94	09:38-09:53	54.0	48.5	45.7	52.0
	10/29/93	14:27-14:42	56.3	49.6	45.3	
7	1/07/94	08:46-09:01	75.0	65.4	42.8	67.9
	1/06/94	14:48-15:03	73.3	64.1	45.8	
		20:09-20:24	72.1	60.1	39.6	
8	1/07/94	09:12-09:27	73.8	64.8	46.5	65.2
	1/06/94	16:01-16:16	74.0	64.5	44.6	
		21:08-21:23	71.3	59.5	40.5	
9	1/07/94	12:28-12:43	73.6	61.7	33.0	63.0

[1] Noise measurements and estimated CNEL prepared by Walker, Celano & Associates.

Site 2: Ambient noise levels were in the 60 dBA to 71 dBA range and were due to traffic on State Route 247. Intrusive noise levels were approximately 82 dBA and were due to individual noisy trucks passing by the measurement microphone. These maximum noise levels were some 10 dBA higher than the maximum levels at Site 1 due to the small setback from the highway to the microphone position. Background noise levels ranged from approximately 29 dBA during long lulls in traffic during late night hours to approximately 51 dBA to 52 dBA during morning and midday heavy traffic.

Site 3: Traffic on Joshua Lane was the significant source of noise at this site. Ambient noise was in the 57 dBA to 63 dBA range. Intrusive noise levels were in the 69 dBA to 74 dBA range and were due to individual vehicles passing the measurement position. Background noise levels were in the 32 dBA to 36 dBA range.

Site 4: Sporadic traffic on Palomar Avenue was the significant source of noise at this site. Ambient noise was in the 47 dBA to 53 dBA range. Intrusive noise levels were in the 69 dBA to 74 dBA range and were due to individual vehicles passing the measurement position. Background noise levels were in the 28 dBA to 34 dBA range.

Site 5: Noise at this location was due to operation of an electric motor driven water pump on the adjacent pump station. At the time of the measurements, only one of the two pumps within the station was operating. The occupant of the residence reported that the pump(s) operate intermittently, as necessary to transfer water into distant storage tanks. The pump noise was essentially constant at 71 dBA at the property line. Noise at this location would be similar to that measured at Site 4 during periods when the pump(s) are not operating.

Site 6: Noise at this location was due to distant traffic on State Route 62. During both measurement periods, and several other visits to this site when no measurements were conducted, there was essentially no significant noise subjectively attributable to operations on the Granite Construction property. Occasionally, noise from other commercial operations in the vicinity was audible.

Site 7: Traffic Yucca Trail was the primary source of noise impacting this site. Ambient noise levels were in the 64 dBA to 65 dBA range during daytime hours and dropped to approximately 60 dBA after 10:00 PM. Intrusive noise levels were in the 72 dBA to 75 dBA range and were due to individual vehicles passing the measurement position. Background noise levels were in the 40 dBA to 46 dBA range.

Site 8: Traffic on Onaga Trail was the primary source of noise impacting this site. Ambient noise levels were approximately 65 dBA during daytime hours and dropped to approximately 60 dBA after 9:00 PM. Intrusive noise levels were in the 71 dBA to 74 dBA range and were due to individual vehicles passing the measurement position. Background noise levels were in the 40 dBA to 46 dBA range.

Site 9: Traffic on Buena Vista Drive was the primary source of noise impacting this site. The daytime ambient noise level was approximately 62 dBA and the background noise was approximately 33 dBA.

In general, the existing noise environment in the Town of Yucca Valley is typical of a rural community with a limited number of heavily traveled roadways. Noise levels in the immediate vicinity of the two State Routes are moderately high with daytime average noise levels in the mid to upper 60 dBA range. However, nighttime background noise levels below 30 dBA were recorded along the side of State Route 247. Along the arterial and secondary streets, daytime average noise levels were in

the upper 40 dBA to mid 60 dBA range, depending on local traffic conditions. Nighttime background noise levels below 30 dBA occurred in several locations.

With the exception of those areas which are in close proximity to major noise generators such as State Routes 62 and 247 and Yucca Trail construction operations, water wells/pumps, it appears that most of the property currently impacted by noise can be mitigated to acceptable noise standards. Additional noise studies, based upon final grading plans and detailed development plans, will be necessary to determine exactly how close residential development can come to the existing and future roadways. This study identifies preliminary noise mitigation measures required to meet applicable exterior and interior noise standards.

EXTERIOR NOISE ENVIRONMENTAL ANALYSIS

It is expected that the primary sources of noise that will impact the noise sensitive land uses in the vicinity of the project site will be construction traffic noise from State Routes 62 and 247, Yucca Trail and stationary source noise.

Traffic Noise Prediction

The expected roadway noise impacts were projected using a version of the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108), together with several key roadway site parameters. The key input parameters, which determine the projected impact of vehicular traffic noise, include the roadway classification (e.g. collector, secondary, major, arterial, multi-modal corridor or freeway), the roadway active width (the distance between the center of the outer most travel lanes on each side of the roadway), the total vehicle count per day (ADT), the travel speed, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the roadway grade, the angle of view, the site conditions ("hard" or "soft") and the percentage of total average daily traffic (ADT), which flows each hour throughout a 24 hour period.

The traffic volumes and travel speeds used for this study are presented in Table 2. The traffic volumes shown in Table 2 were obtained from the circulation element traffic study, prepared by ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC., dated August 4, 1995. The average travel speeds shown in Table 2 are expected to occur during smooth traffic flows on subject roadways. It should be noted that these speeds are used for comparison calculations and consequently their change in value is more relevant than their absolute value. For the purpose of this study all calculations were made with the speed values shown in Table 2. Soft site conditions

TABLE 2

AVERAGE DAILY TRAFFIC (1,000's) AND TRAVEL SPEEDS

ROAD	SEGMENT	EXISTING	GENERAL PLAN[1] BUILDOUT	AVERAGE TRAVEL SPEED (MPH)
SR-62	W/O Kickapoo	32.0	60.0	45
	E/O Acoma Tr.	39.0	60.0	35
	W/O SR-247	39.0	55.0	35
	W/O Yucca Mesa	27.0	46.0	55
SR-247	S/O Buena Vista	7.9	34.0	55
	N/O SR-62	11.9	32.0	45
Yucca Tr.	E/O Joshua Ln.	7.4	21.0	40
	W/O Palomar Ave.	6.3	20.0	50
	W/O La Contenta	4.6	14.0	50
Onaga Tr.	W/O Avalon Ave.	0.7	8.0	40
	W/O Joshua Ln.	3.6	16.0	40
	E/O Acoma Tr.	4.6	17.0	40
	E/O Deer Tr.	2.9	20.0	40
Pioneertown	N/O SR-62	0.8	9.0	30
Sage Ave.	N/O Onaga Tr.	1.5	12.0	40
Acoma Tr.	S/O Onaga Tr.	1.2	14.0	40
	S/O SR-62	2.5	8.0	40
Joshua Ln.	N/O Joshua Dr.	3.7	11.0	40
	S/O SR-62	4.5	19.0	35
Avalon Ave.	N/O Yucca Tr.	2.2	12.0	45
Palomar Ave.	N/O Onaga Tr.	2.3	13.0	45
Yucca Mesa	N/O SR-62	3.3	7.0	50
La Contenta	S/O SR-62	1.5	7.0	40
Skyline Ranch	W/O SR-247	1.5	8.0	45
Buena Vista	E/O SR-247	1.7	8.0	55
Kickapoo Tr.	S/O SR-62	2.3	10.0	35
Santa Fe Tr.	E/O Kickapoo	1.4	6.0	35
Deer Tr.	N/O Onaga Tr.	2.0	9.0	35

[1] General plan daily traffic projections (preferred land uses and network), circulation element traffic study August 4, 1995.

TABLE 2 (CONT'D)

AVERAGE DAILY TRAFFIC (1,000's) AND TRAVEL SPEEDS

ROAD	SEGMENT	EXISTING	GENERAL PLAN[1] BUILDOUT	AVERAGE TRAVEL SPEED (MPH)
Palm Ave.	S/O SR-62	1.0	6.0	35
Balsa Ave.	S/O SR-62	19	9.0	35
	N/O SR-62	2.6	18.0	45
Paxton Rd.	W/O Avalon Dr.	0.6	23.0	35
Sunnyslope Dr.	W/O Palm Ave.	0.8	12.0	45
	E/O Sage Ave.	0.8	14.0	45
	E/O SR-247	--	8.0	45
	W/O Indio Ave.	--	16.0	45
Joshua Dr.	E/O Acoma Tr.	--	10.0	45
	E/O Sage Ave.	2.0	13.0	45
Camino Del Cielo	N/O SR-62	0.9	13.0	40
	S/O SR-62	--	14.0	40

[1] General plan daily traffic projections (preferred land uses and network), circulation element traffic study August 4, 1995.

(drop-off rate = 4.5 dBA per doubling of distance) were used to calculate all noise contours.

Expected future roadway parameter information for the percentages of automobile, medium trucks and heavy trucks along with the 24 hourly percentage of traffic flow breakdown were collected by ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC., based upon available data from the Town of Yucca Valley General Plan Noise Element, the San Bernardino County Noise Element and Development Code, Caltrans, San Bernardino County Staff, other Southern California Counties and local traffic counts. The traffic distribution data used for this study are presented in Table 3.

Traffic Noise Contours

The data presented in Tables 2 and 3 were used with the FHWA traffic noise prediction model to determine the traffic noise contours (CNEL). The computed traffic noise levels are expressed in terms of CNEL. Computer printouts in terms of CNEL are included in Appendix "D".

The distances to the CNEL contours for roadways in the project's vicinity are presented in Tables 4 and 5, for respectively the existing, and General Plan Buildout traffic volumes. The distances shown (in feet) are measured from the centerline of the road to the contour value shown. Also included in Tables 4 and 5 is the CNEL level at a distance of 100 feet from the highway centerline.

Exhibits E and F outline the projected 60, 65 and 70 dBA CNEL noise contour boundaries. Appendix "E" provides full size contour maps. It should be noted that these projections are for "soft site" conditions and an "infinite" length road and do not include the shielding that would be provided by intervening development and/or terrain

TABLE 3

TRAFFIC DISTRIBUTION (%)

HOURLY TRAFFIC FLOW DISTRIBUTION				
MOTOR-VEHICLE TYPE	PERCENT TRAFFIC FLOW BY TIME PERIOD			
	DAY (7 AM TO 7 PM)	EVENING (7 PM TO 10 PM)	NIGHT (10 PM TO 7 AM)	TOTAL% TRAFFIC FLOW
Automobiles	77.5	12.9	9.6	100.0
Medium Trucks	84.8	4.9	10.3	100.0
Heavy Trucks	86.5	2.7	10.8	100.0

TRAFFIC DISTRIBUTION BY ROADWAY CLASSIFICATION

CLASSIFICATION	AUTOS	MEDIUM TRUCKS	HEAVY TRUCKS
State Routes 62 and 247	88.8%	7.2%	4.0%
Arterial/Collector	97.0%	2.0%	1.0%

TABLE 4

EXISTING NOISE CONTOURS

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
SR-62	W/O Kickapoo	70.6	106	229	493
	E/O Acoma Tr.	69.1	86	185	399
	W/O SR-247	69.1	86	185	399
	W/O Yucca Mesa	71.6	126	271	584
SR-247	S/O Buena Vista	66.8	51	111	239
	N/O SR-62	66.7	51	110	236
Yucca Tr.	E/O Joshua Ln.	59.7	21	44	96
	W/O Palomar Ave.	61.4	27	57	123
	W/O La Contenta	59.9	21	46	99
Onaga Tr.	W/O Avalon Ave.	49.5	4	9	20
	W/O Joshua Ln.	56.6	13	27	59
	E/O Acoma Tr.	57.7	15	32	70
	E/O Deer Tr.	56.7	11	24	51
Pioneertown	N/O SR-62	47.1	3	6	14
Sage Ave.	N/O Onaga Tr.	52.8	7	15	33
Acoma Tr.	S/O Onaga Tr.	51.8	6	13	28
	S/O SR-62	58.3	16	36	77
Joshua Ln.	N/O Joshua Dr.	56.7	13	28	60
	S/O SR-62	57.6	15	31	66
Avalon Ave.	N/O Yucca Tr.	58.8	18	38	83
Palomar Ave.	N/O Onaga Tr.	56.9	11	25	53
Yucca Mesa	N/O SR-62	58.6	17	37	80
La Contenta	S/O SR-62	52.8	7	15	33
Skyline Ranch	W/O SR-247	54.0	9	19	40
Buena Vista	E/O SR-247	56.7	13	28	60
Kickapoo Tr.	S/O SR-62	53.3	8	16	36
Santa Fe Tr.	E/O Kickapoo	51.1	5	12	26

TABLE 4 (CONT'D)

EXISTING NOISE CONTOURS

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Deer Tr.	N/O Onaga Tr.	52.7	7	15	32
Palm Ave.	S/O SR-62	49.7	4	9	20
Balsa Ave.	S/O SR-62	52.4	7	15	31
	N/O SR-62	56.4	12	27	58
Paxton Rd.	W/O Avalon Dr.	47.4	3	7	15
Sunnyslope Dr.	W/O Palm Ave.	51.3	6	12	26
	E/O Sage Ave.	51.3	6	12	26
	E/O Hwy 247	--	--	--	--
	W/O India Ave.	--	--	--	--
Joshua Dr.	E/O Acoma Tr.	--	--	--	--
	E/O Sage Ave.	56.3	10	22	48
Camino Del Cielo	N/O SR-62	50.8	5	11	23
	S/O SR-62	--	--	--	--

TABLE 5

GENERAL PLAN BUILDOUT NOISE CONTOURS

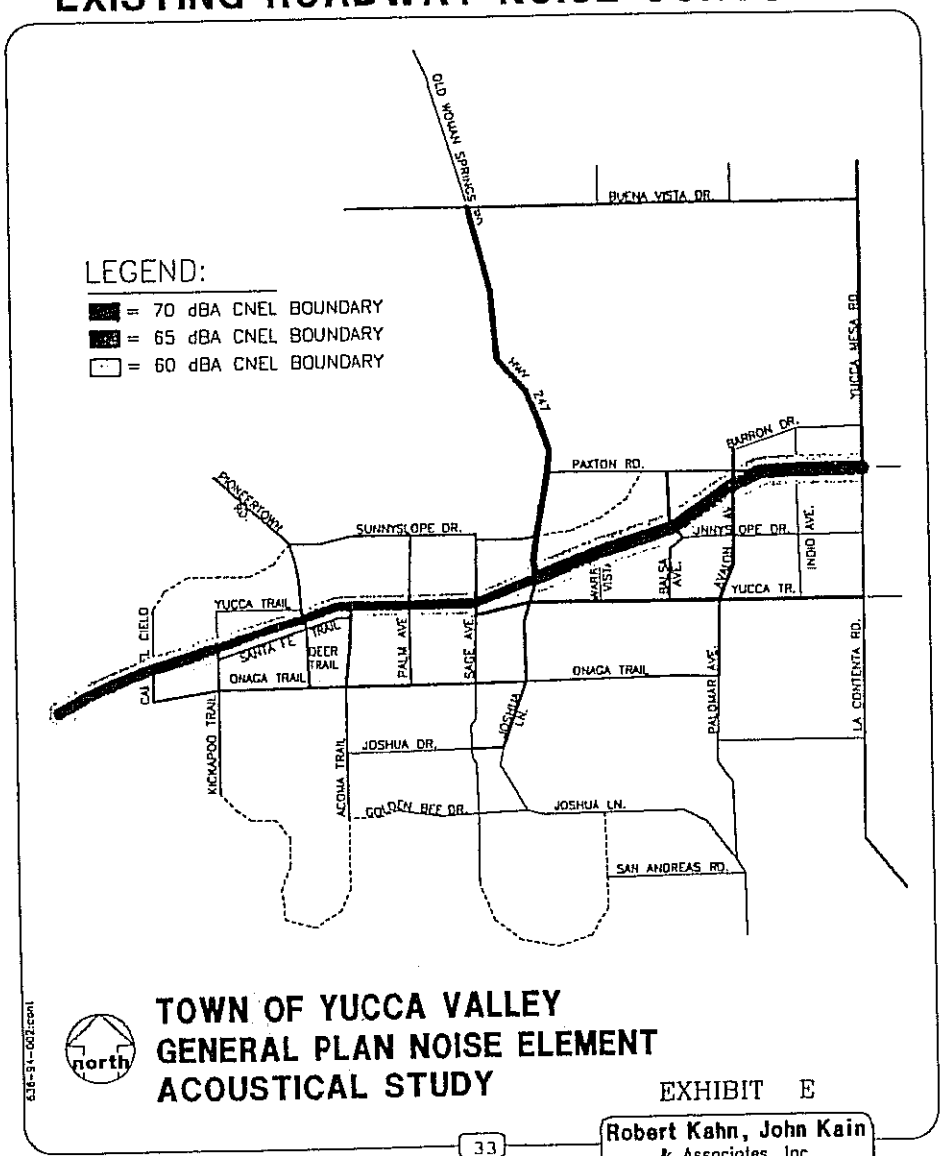
ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
SR-62	W/O Kickapoo	72.8	143	308	664
	E/O Acoma Tr.	71.4	116	247	532
	W/O SR-247	71.0	108	233	502
	W/O Yucca Mesa	74.3	180	387	834
SR-247	S/O Buena Vista	72.6	136	293	632
	N/O SR-62	70.4	98	212	456
Yucca Tr.	E/O Joshua Ln.	64.6	41	89	192
	W/O Palomar Ave.	66.6	67	124	267
	W/O La Contenta	66.0	46	98	210
Onaga Tr.	W/O Avalon Ave.	60.2	22	47	101
	W/O Joshua Ln.	63.0	33	71	153
	E/O Acoma Tr.	63.6	36	77	167
	E/O Deer Tr.	64.3	40	86	186
Pioneertown	N/O SR-62	57.8	16	32	69
Sage Ave.	N/O Onaga Tr.	62.0	28	61	132
Acoma Tr.	S/O Onaga Tr.	62.7	32	68	146
	S/O SR-62	63.5	36	77	166
Joshua Ln.	N/O Joshua Dr.	61.6	27	58	126
	S/O SR-62	62.7	31	67	145
Avalon Ave.	N/O Yucca Tr.	66.3	55	119	256
Palomar Ave.	N/O Onaga Tr.	63.6	36	78	168
Yucca Mesa	N/O SR-62	62.0	29	61	132
La Contenta	S/O SR-62	59.7	20	43	92
Skyline Ranch	W/O SR-247	61.6	26	57	122
Buena Vista	E/O SR-247	64.1	40	86	183
Kickapoo Tr.	S/O SR-62	59.8	20	44	96
Santa Fe Tr.	E/O Kickapoo	57.8	15	31	67
Deer Tr.	N/O Onaga Tr.	59.4	19	41	88
Palm Ave.	S/O SR-62	57.6	16	31	67

TABLE 5 (CONT'D)

GENERAL PLAN BUILDOUT NOISE CONTOURS

ROAD	SEGMENT	CNEL AT 100 FT. (dBA)	DISTANCE TO CONTOUR (FT.)		
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Balsa Ave.	S/O SR-62	59.4	19	41	88
	N/O SR-62	66.0	46	97	209
Paxton Rd.	W/O Avalon Dr.	63.4	36	77	165
Sunnyslope Dr.	W/O Palm Ave.	63.2	34	74	160
	E/O Sage Ave.	63.9	38	82	177
	E/O SR-247	61.6	26	57	122
	W/O Indio Ave.	64.6	42	90	193
Joshua Dr.	E/O Acoma Tr.	62.4	30	66	141
	E/O Sage Ave.	63.6	36	78	168
Camino Del Cielo	N/O SR-62	62.3	30	65	139
	S/O SR-62	62.7	32	68	146

TOWN OF YUCCA VALLEY
EXISTING ROADWAY NOISE CONTOURS

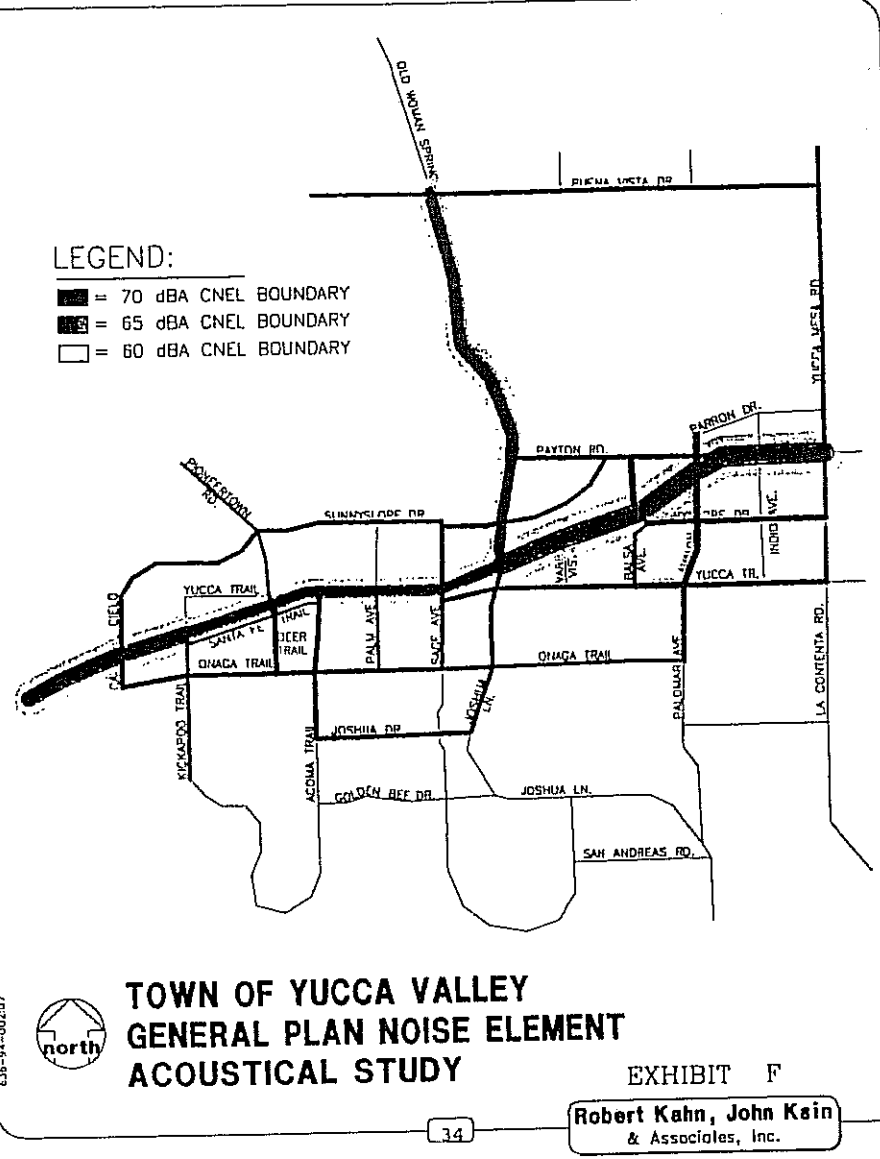


TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT E

Robert Kahn, John Kain
& Associates, Inc.

TOWN OF YUCCA VALLEY
BUILDOUT ROADWAY NOISE CONTOURS



TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT F

Robert Kahn, John Kain
& Associates, Inc.

features. It should also be noted that the 1 foot resolution tabulated is a computational artifact that has been retained for illustrative purposes. The actual precision of the calculations is on the order of 10 to 20% of the distance due to the various assumptions used in the calculations. The calculations are based on projections for ADT and vehicle mix some time in the future, but utilize average vehicle noise emission levels based on acoustic measurement data taken some 7 to 9 years ago.

It should be noted that the values given in Tables 4 and 5 are based upon soft site conditions and do not take into account the effects of any noise barriers, topography or final roadway grades that may affect ambient noise levels. Soft site conditions were assumed due to the open space, slope and landscaped areas anticipated in this area. These are appropriate assumptions for this level of noise analysis. Final noise studies should be prepared at the time future noise sensitive development occurs. These studies should take into account the effect of noise barriers and actual topography.

POTENTIAL NOISE IMPACTS

Noise can be broken down in short-term and long-term components for the purposes of analyzing associated environmental impacts. Short-term noise is associated primarily with on-site grading and construction activities and with off-site heavy-duty truck traffic. Long-term noise impacts are further divided into project generated impacts on surrounding land uses and those impacts which occur at the project site.

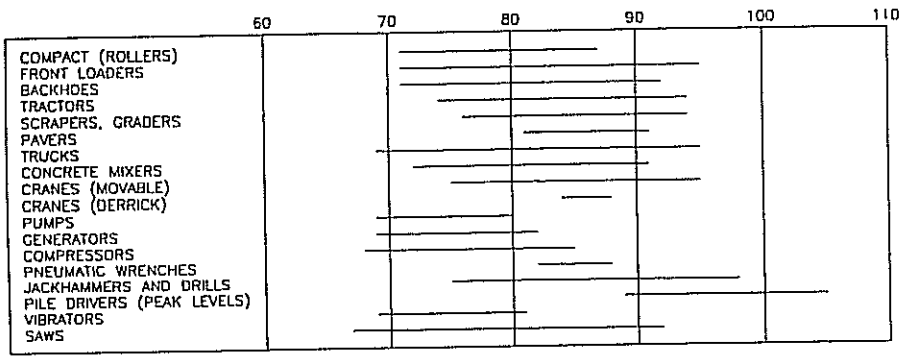
Short-Term Construction Noise Impacts

Construction noise represents a short term impact on ambient noise levels. Noise generated by construction equipment, including trucks, graders, back-hoes, bull-dozers, concrete mixers and portable generators can reach high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and limiting hours of construction to normal weekday working hours.

Noise levels for equipment which might be used for the excavation and construction of the proposed project are presented in Exhibit G. Note that the noise levels presented are for a distance of 50 feet. The noise levels in Exhibit G decrease at a rate of approximately 6 dBA per doubling of the distance. Therefore, at 100 feet the noise levels will be about 6 dBA less than reported in the exhibit. Similarly, at 200 feet the noise levels would be 12 dBA less than indicated in the exhibit. Intervening structures or topography will act as a noise barrier, and reduce noise levels further.

Since construction noise is of a temporary nature, most jurisdictions do not require noise mitigations to specific levels. However, they do require operational

CONSTRUCTION EQUIPMENT NOISE



SOURCE: "HANKBOOK OF NOISE CONTROL," BY CYRIL HARRIS, 1979.

TOWN OF YUCCA VALLEY
GENERAL PLAN NOISE ELEMENT
ACOUSTICAL STUDY

EXHIBIT G

Robert Kahn, John Kain & Associates, Inc.

6.16-94-002:05

considerations (i.e., hours of construction, mufflers on construction equipment, etc.) to minimize noise impacts during the construction process.

Long-Term Operational Noise Impacts

Transportation related noise standards should be established for noise sensitive land uses (e.g., residences of all types) in the Town of Yucca Valley Noise Element of the General Plan. These standards should include a 65 dBA CNEL for exterior noise sensitive areas and 45 dBA CNEL for interior areas.

Future Related Noise Impacts

Future development in and around the Town of Yucca Valley will generate additional traffic, and as a result may alter noise levels in surrounding areas. To assess the future impacts on land uses adjacent to streets that will serve the community, the increases in roadway noise along these streets were determined. These roadways were modeled for future traffic conditions for General Plan Buildout conditions. The increase in noise levels for Buildout conditions is presented in Table 6.

This table indicates that future noise impacts increase 1.9 dBA to 16.0 dBA over existing impacts. Most of the significant noise increases are projected in areas that are not yet developed. In these areas, any future noise sensitive uses (i.e., residential developments, schools, churches, etc.) will require mitigation measures to meet local noise standards.

The results of the future noise modeling are presented in Tables 4 and 5 in terms of CNEL noise levels 100 feet from the roadway centerline and the distances to the 70 dBA CNEL, 65 dBA CNEL, and 60 dBA CNEL contours. The results are presented for

TABLE 6

INCREASE IN NOISE LEVELS (dBA)
FOR GENERAL PLAN BUILDOUT

ROAD	SEGMENT	EXISTING CNEL AT 100 FT. (dBA)	BUILDOUT CNEL AT 100 FT. (dBA)	INCREASE IN NOISE LEVEL (dBA)
SR-62	W/O Kickapoo	70.5	72.8	+2.3
	E/O Acoma Tr.	69.1	71.4	+2.3
	W/O SR-247	69.1	71.0	+1.9
	W/O Yucca Mesa	71.6	74.3	+2.7
SR-247	S/O Buena Vista	65.8	72.5	+6.7
	N/O SR-62	65.7	70.4	+4.7
Yucca Tr.	E/O Joshua Ln.	59.7	64.5	+4.8
	W/O Palomar Ave.	61.4	66.6	+5.2
	W/O La Contenta	59.9	65.0	+5.1
Onaga Tr.	W/O Avalon Ave.	49.5	60.2	+10.7
	W/O Joshua Ln.	56.6	63.0	+6.4
	E/O Acoma Tr.	57.7	63.6	+5.9
	E/O Deer Tr.	55.7	64.3	+8.6
Pioneertown	N/O SR-62	47.1	57.8	+10.7
Sage Ave.	N/O Onaga Tr.	52.8	62.0	+9.2
Acoma Tr.	S/O Onaga Tr.	51.8	62.7	+4.9
	S/O SR-62	58.3	63.5	+5.2
Joshua Ln.	N/O Joshua Dr.	56.7	61.6	+4.9
	S/O SR-62	57.6	62.7	+5.1
Avalon Ave.	N/O Yucca Tr.	58.8	66.3	+7.5
Palomar Ave.	N/O Onaga Tr.	56.9	63.6	+7.7
Yucca Mesa	N/O SR-62	58.6	62.0	+3.4
La Contenta	S/O SR-62	52.8	59.7	+6.9
Skyline Ranch	W/O SR-247	54.0	61.5	+7.5
Buena Vista	E/O SR-247	56.7	64.1	+7.4
Kickapoo Tr.	S/O SR-62	63.3	69.8	+6.5
Santa Fe Tr.	E/O Kickapoo	51.1	57.6	+6.5
Deer Tr.	N/O Onaga Tr.	62.7	69.4	+6.7
Palm Ave.	S/O SR-62	49.7	57.5	+7.8

TABLE 6 (CONT'D)

INCREASE IN NOISE LEVELS (dBA)
FOR GENERAL PLAN BUILDOUT

ROAD	SEGMENT	EXISTING CNEL AT 100 FT. (dBA)	BUILDOUT CNEL AT 100 FT. (dBA)	INCREASE IN NOISE LEVEL (dBA)
Balsa Ave.	S/O SR-62	62.4	69.4	+7.0
	N/O SR-62	58.4	66.0	+8.6
Paxton Rd.	W/O Avalon Dr.	47.4	63.4	+16.0
Sunnyslope Dr.	W/O Palm Ave.	51.3	63.2	+11.9
	E/O Sage Ave.	51.3	63.9	+12.6
	E/O SR-247	–	61.6	--
	W/O Indio Ave.	–	64.6	--
Joshua Dr.	E/O Acoma Tr.	–	62.4	--
	E/O Sage Ave.	56.3	63.6	+8.3
Camino Del Cielo	N/O SR-62	50.6	62.3	+11.7
	S/O SR-62	--	62.7	--

soft site conditions. (Soft site represents a noise propagation rate that includes the effects of ground absorption for locations close to roadway level.) The values presented in Tables 4 and 5 are considered conservative, because they do not account for the effect of existing topography, noise barriers or intervening buildings that may alter the roadway noise levels.

Stationary Source Noise Impacts

The primary sources of stationary noise surrounding the Town of Yucca Valley will be created by the water wells/pumps, granite construction batch plant operations and other industrial/construction activities.

Noise monitoring sites 5 and 6 identified two existing stationary source noise impacts. Both the water pump and granite construction plant as well as additional existing or future stationary noise sources should comply with noise standards outlined in the noise standards and criteria section of this report.

CONCLUSIONS

A noise element acoustical study has been completed for the Town of Yucca Valley. This noise study includes noise monitoring of ambient conditions along roadways in the vicinity of the community, a review of noise measurements from previous noise studies, a review of local agency requirements and an analysis of existing and future General Plan Buildout generated roadway noise impacts. From a noise impact standpoint, future development throughout the Town of Yucca Valley can occur through proper planning and design of noise mitigation measures.

Preliminary and final noise reports (based upon final grading plans and detailed development plans) should be prepared in conjunction with future development to ensure that County and City exterior and interior noise standards can be achieved through incorporation of recommended mitigation measures.

APPENDIX A

GLOSSARY OF ACOUSTICAL TERMS

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GLOSSARY OF ACOUSTICAL TERMS

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above).

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

L(n). The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99 etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

PERCENT NOISE LEVELS. See L(n).

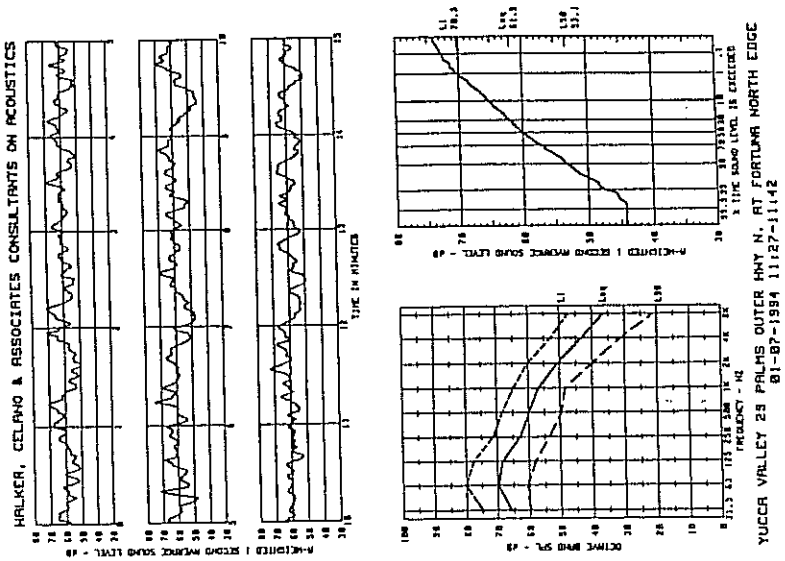
SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

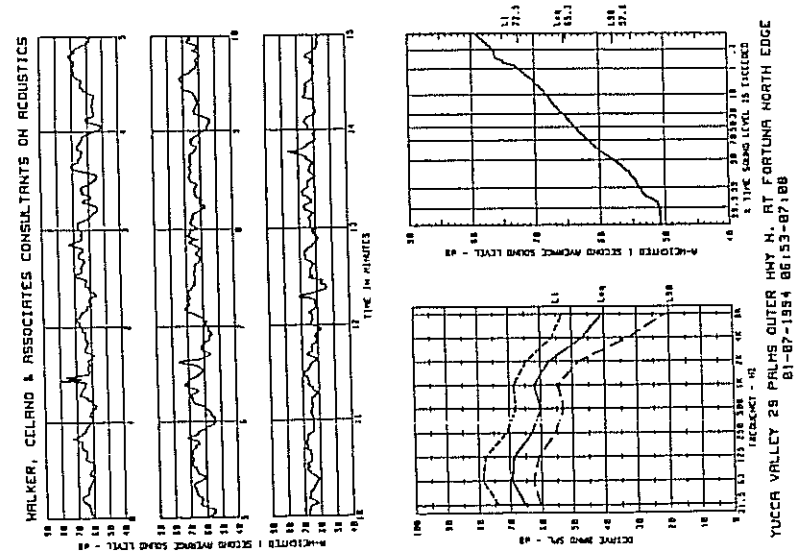
SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

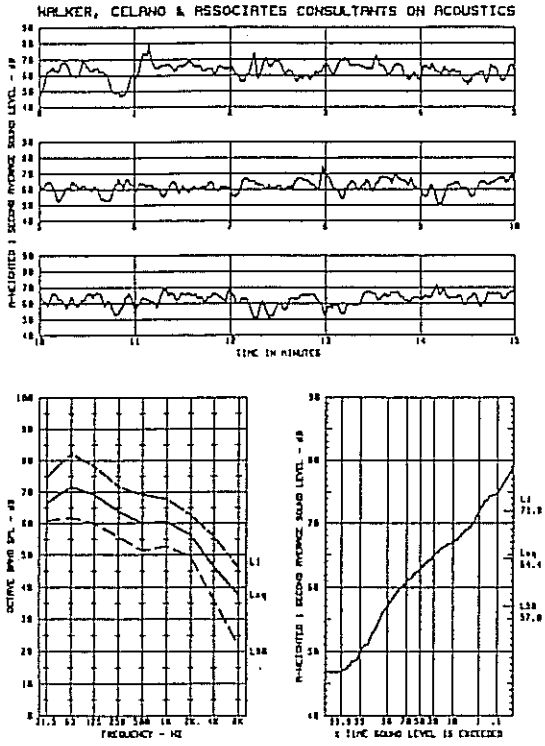
SINGLE EVENT NOISE EXPOSURE LEVEL (SENEL). The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

APPENDIX B

NOISE MEASUREMENTS







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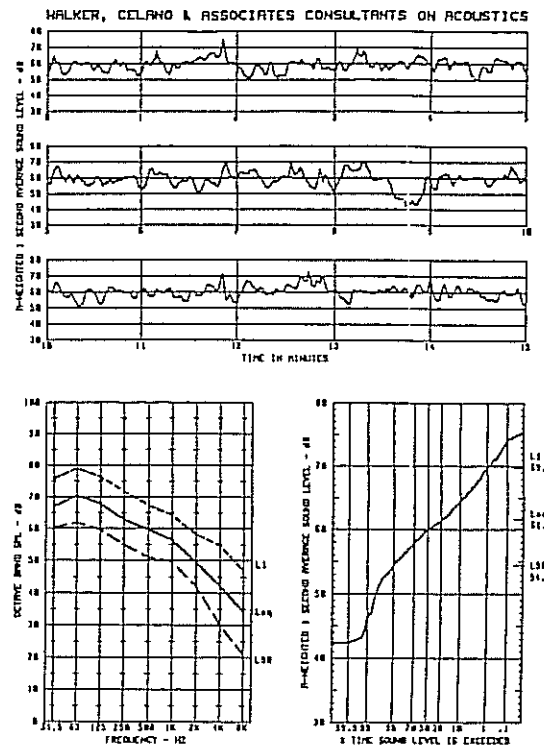

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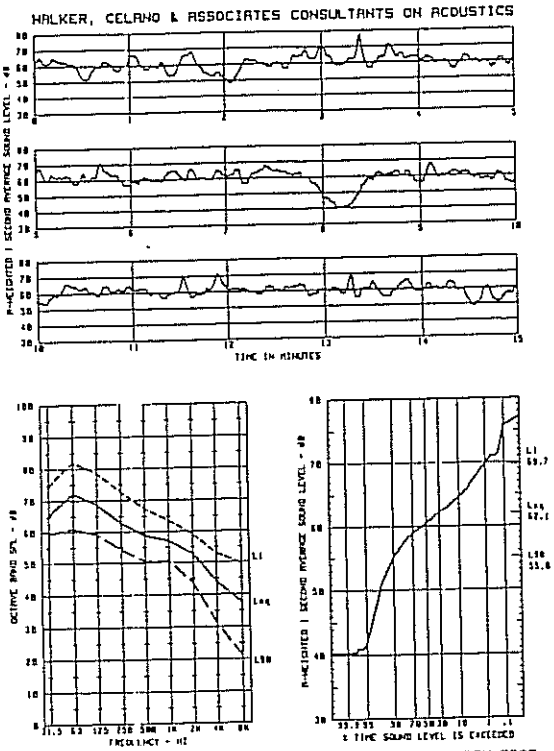
10-29-1993 15:31-15:46



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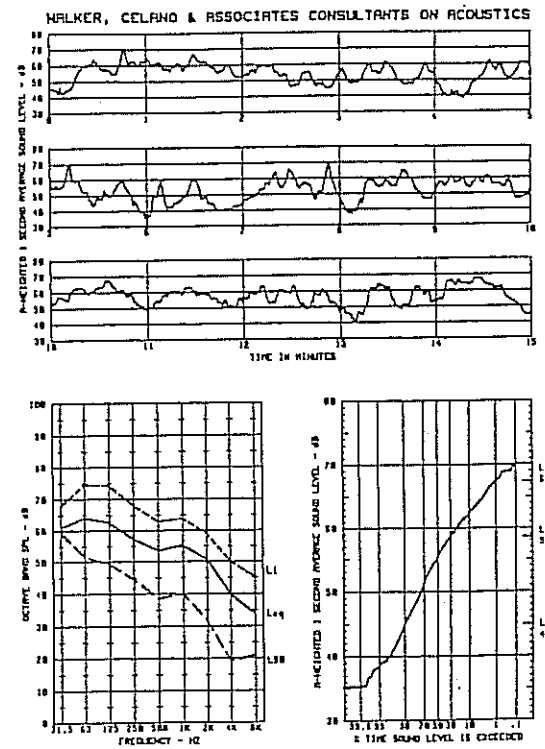
01-06-1994 17:41-17:56



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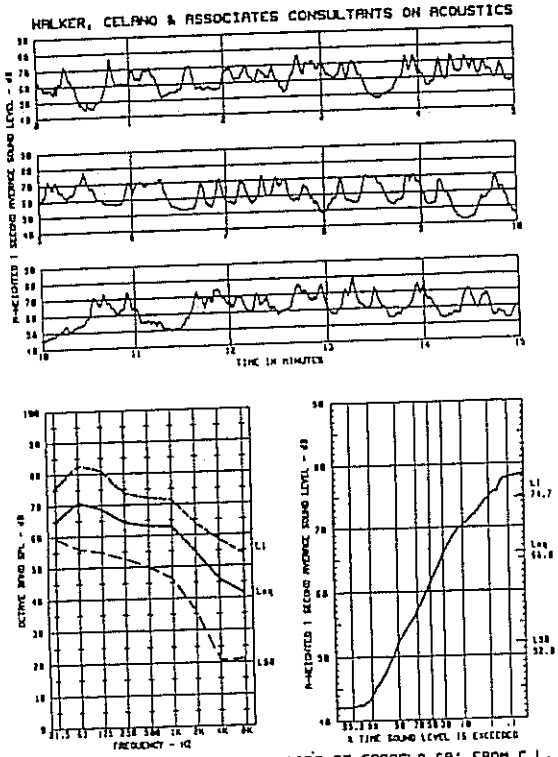
01-06-1994 22:11-22:26



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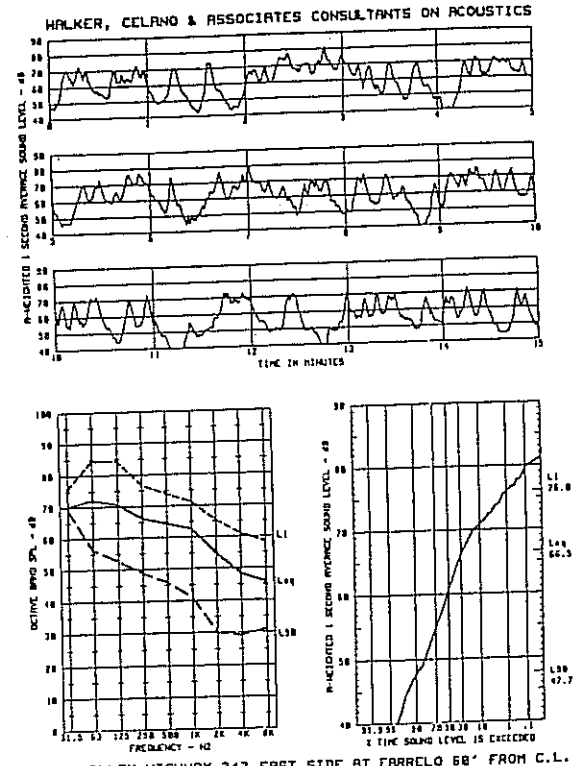
01-07-1994 07:28-07:35



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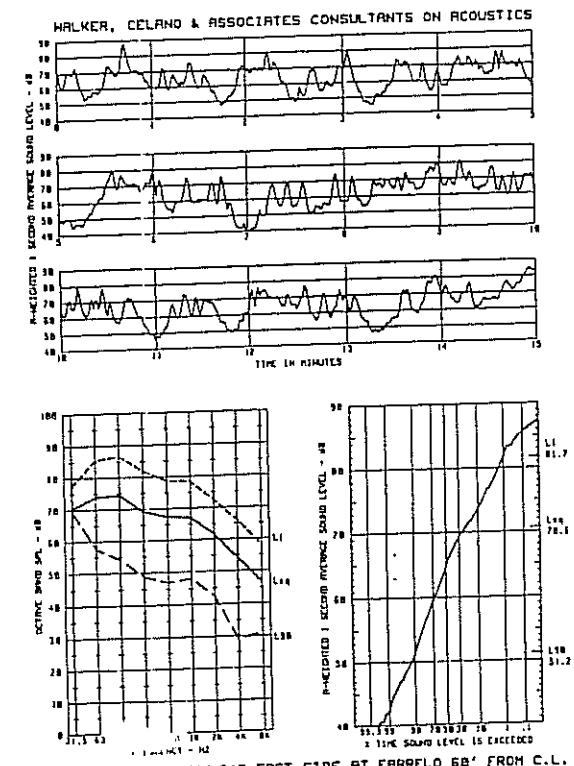

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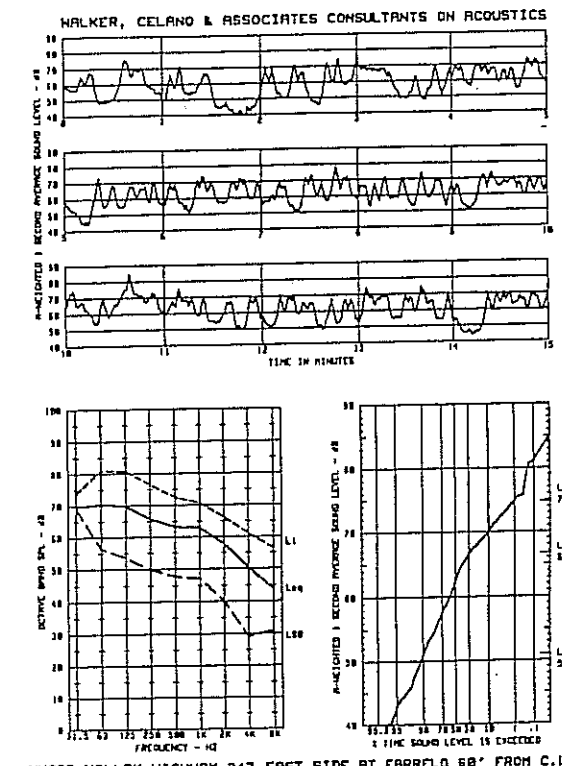

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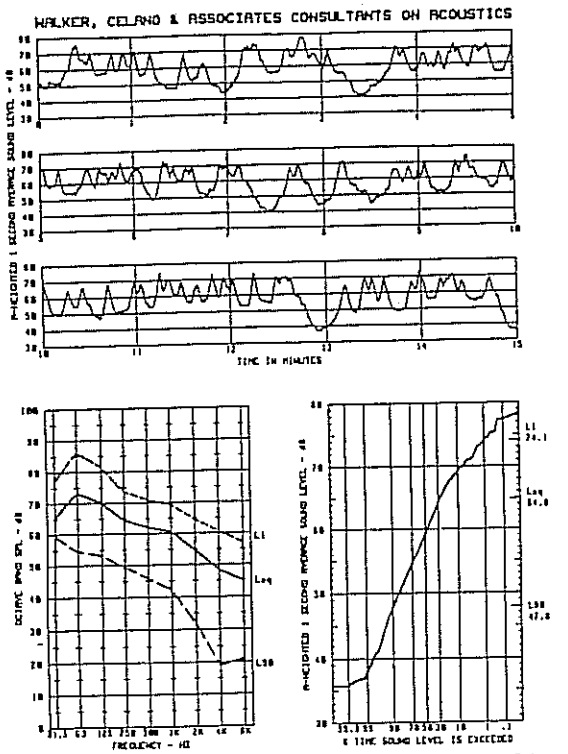
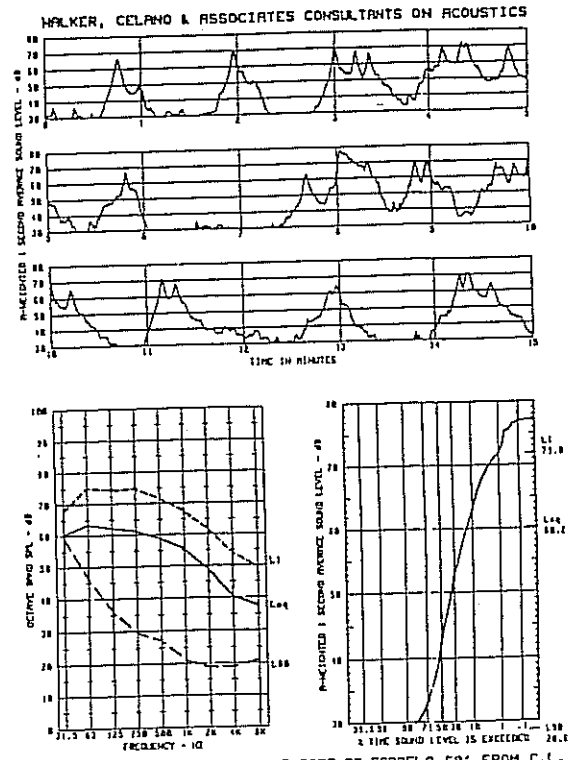
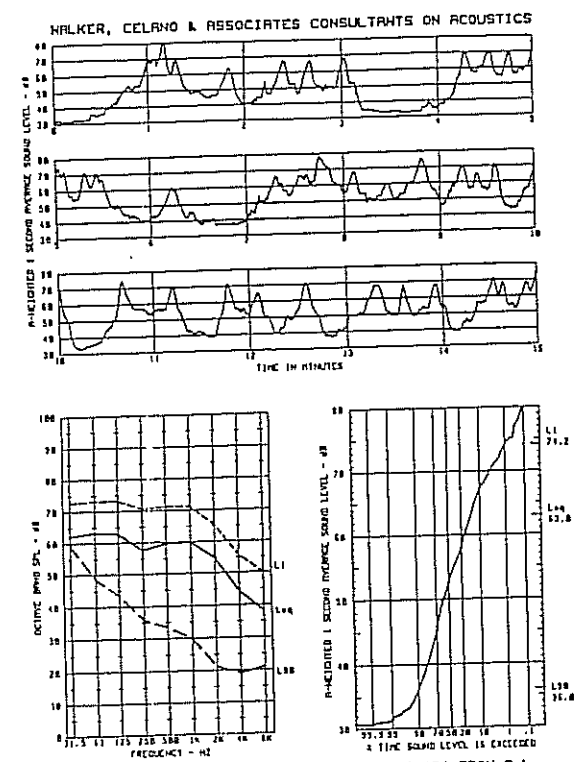


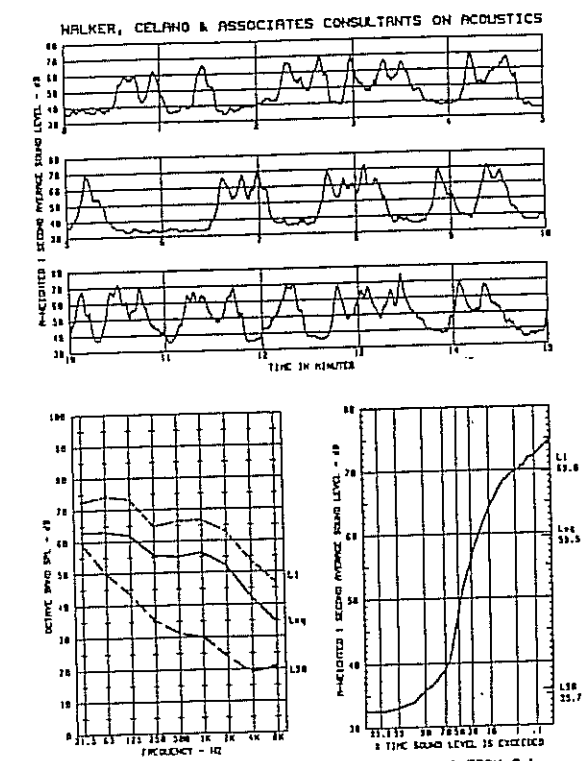
YUCCA VALLEY HIGHWAY 247 EAST SIDE AT FARRELO 68' FROM C.L.
01-06-1994 18:24-18:38



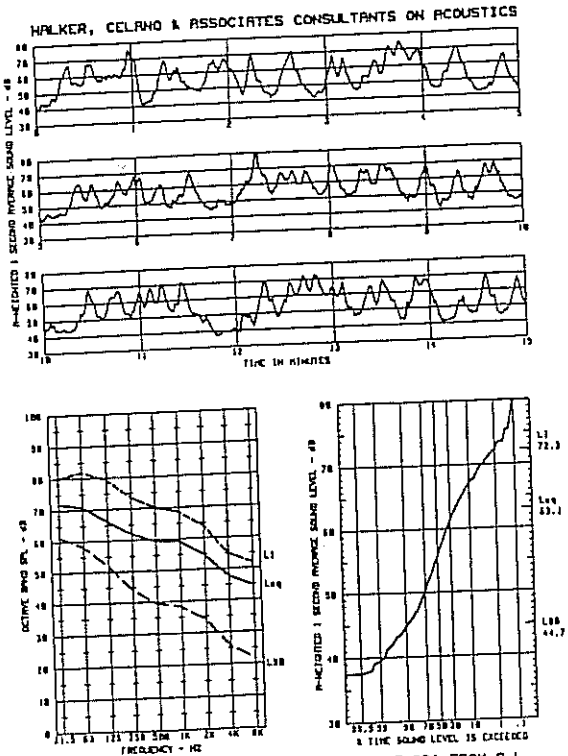
YUCCA VALLEY HIGHWAY 247 EAST SIDE AT FARRELO 68' FROM C.L.
01-06-1994 22:48-22:55



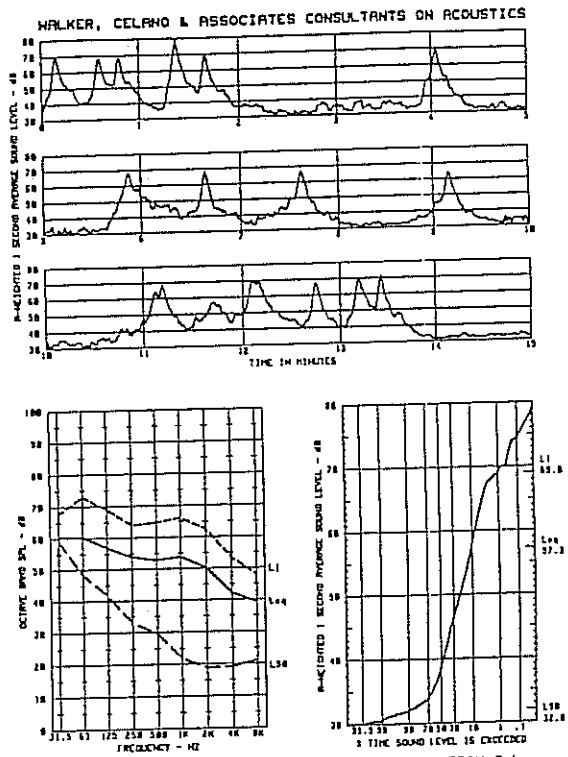
YUCCA VALLEY SOUTH SIDE OF JOSHUA LANE 68' FROM C.L.
WEST OF MOYLE'S SKY HARBOR HEALTHCARE CENTER
01-07-1994 07:47-08:02



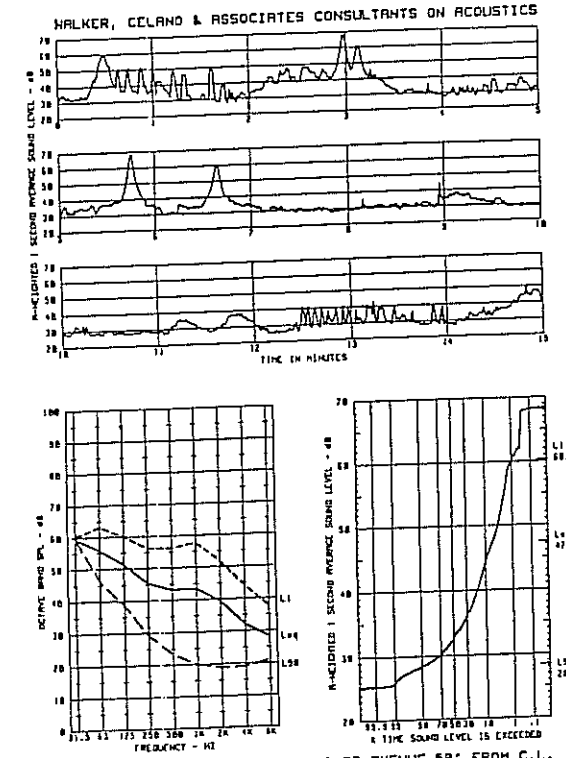
YUCCA VALLEY SOUTH SIDE OF JOSHUA LANE 68' FROM C.L.
WEST OF MOYLE'S SKY HARBOR HEALTHCARE CENTER
10-29-1993 11:17-11:32



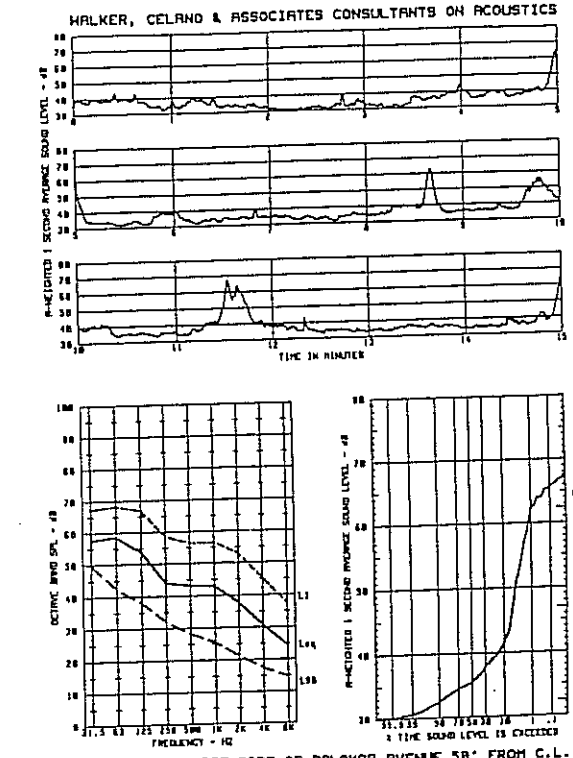
YUCCA VALLEY SOUTH SIDE OF JOSHUA LANE 60' FROM C.L.
WEST OF MOYLE'S SKY HARBOR HEALTHCARE CENTER
01-06-1994 15:23-15:38



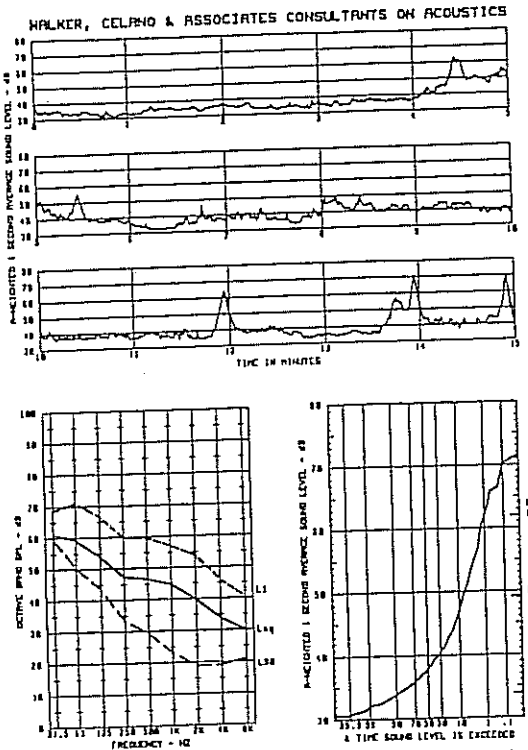
YUCCA VALLEY SOUTH SIDE OF JOSHUA LANE 60' FROM C.L.
WEST OF MOYLE'S SKY HARBOR HEALTHCARE CENTER
01-06-1994 20:39-20:54



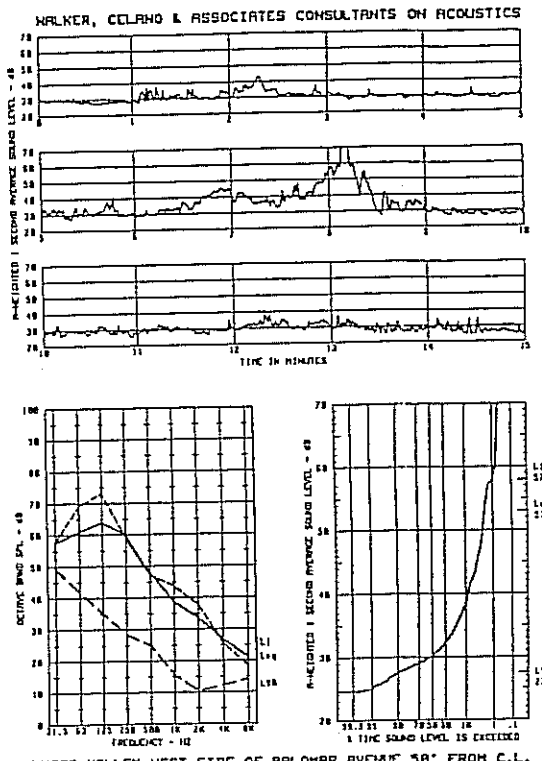
YUCCA VALLEY WEST SIDE OF PALOMAR AVENUE 50' FROM C.L.
SOUTH OF LISBON DRIVE
01-07-1994 08:11-08:26



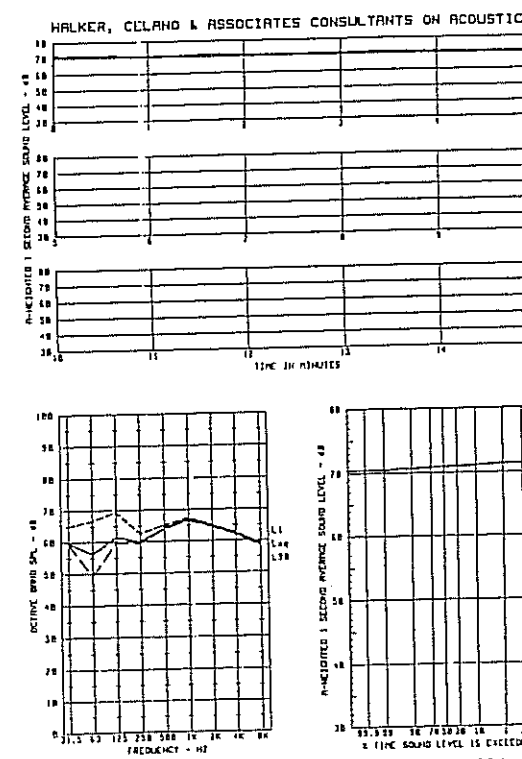
YUCCA VALLEY WEST SIDE OF PALOMAR AVENUE 50' FROM C.L.
SOUTH OF LISBON DRIVE
10-29-1993 11:58-12:13



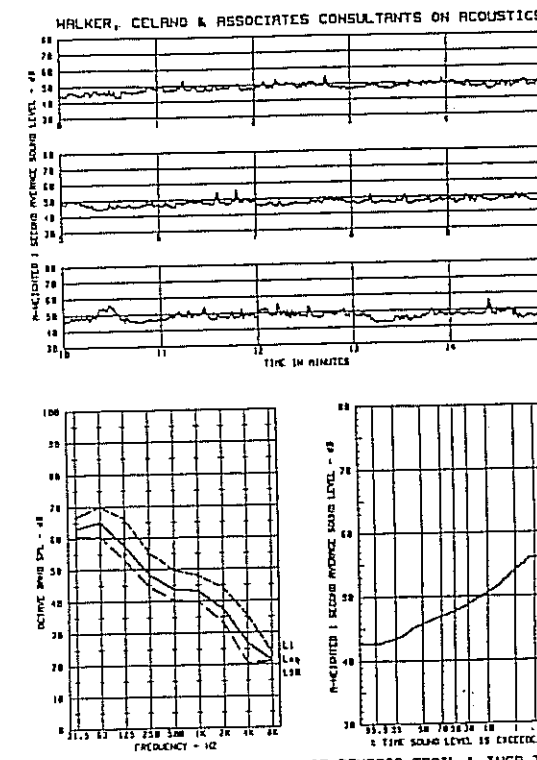
YUCCA VALLEY WEST SIDE OF PALOMAR AVENUE 50' FROM C.L.
SOUTH OF LISBON DRIVE
01-06-1994 16:41-16:56



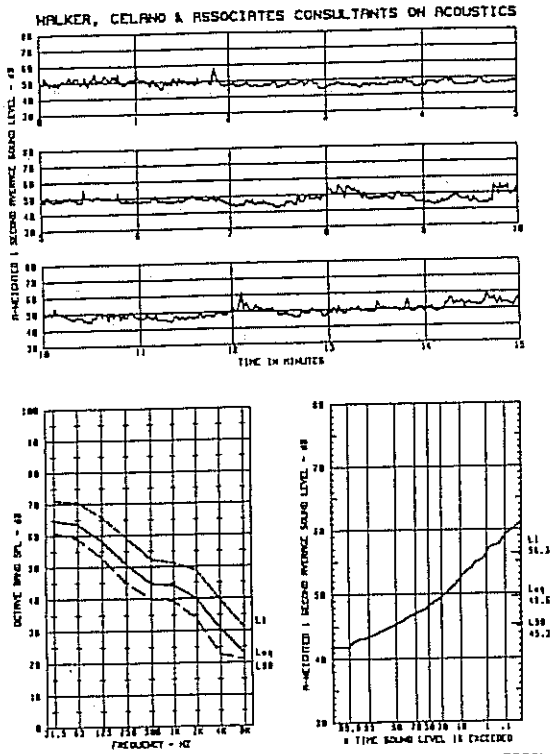
YUCCA VALLEY WEST SIDE OF PALOMAR AVENUE 50' FROM C.L.
SOUTH OF LISBON DRIVE
01-06-1994 21:41-21:56



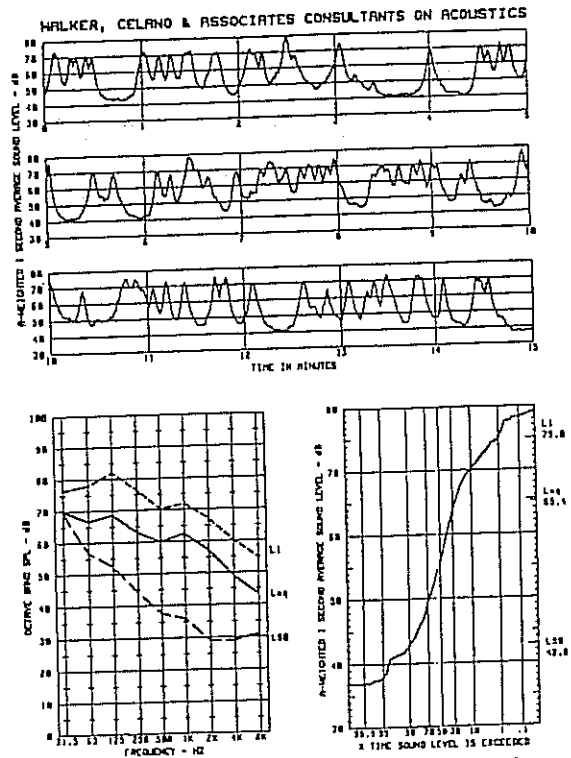
YUCCA VALLEY SOUTH P.L. OF WATER PUMP STATION
NORTH P.L. OF 8543 PALOMAR AVENUE
10-29-1993 12:19-12:24



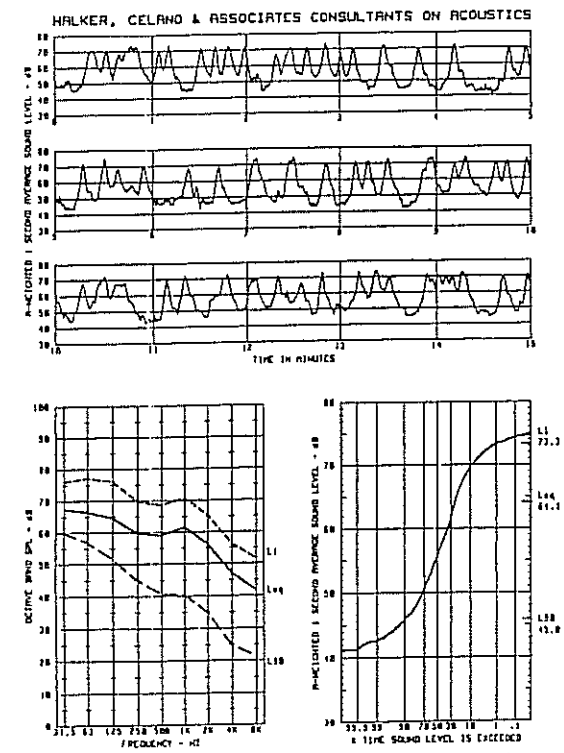
YUCCA VALLEY SOUTHEAST CORNER OF BENECIA TRAIL & INCA TRAIL
OPPOSITE GRANITE CONSTRUCTION YARD
01-07-1994 09:30-09:53



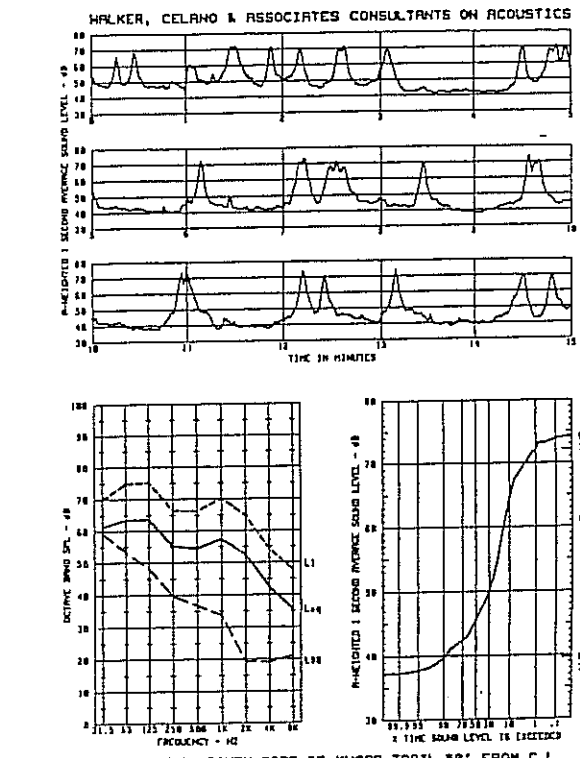
YUCCA VALLEY SOUTHEAST CORNER OF BENECIA TRAIL & INCA TRAIL
OPPOSITE GRANITE CONSTRUCTION YARD
10-29-1993 14:27-14:42



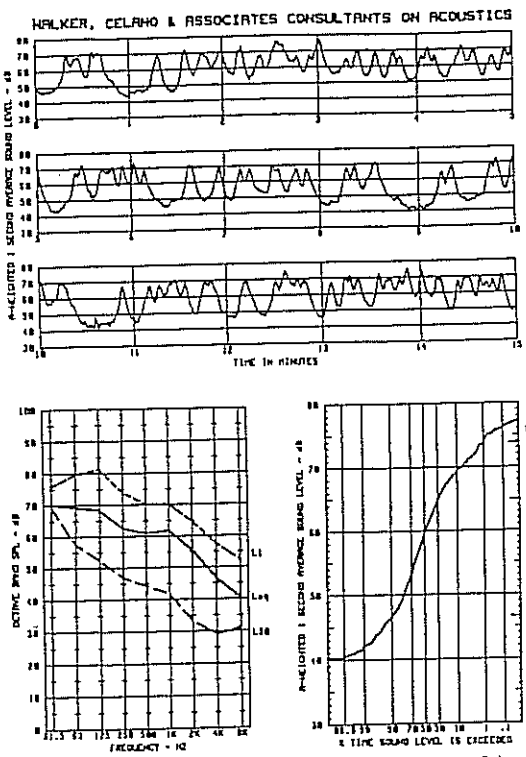
YUCCA VALLEY SOUTH SIDE OF YUCCA TRAIL 50' FROM C.L.
WEST OF EMERSON AVENUE
01-07-1994 08:46-09:01



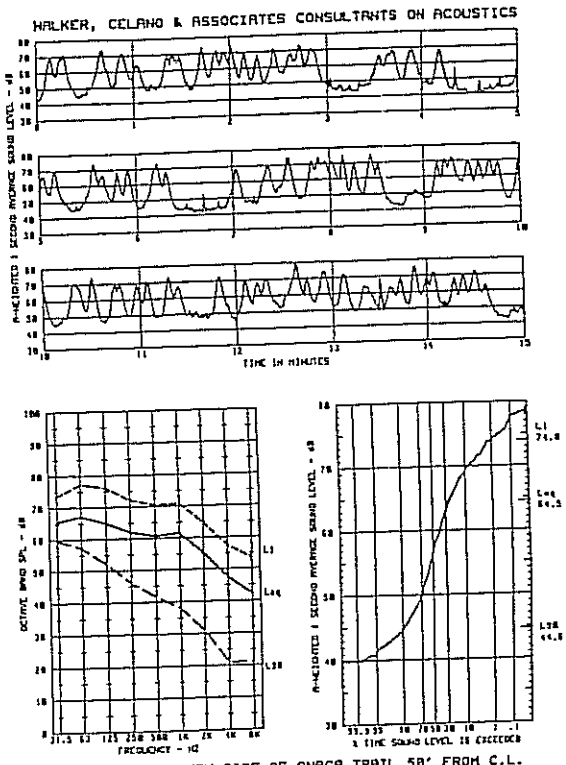
YUCCA VALLEY SOUTH SIDE OF YUCCA TRAIL 50' FROM C.L.
WEST OF EMERSON AVENUE
01-06-1994 14:48-15:03



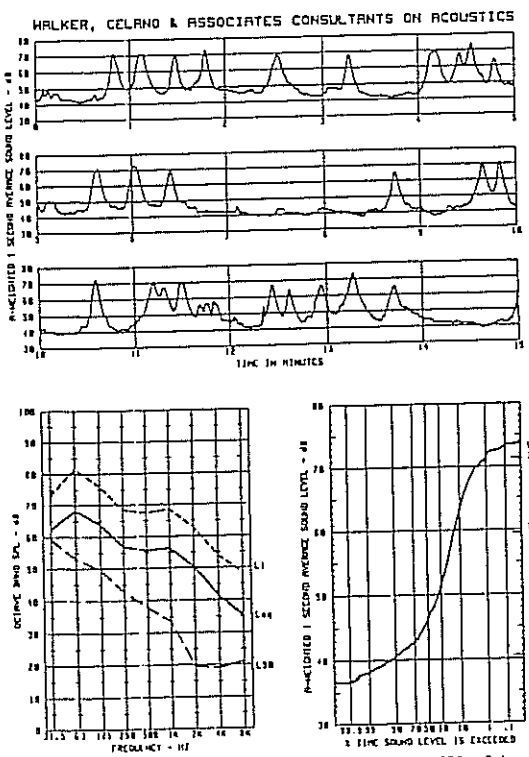
YUCCA VALLEY SOUTH SIDE OF YUCCA TRAIL 50' FROM C.L.
WEST OF EMERSON AVENUE
01-06-1994 20:05-20:24



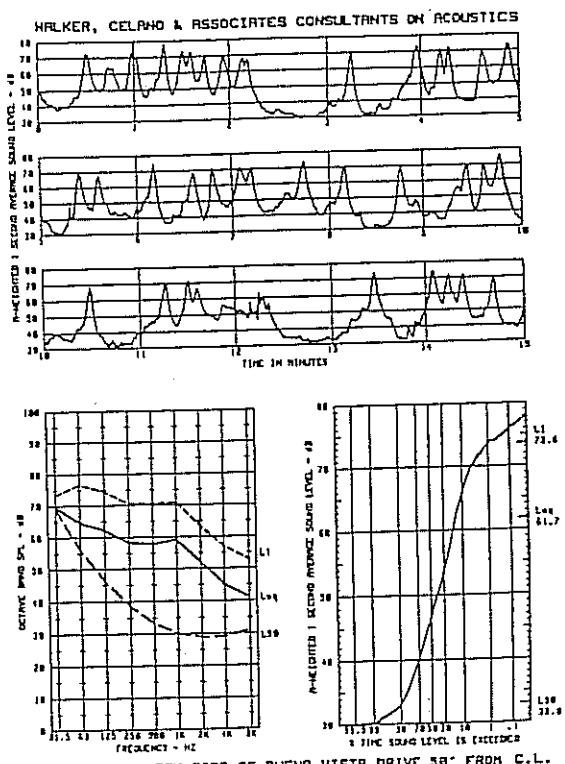
YUCCA VALLEY SOUTH SIDE OF ONAGA TRAIL 50' FROM C.L.
WEST OF YUCA VALLEY HIGH SCHOOL
01-07-1994 09:12-09:27



YUCCA VALLEY SOUTH SIDE OF ONAGA TRAIL 50' FROM C.L.
WEST OF YUCA VALLEY HIGH SCHOOL
01-06-1994 16:01-16:16



YUCCA VALLEY SOUTH SIDE OF ONAGA TRAIL 50' FROM C.L.
WEST OF YUCA VALLEY HIGH SCHOOL
01-06-1994 21:08-21:23



YUCCA VALLEY NORTH SIDE OF BUENA VISTA DRIVE 50' FROM C.L.
EAST SIDE OF TERRY LANE
01-07-1994 12:28-12:43

APPENDIX C

TOWN OF YUCCA VALLEY DEVELOPMENT CODE NOISE STANDARDS

Article 5. Noise Hazard (NH) Overlay District.

Sections:

85.020501 Intent.
85.020505 Locational Requirements.
85.020510 Development Standards.

85.020501 Intent.

The Noise Hazard (NH) Overlay District is created to provide greater public safety by establishing land use review procedures and requirements for land uses in areas with identified high noise levels.

85.020505 Locational Requirements.

(a) The Noise Hazard Overlay should be applied to those areas where the Average Day-Night Sound Level (Ldn) is sixty-five (65) decibels, 65 dBA or greater, except in the Chino Hills Specific Plan area where it shall be applied to areas with Ldn of sixty (60) decibels or greater, 60 dBA.

(b) The Noise Hazard Overlay District shall be designated by the symbol (NH) on the San Bernardino County Official Land Use Plan.

85.020510 Development Standards.

When a land use application or development permit is proposed within the Noise Hazard Overlay District, the following standards shall apply with respect to residential uses:

(a) Noise levels shall be identified. An acoustical report shall be performed to identify noise impact and any recommendation for noise attenuation, or other mitigation measures shall be incorporated into the design standards or conditions of approval as applicable.

(b) Interior noise levels in all one-family and multi-family residences and educational institutions shall not exceed forty-five (45) dBA Ldn emanating from sources outside of the residential building.

(c) Exterior noise levels in all one-family residential land use areas and multi-family residential land use areas should not exceed sixty-five (65) dBA Ldn. Exterior noise levels shall not exceed seventy (70) dBA Ldn for any residential use areas.

(d) Ability to mitigate exterior noises to the levels of sixty-five (65) dBA Ldn and seventy (70) dBA Ldn shall be considered by the reviewing authority when determining the actual Ldn level with which the land uses must comply.

(e) In areas where noise exceeds the noise standard, measures shall be taken to mitigate noise levels. An acoustical report identifying these mitigation measures

EXISTING

APPENDIX D

CNEL COMPUTER PRINTOUTS

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: W/O KICKAPOO TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	32,000	PK HR VOL	3,200
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	65.4	63.5	61.8	55.7	64.9
MEDIUM TRUCKS	65.5	64.0	57.7	56.1	64.8
HEAVY TRUCKS	67.8	66.4	57.3	58.6	67.0
VEHICULAR NOISE	71.2	69.6	64.2	61.8	70.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	92	199	429	680
DISTANCE TO CNEL (FT)	106	229	493	781

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: E/O ACOMA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

		PK HR VOL	3,900
ADT	39,000		
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	63.2	61.3	59.6	53.5	62.7
MEDIUM TRUCKS	63.8	62.3	55.9	54.4	63.1
HEAVY TRUCKS	67.0	65.6	56.6	57.8	66.3
VEHICULAR NOISE	69.8	68.3	62.4	60.4	69.1

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	75	162	349	554
DISTANCE TO CNEL (FT)	86	185	399	633

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: W/O HIGHWAY 247

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	39,000	PK HR VOL	3,900
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	63.2	61.3	59.6	53.5	62.7
MEDIUM TRUCKS	63.8	62.3	55.9	54.4	63.1
HEAVY TRUCKS	67.0	65.6	56.6	57.8	66.3
VEHICULAR NOISE	69.8	68.3	62.4	60.4	69.1

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	75	162	349	554
DISTANCE TO CNEL (FT)	86	185	399	633

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: W/O YUCCA MESA

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	27,000	PK HR VOL	2,700
SPEED	55 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	67.1	65.3	63.5	57.4	66.7
MEDIUM TRUCKS	66.9	65.4	59.0	57.5	66.1
HEAVY TRUCKS	68.3	66.9	57.8	59.1	67.6
VEHICULAR NOISE	72.3	70.7	65.6	62.8	71.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	109	235	506	802
DISTANCE TO CNEL (FT)	126	271	584	926

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 247
LOCATION: S/O BUENA VISTA

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	7,900	PK HR VOL	790
SPEED	55 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9110
MEDIUM TRUCKS	0.848	0.049	0.103	0.0530
HEAVY TRUCKS	0.865	0.027	0.108	0.0360

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.9	60.0	58.3	52.2	61.4
MEDIUM TRUCKS	60.2	58.7	52.3	50.8	59.5
HEAVY TRUCKS	62.5	61.1	52.1	53.3	61.8
VEHICULAR NOISE	66.4	64.8	60.0	57.0	65.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	44	96	206	327
DISTANCE TO CNEL (FT)	51	111	239	379

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 247
LOCATION: N/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	11,900	PK HR VOL	1,190
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	98.5
DIST WALL	100 FT	MED TRUCK SLE DIST	98.4
DIST W/OB	0 FT	HVY TRUCK SLE DIST	98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9110
MEDIUM TRUCKS	0.848	0.049	0.103	0.0530
HEAVY TRUCKS	0.865	0.027	0.108	0.0360

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.3	59.4	57.6	51.5	60.8
MEDIUM TRUCKS	59.9	58.4	52.0	50.5	59.2
HEAVY TRUCKS	63.0	61.6	52.6	53.8	62.3
VEHICULAR NOISE	66.3	64.8	59.6	56.9	65.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	44	95	205	324
DISTANCE TO CNEL (FT)	51	110	236	374

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: E/O JOSHUA LANE

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	7,400		PK HR VOL	740
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.9	56.0	54.3	48.2	57.4
MEDIUM TRUCKS	52.3	50.8	44.4	42.9	51.6
HEAVY TRUCKS	54.6	53.1	44.1	45.3	53.8
VEHICULAR NOISE	60.3	58.6	55.1	50.8	59.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	17	37	81	128
DISTANCE TO CNEL (FT)	21	44	96	152

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: W/O PALOMAR AVE.

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	6,300		PK HR VOL	630
SPEED	50 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.0	58.1	56.3	50.2	59.5
MEDIUM TRUCKS	53.9	52.4	46.0	44.5	53.2
HEAVY TRUCKS	55.3	53.8	44.8	46.1	54.5
VEHICULAR NOISE	62.0	60.2	57.0	52.4	61.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	22	48	103	164
DISTANCE TO CNEL (FT)	27	57	123	196

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: W/O LA CONTENTA

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	4,500		PK HR VOL	450
SPEED	50 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	58.5	56.6	54.8	48.8	58.0
MEDIUM TRUCKS	52.4	50.9	44.6	43.0	51.7
HEAVY TRUCKS	53.8	52.4	43.3	44.6	53.1
VEHICULAR NOISE	60.5	58.8	55.5	50.9	59.9

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	18	38	83	131
DISTANCE TO CNEL (FT)	21	46	99	156

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: W/O AVALON AVE.

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	700		PK HR VOL	70
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	47.7	45.8	44.0	38.0	47.2
MEDIUM TRUCKS	42.0	40.5	34.2	32.6	41.3
HEAVY TRUCKS	44.3	42.9	33.9	35.1	43.6
VEHICULAR NOISE	50.1	48.4	44.8	40.5	49.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	4	8	17	27
DISTANCE TO CNEL (FT)	4	9	20	31

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: W/O JOSHUA LANE

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	3,600	PK HR VOL	360
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	54.8	52.9	51.1	45.1	54.3
MEDIUM TRUCKS	49.2	47.6	41.3	39.7	48.4
HEAVY TRUCKS	51.4	50.0	41.0	42.2	50.7
VEHICULAR NOISE	57.2	55.5	51.9	47.7	56.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	11	23	50	79
DISTANCE TO CNEL (FT)	13	27	59	94

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: E/O ACOMA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	4,600	PK HR VOL	460
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.9	54.0	52.2	46.1	55.4
MEDIUM TRUCKS	50.2	48.7	42.3	40.8	49.5
HEAVY TRUCKS	52.5	51.1	42.0	43.3	51.8
VEHICULAR NOISE	58.2	56.5	53.0	48.7	57.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	13	27	59	93
DISTANCE TO CNEL (FT)	15	32	70	110

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: E/O DEER TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	2,900	PK HR VOL	290
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	53.9	52.0	50.2	44.1	53.4
MEDIUM TRUCKS	48.2	46.7	40.3	38.8	47.5
HEAVY TRUCKS	50.5	49.1	40.0	41.3	49.8
VEHICULAR NOISE	56.2	54.5	51.0	46.7	55.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	9	20	43	68
DISTANCE TO CNEL (FT)	11	24	51	81

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PIONEERTOWN
LOCATION: N/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	800	PK HR VOL	80
SPEED	30 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	44.8	42.9	41.1	35.0	44.3
MEDIUM TRUCKS	39.6	38.1	31.8	30.2	38.9
HEAVY TRUCKS	43.1	41.6	32.6	33.9	42.3
VEHICULAR NOISE	47.7	46.1	42.1	38.2	47.1

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	3	5	12	19
DISTANCE TO CNEL (FT)	3	6	14	22

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SAGE AVE.
LOCATION: N/O ONAGA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,500		PK HR VOL	150
SPEED	40	MPH		
PK HR	10	%		
DIST CTL	100	FT		
DIST N/F	12	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100	FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0	FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0	FT		
HTH OBS	5	FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	51.0	49.1	47.3	41.3	50.5
MEDIUM TRUCKS	45.4	43.8	37.5	35.9	44.6
HEAVY TRUCKS	47.6	46.2	37.2	38.4	46.9
VEHICULAR NOISE	53.4	51.7	48.1	43.8	52.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	6	13	28	44
DISTANCE TO CNEL (FT)	7	15	33	52

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ACOMA TRAIL
LOCATION: S/O ONAGA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,200		PK HR VOL	120
SPEED	40	MPH		
PK HR	10	%		
DIST CTL	100	FT		
DIST N/F	12	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100	FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0	FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0	FT		
HTH OBS	5	FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	50.0	48.1	46.4	40.3	49.5
MEDIUM TRUCKS	44.4	42.9	36.5	35.0	43.7
HEAVY TRUCKS	46.6	45.2	36.2	37.4	45.9
VEHICULAR NOISE	52.4	50.7	47.2	42.9	51.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	5	11	24	38
DISTANCE TO CNEL (FT)	6	13	28	45

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ACOMA TRAIL
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	2,500	PK HR VOL	250
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	52.8	50.9	49.2	43.1	52.3
MEDIUM TRUCKS	53.1	51.6	45.3	43.7	52.4
HEAVY TRUCKS	55.9	54.4	45.4	46.6	55.1
VEHICULAR NOISE	58.9	57.4	51.8	49.6	58.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	14	31	67	106
DISTANCE TO CNEL (FT)	16	36	77	121

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA LANE
LOCATION: N/O JOSHUA DRIVE

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	3,700	PK HR VOL	370
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	54.9	53.0	51.3	45.2	54.4
MEDIUM TRUCKS	49.3	47.8	41.4	39.9	48.6
HEAVY TRUCKS	51.5	50.1	41.1	42.3	50.8
VEHICULAR NOISE	57.3	55.6	52.0	47.8	56.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	11	24	51	81
DISTANCE TO CNEL (FT)	13	28	60	96

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA LANE
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	4,400		PK HR VOL 440
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	36 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE 98.5
DIST WALL	100 FT		MED TRUCK SLE DIST 98.4
DIST W/OB	0 FT		HVY TRUCK SLE DIST 98.4
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.8	53.9	52.1	46.0	55.3
MEDIUM TRUCKS	50.1	48.6	42.3	40.7	49.4
HEAVY TRUCKS	52.4	51.0	41.9	43.2	51.7
VEHICULAR NOISE	58.2	56.4	52.9	48.6	57.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	12	26	57	90
DISTANCE TO CNEL (FT)	15	31	68	107

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: AVALON AVE.
LOCATION: N/O YUCCA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	2,200		PK HR VOL 220
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE 99.9
DIST WALL	100 FT		MED TRUCK SLE DIST 99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST 99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	53.7	51.8	50.1	44.0	53.2
MEDIUM TRUCKS	53.8	52.3	45.9	44.4	53.1
HEAVY TRUCKS	56.0	54.6	45.6	46.8	55.3
VEHICULAR NOISE	59.4	57.9	52.5	50.0	58.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	16	33	72	114
DISTANCE TO CNEL (FT)	18	38	83	131

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PALOMAR AVE.
LOCATION: N/O ONAGA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	2,300		PK HR VOL	230
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	54.3	52.4	50.6	44.6	53.8
MEDIUM TRUCKS	48.4	46.9	40.6	39.0	47.7
HEAVY TRUCKS	50.2	48.8	39.8	41.0	49.5
VEHICULAR NOISE	56.5	54.8	51.3	46.9	55.9

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	10	21	45	71
DISTANCE TO CNEL (FT)	11	25	53	84

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA MESA
LOCATION: N/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	3,300		PK HR VOL	330
SPEED	50 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.1	55.2	53.5	47.4	56.7
MEDIUM TRUCKS	51.1	49.6	43.2	41.7	50.4
HEAVY TRUCKS	52.5	51.0	42.0	43.2	51.7
VEHICULAR NOISE	59.2	57.4	54.1	49.6	58.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	14	31	67	107
DISTANCE TO CNEL (FT)	17	37	80	127

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: LA CONTENTA
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,500	PK HR VOL	150
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	51.0	49.1	47.3	41.3	50.5
MEDIUM TRUCKS	45.4	43.8	37.5	35.9	44.6
HEAVY TRUCKS	47.6	46.2	37.2	38.4	46.9
VEHICULAR NOISE	53.4	51.7	48.1	43.8	52.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	6	13	28	44
DISTANCE TO CNEL (FT)	7	15	33	52

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SKYLINE RANCH ROAD
LOCATION: W/O HWY. 247

JN: 636-94-00
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,500	PK HR VOL	150
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAIL
AUTOMOBILES	0.775	0.129	0.096	0.970
MEDIUM TRUCKS	0.848	0.049	0.103	0.020
HEAVY TRUCKS	0.865	0.027	0.108	0.010

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNE
AUTOMOBILES	52.4	50.5	48.8	42.7	51.
MEDIUM TRUCKS	46.6	45.1	38.7	37.2	45.
HEAVY TRUCKS	48.4	46.9	37.9	39.2	47.
VEHICULAR NOISE	54.6	52.9	49.5	45.1	54.

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	
DISTANCE TO LEQ DAY (FT)	7	16	34	
DISTANCE TO CNEL (FT)	9	19	40	

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BUENA VISTA
LOCATION: E/O HWY. 247

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,700		PK HR VOL	170
SPEED	55 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.4	53.5	51.8	45.7	54.9
MEDIUM TRUCKS	49.2	47.7	41.3	39.8	48.5
HEAVY TRUCKS	50.2	48.8	39.7	41.0	49.5
VEHICULAR NOISE	57.3	55.6	52.4	47.7	56.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	11	23	50	80
DISTANCE TO CNEL (FT)	13	28	60	96

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: KICKAPOO TRAIL
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	2,300		PK HR VOL	230
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	51.2	49.3	47.6	41.5	50.7
MEDIUM TRUCKS	45.8	44.3	38.0	36.4	45.1
HEAVY TRUCKS	48.6	47.2	38.2	39.4	47.9
VEHICULAR NOISE	53.9	52.2	48.4	44.4	53.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	6	14	30	48
DISTANCE TO CNEL (FT)	8	16	36	56

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SANTA FE TRAIL
LOCATION: E/O KICKAPOO TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,400	PK HR VOL	140
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	49.1	47.2	45.4	39.3	48.6
MEDIUM TRUCKS	43.7	42.2	35.8	34.3	42.9
HEAVY TRUCKS	46.5	45.1	36.0	37.3	45.7
VEHICULAR NOISE	51.7	50.0	46.3	42.2	51.1

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	5	10	22	34
DISTANCE TO CNEL (FT)	5	12	26	40

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: DEER TRIAL
LOCATION: N/O ONAGA TRAIL

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	2,000	PK HR VOL	200
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	50.6	48.7	47.0	40.9	50.1
MEDIUM TRUCKS	45.2	43.7	37.3	35.8	44.5
HEAVY TRUCKS	48.0	46.6	37.6	38.8	47.3
VEHICULAR NOISE	53.3	51.6	47.8	43.7	52.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	6	13	27	43
DISTANCE TO CNEL (FT)	7	15	32	51

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PALM AVE.
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,000	PK HR VOL	100
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	47.6	45.7	43.9	37.9	47.1
MEDIUM TRUCKS	42.2	40.7	34.3	32.8	41.5
HEAVY TRUCKS	45.0	43.6	34.6	35.8	44.3
VEHICULAR NOISE	50.3	48.6	44.8	40.7	49.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	4	8	17	27
DISTANCE TO CNEL (FT)	4	9	20	32

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BALSA AVE.
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	1,900	PK HR VOL	190
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	50.4	48.5	46.7	40.7	49.9
MEDIUM TRUCKS	45.0	43.5	37.1	35.6	44.3
HEAVY TRUCKS	47.8	46.4	37.3	38.6	47.1
VEHICULAR NOISE	53.0	51.4	47.6	43.5	52.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	6	12	26	42
DISTANCE TO CNEL (FT)	7	15	31	50

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BALSA AVE.
LOCATION: N/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	2,600	PK HR VOL	260
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	54.8	52.9	51.2	45.1	54.3
MEDIUM TRUCKS	49.0	47.5	41.1	39.5	48.2
HEAVY TRUCKS	50.8	49.3	40.3	41.5	50.0
VEHICULAR NOISE	57.0	55.3	51.9	47.5	56.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	10	22	48	77
DISTANCE TO CNEL (FT)	12	27	58	91

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PAXTON RD.
LOCATION: W/O AVALON DR.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	600	PK HR VOL	60
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	12 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT	MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT	HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	45.4	43.5	41.7	35.7	44.9
MEDIUM TRUCKS	40.0	38.5	32.1	30.6	39.3
HEAVY TRUCKS	42.8	41.4	32.3	33.6	42.1
VEHICULAR NOISE	48.0	46.3	42.6	38.5	47.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	3	6	12	19
DISTANCE TO CNEL (FT)	3	7	15	23

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: W/O PALM AVE.

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	800		PK HR VOL	80
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	49.7	47.8	46.0	40.0	49.2
MEDIUM TRUCKS	43.8	42.3	36.0	34.4	43.1
HEAVY TRUCKS	45.6	44.2	35.2	36.4	44.9
VEHICULAR NOISE	51.9	50.2	46.8	42.3	51.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	5	10	22	35
DISTANCE TO CNEL (FT)	6	12	26	42

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: E/O SAGE AVE.

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	800		PK HR VOL	80
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	49.7	47.8	46.0	40.0	49.2
MEDIUM TRUCKS	43.8	42.3	36.0	34.4	43.1
HEAVY TRUCKS	45.6	44.2	35.2	36.4	44.9
VEHICULAR NOISE	51.9	50.2	46.8	42.3	51.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	5	10	22	35
DISTANCE TO CNEL (FT)	6	12	26	42

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA DR.
LOCATION: E/O SAGE AVE.

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	2,000		PK HR VOL	200
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

(HARD SITE=10, SOFT SITE=15)

SITE CONDITIONS:	
AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0

(0=WALL,1=BERM)

ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	53.7	51.8	50.0	44.0	53.2
MEDIUM TRUCKS	47.8	46.3	40.0	38.4	47.1
HEAVY TRUCKS	49.6	48.2	39.2	40.4	48.9
VEHICULAR NOISE	55.9	54.1	50.7	46.3	55.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	9	19	41	64
DISTANCE TO CNEL (FT)	10	22	48	77

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: CAM DEL CIELO
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 10-Aug-95
BY: B. LAWSON

ADT	900		PK HR VOL	90
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	12 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.9
DIST WALL	100 FT		MED TRUCK SLE DIST	99.9
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.9
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

(HARD SITE=10, SOFT SITE=15)

SITE CONDITIONS:	
AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0

(0=WALL,1=BERM)

ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	48.8	46.9	45.1	39.1	48.3
MEDIUM TRUCKS	43.1	41.6	35.3	33.7	42.4
HEAVY TRUCKS	45.4	44.0	34.9	36.2	44.7
VEHICULAR NOISE	51.2	49.5	45.9	41.6	50.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	4	9	20	31
DISTANCE TO CNEL (FT)	5	11	23	37

BUILDOUT

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: E/O ACOMA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	60,000	PK HR VOL	6,000
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	77 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	92.4
DIST WALL	100 FT	MED TRUCK SLE DIST	92.3
DIST W/OB	0 FT	HVY TRUCK SLE DIST	92.3
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	65.5	63.6	61.9	55.8	65.0
MEDIUM TRUCKS	66.1	64.6	58.2	56.6	65.3
HEAVY TRUCKS	69.3	67.9	58.9	60.1	68.6
VEHICULAR NOISE	72.1	70.5	64.7	62.7	71.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	100	216	466	738
DISTANCE TO CNEL (FT)	115	247	532	843

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: W/O HIGHWAY 247

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	55,000	PK HR VOL	5,500
SPEED	35 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	77 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	92.4
DIST WALL	100 FT	MED TRUCK SLE DIST	92.3
DIST W/OB	0 FT	HVY TRUCK SLE DIST	92.3
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	65.1	63.2	61.5	55.4	64.6
MEDIUM TRUCKS	65.7	64.2	57.8	56.3	65.0
HEAVY TRUCKS	68.9	67.5	58.5	59.7	68.2
VEHICULAR NOISE	71.7	70.2	64.3	62.3	71.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	95	204	439	696
DISTANCE TO CNEL (FT)	108	233	502	796

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 62
LOCATION: W/O YUCCA MESA

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

		PK HR VOL	4,600
ADT	46,000		
SPEED	55 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	77 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	92.4
DIST WALL	100 FT	MED TRUCK SLE DIST	92.3
DIST W/OB	0 FT	HVY TRUCK SLE DIST	92.3
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	69.9	68.0	66.2	60.1	69.4
MEDIUM TRUCKS	69.6	68.1	61.7	60.2	68.9
HEAVY TRUCKS	71.0	69.6	60.6	61.8	70.3
VEHICULAR NOISE	75.0	73.4	68.3	65.6	74.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	156	335	722	1144
DISTANCE TO CNEL (FT)	180	387	834	1321

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 247
LOCATION: S/O BUENA VISTA

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	34,000		PK HR VOL	3,400
SPEED	55 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	77 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	92.4
DIST WALL	100 FT		MED TRUCK SLE DIST	92.3
DIST W/OB	0 FT		HVY TRUCK SLE DIST	92.3
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR			
RT ANGLE	90 DGR			
DF ANGLE	180 DGR			
SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)		
AUTOMOBILE	15			
MED TRUCKS	15			
HVY TRUCKS	15			
BARRIER	0	(0=WALL,1=BERM)		
ELEVATIONS:				
PAD	0 FT	AUTOMOBILES =	0.00 FT	
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT	
		HEAVY TRUCKS =	8.01 FT	
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS	

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9110
MEDIUM TRUCKS	0.848	0.049	0.103	0.0530
HEAVY TRUCKS	0.865	0.027	0.108	0.0360

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	68.7	66.8	65.0	58.9	68.2
MEDIUM TRUCKS	67.0	65.4	59.1	57.5	66.2
HEAVY TRUCKS	69.3	67.8	58.8	60.1	68.5
VEHICULAR NOISE	73.2	71.6	66.8	63.7	72.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	117	253	545	864
DISTANCE TO CNEL (FT)	136	293	632	1002

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: HWY 247
LOCATION: N/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	32,000		PK HR VOL	3,200
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	77 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	92.4
DIST WALL	100 FT		MED TRUCK SLE DIST	92.3
DIST W/OB	0 FT		HVY TRUCK SLE DIST	92.3
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR			
RT ANGLE	90 DGR			
DF ANGLE	180 DGR			
SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)		
AUTOMOBILE	15			
MED TRUCKS	15			
HVY TRUCKS	15			
BARRIER	0	(0=WALL,1=BERM)		
ELEVATIONS:				
PAD	0 FT	AUTOMOBILES =	0.00 FT	
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT	
		HEAVY TRUCKS =	8.01 FT	
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS	

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9110
MEDIUM TRUCKS	0.848	0.049	0.103	0.0530
HEAVY TRUCKS	0.865	0.027	0.108	0.0360

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	66.0	64.1	62.3	56.2	65.5
MEDIUM TRUCKS	64.6	63.1	56.7	55.2	63.9
HEAVY TRUCKS	67.7	66.3	57.3	58.5	67.0
VEHICULAR NOISE	71.1	69.5	64.3	61.7	70.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	85	184	395	627
DISTANCE TO CNEL (FT)	98	212	456	723

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: E/O JOSHUA LANE

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	21,000	PK HR VOL	2,100
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	52 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT	MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT	HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.7	60.8	59.0	52.9	62.2
MEDIUM TRUCKS	57.0	55.5	49.2	47.6	56.3
HEAVY TRUCKS	59.3	57.9	48.8	50.1	58.6
VEHICULAR NOISE	65.1	63.4	59.8	55.5	64.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	35	75	162	256
DISTANCE TO CNEL (FT)	41	89	192	304

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: W/O PALOMAR AVE.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

		PK HR VOL	2,000
ADT	20,000		
SPEED	50 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	52 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT	MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT	HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	65.2	63.3	61.5	55.5	64.7
MEDIUM TRUCKS	59.1	57.6	51.3	49.7	58.4
HEAVY TRUCKS	60.5	59.1	50.0	51.3	59.8
VEHICULAR NOISE	67.2	65.5	62.2	57.6	66.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	48	104	224	354
DISTANCE TO CNEL (FT)	57	124	267	423

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA TRAIL
LOCATION: W/O LA CONTENTA

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	14,000	PK HR VOL	1,400
SPEED	50 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	47 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	63.6	61.7	59.9	53.9	63.1
MEDIUM TRUCKS	57.5	56.0	49.7	48.1	56.8
HEAVY TRUCKS	58.9	57.5	48.4	49.7	58.2
VEHICULAR NOISE	65.6	63.9	60.6	56.0	65.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	38	82	176	279
DISTANCE TO CNEL (FT)	45	98	210	333

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: W/O AVALON AVE.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	8,000	PK HR VOL	800
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	47 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	58.4	56.5	54.8	48.7	57.9
MEDIUM TRUCKS	52.8	51.3	44.9	43.4	52.1
HEAVY TRUCKS	55.1	53.6	44.6	45.9	54.3
VEHICULAR NOISE	60.8	59.1	55.6	51.3	60.2

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	18	39	85	135
DISTANCE TO CNEL (FT)	22	47	101	160

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: W/O JOSHUA LANE

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	15,000		PK HR VOL	1,500
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	52 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT		MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT		HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.2	59.3	57.5	51.5	60.7
MEDIUM TRUCKS	55.6	54.1	47.7	46.2	54.8
HEAVY TRUCKS	57.8	56.4	47.4	48.6	57.1
VEHICULAR NOISE	63.6	61.9	58.3	54.1	63.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	28	60	129	205
DISTANCE TO CNEL (FT)	33	71	153	243

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: E/O ACOMA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	17,000		PK HR VOL	1,700
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	52 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT		MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT		HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.8	59.9	58.1	52.0	61.3
MEDIUM TRUCKS	56.1	54.6	48.2	46.7	55.4
HEAVY TRUCKS	58.4	57.0	47.9	49.2	57.7
VEHICULAR NOISE	64.1	62.4	58.9	54.6	63.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	30	65	140	223
DISTANCE TO CNEL (FT)	36	77	167	264

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ONAGA TRAIL
LOCATION: E/O DEER TRAIL
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	20,000	PK HR VOL	2,000
SPEED	40 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	52 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT	MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT	HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.5	60.6	58.8	52.7	62.0
MEDIUM TRUCKS	56.8	55.3	48.9	47.4	56.1
HEAVY TRUCKS	59.1	57.7	48.6	49.9	58.4
VEHICULAR NOISE	64.8	63.1	59.6	55.3	64.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	34	73	157	248
DISTANCE TO CNEL (FT)	40	86	186	294

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PIONEERTOWN
LOCATION: N/O HWY. 62
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	9,000	PK HR VOL	900
SPEED	30 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	47 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.4	53.5	51.8	45.7	54.9
MEDIUM TRUCKS	50.3	48.8	42.4	40.9	49.6
HEAVY TRUCKS	53.7	52.3	43.3	44.5	53.0
VEHICULAR NOISE	58.4	56.8	52.8	48.9	57.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	13	27	59	94
DISTANCE TO CNEL (FT)	15	32	69	110

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SAGE AVE.
LOCATION: N/O ONAGA TRAIL
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	12,000			PK HR VOL	1,200
SPEED	40	MPH			
PK HR	10	%			
DIST CTL	100	FT			
DIST N/F	47	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE		97.3
DIST WALL	100	FT	MED TRUCK SLE DIST		97.2
DIST W/OB	0	FT	HVY TRUCK SLE DIST		97.2
HTH WALL	0.0	FT			
HTH OBS	5	FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.2	58.3	56.5	50.5	59.7
MEDIUM TRUCKS	54.6	53.0	46.7	45.1	53.8
HEAVY TRUCKS	56.8	55.4	46.4	47.6	56.1
VEHICULAR NOISE	62.6	60.9	57.3	53.1	62.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	24	52	111	176
DISTANCE TO CNEL (FT)	28	61	132	209

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ACOMA TRAIL
LOCATION: S/O ONAGA TRAIL
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	14,000			PK HR VOL	1,400
SPEED	40	MPH			
PK HR	10	%			
DIST CTL	100	FT			
DIST N/F	47	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE		97.3
DIST WALL	100	FT	MED TRUCK SLE DIST		97.2
DIST W/OB	0	FT	HVY TRUCK SLE DIST		97.2
HTH WALL	0.0	FT			
HTH OBS	5	FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.9	59.0	57.2	51.1	60.4
MEDIUM TRUCKS	55.2	53.7	47.4	45.8	54.5
HEAVY TRUCKS	57.5	56.1	47.0	48.3	56.8
VEHICULAR NOISE	63.3	61.6	58.0	53.7	62.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	27	57	123	196
DISTANCE TO CNEL (FT)	32	68	146	232

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: ACOMA TRAIL
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	8,000		PK HR VOL	800
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	58.1	56.2	54.4	48.3	57.6
MEDIUM TRUCKS	58.4	56.8	50.5	48.9	57.6
HEAVY TRUCKS	61.1	59.7	50.6	51.9	60.4
VEHICULAR NOISE	64.2	62.6	57.0	54.8	63.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	31	67	145	230
DISTANCE TO CNEL (FT)	36	77	166	264

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA LANE
LOCATION: N/O JOSHUA DRIVE

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	11,000		PK HR VOL	1,100
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	59.8	57.9	56.2	50.1	59.3
MEDIUM TRUCKS	54.2	52.7	46.3	44.8	53.5
HEAVY TRUCKS	56.4	55.0	46.0	47.2	55.7
VEHICULAR NOISE	62.2	60.5	56.9	52.7	61.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	23	49	105	167
DISTANCE TO CNEL (FT)	27	58	125	198

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA LANE
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	19,000		PK HR VOL	1,900
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	52 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	96.7
DIST WALL	100 FT		MED TRUCK SLE DIST	96.6
DIST W/OB	0 FT		HVY TRUCK SLE DIST	96.6
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)	
AUTOMOBILE	15		
MED TRUCKS	15		
HVY TRUCKS	15		
BARRIER	0	(0=WALL,1=BERM)	
ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.6	58.7	56.9	50.9	60.1
MEDIUM TRUCKS	55.2	53.7	47.3	45.8	54.5
HEAVY TRUCKS	58.0	56.6	47.6	48.8	57.3
VEHICULAR NOISE	63.3	61.6	57.8	53.7	62.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	26	57	123	195
DISTANCE TO CNEL (FT)	31	67	145	230

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: AVALON AVE.
LOCATION: N/O YUCCA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	12,000		PK HR VOL	1,200
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)	
AUTOMOBILE	15		
MED TRUCKS	15		
HVY TRUCKS	15		
BARRIER	0	(0=WALL,1=BERM)	
ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.3	59.4	57.6	51.5	60.8
MEDIUM TRUCKS	61.3	59.8	53.5	51.9	60.6
HEAVY TRUCKS	63.6	62.2	53.1	54.4	62.9
VEHICULAR NOISE	67.0	65.4	60.0	57.6	66.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	48	103	223	353
DISTANCE TO CNEL (FT)	55	119	256	406

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PALOMAR AVE.
LOCATION: N/O ONAGA TRAIL
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	13,000		PK HR VOL	1,300
SPEED	45	MPH		
PK HR	10	%		
DIST CTL	100	FT		
DIST N/F	47	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100	FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0	FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0	FT		
HTH OBS	5	FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.0	60.1	58.3	52.3	61.5
MEDIUM TRUCKS	56.1	54.6	48.3	46.7	55.4
HEAVY TRUCKS	57.9	56.5	47.5	48.7	57.2
VEHICULAR NOISE	64.2	62.4	59.0	54.6	63.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	30	66	142	224
DISTANCE TO CNEL (FT)	36	78	168	267

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: YUCCA MESA
LOCATION: N/O HWY. 62
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	7,000		PK HR VOL	700
SPEED	50	MPH		
PK HR	10	%		
DIST CTL	100	FT		
DIST N/F	47	FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100	FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0	FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0	FT		
HTH OBS	5	FT		

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.6	58.7	56.9	50.9	60.1
MEDIUM TRUCKS	54.5	53.0	46.7	45.1	53.8
HEAVY TRUCKS	55.9	54.5	45.4	46.7	55.2
VEHICULAR NOISE	62.6	60.9	57.6	53.0	62.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	24	52	111	176
DISTANCE TO CNEL (FT)	29	61	132	210

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: LA CONTENTA
LOCATION: S/O HWY. 62
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	7,000		PK HR VOL	700
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.9	56.0	54.2	48.1	57.4
MEDIUM TRUCKS	52.2	50.7	44.3	42.8	51.5
HEAVY TRUCKS	54.5	53.1	44.0	45.3	53.8
VEHICULAR NOISE	60.2	58.5	55.0	50.7	59.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	17	36	78	123
DISTANCE TO CNEL (FT)	20	43	92	146

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SKYLINE RANCH ROAD
LOCATION: W/O HWY. 247
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	8,000		PK HR VOL	800
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	59.9	58.0	56.2	50.2	59.4
MEDIUM TRUCKS	54.0	52.5	46.1	44.6	53.3
HEAVY TRUCKS	55.8	54.4	45.4	46.6	55.1
VEHICULAR NOISE	62.1	60.3	56.9	52.5	61.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	22	48	102	162
DISTANCE TO CNEL (FT)	26	57	122	193

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BUENA VISTA
LOCATION: E/O HWY. 247
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	9,000		PK HR VOL	900
SPEED	55 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR	
RT ANGLE	90 DGR	
DF ANGLE	180 DGR	
SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)
AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.8	60.9	59.2	53.1	62.3
MEDIUM TRUCKS	56.6	55.1	48.7	47.2	55.9
HEAVY TRUCKS	57.6	56.2	47.1	48.4	56.9
VEHICULAR NOISE	64.7	63.0	59.8	55.1	64.1

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	33	71	153	243
DISTANCE TO CNEL (FT)	40	85	183	291

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: KICKAPOO TRAIL
LOCATION: S/O HWY. 62
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	10,000		PK HR VOL	1,000
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR	
RT ANGLE	90 DGR	
DF ANGLE	180 DGR	
SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)
AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.8	55.9	54.1	48.1	57.3
MEDIUM TRUCKS	52.4	50.9	44.5	43.0	51.7
HEAVY TRUCKS	55.2	53.8	44.7	46.0	54.5
VEHICULAR NOISE	60.4	58.7	55.0	50.9	59.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	17	37	80	127
DISTANCE TO CNEL (FT)	20	44	95	150

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SANTA FE TRAIL
LOCATION: E/O KICKAPOO TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	6,000		PK HR VOL	600
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.6	53.7	51.9	45.8	55.1
MEDIUM TRUCKS	50.2	48.7	42.3	40.7	49.4
HEAVY TRUCKS	53.0	51.5	42.5	43.8	52.2
VEHICULAR NOISE	58.2	56.5	52.8	48.7	57.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	12	26	57	90
DISTANCE TO CNEL (FT)	15	31	67	107

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: DEER TRIAL
LOCATION: N/O ONAGA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	9,000		PK HR VOL	900
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.3	55.4	53.7	47.6	56.8
MEDIUM TRUCKS	51.9	50.4	44.0	42.5	51.2
HEAVY TRUCKS	54.7	53.3	44.3	45.5	54.0
VEHICULAR NOISE	60.0	58.3	54.5	50.4	59.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	16	35	75	118
DISTANCE TO CNEL (FT)	19	41	88	140

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PALM AVE.
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	6,000		PK HR VOL	600
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	24 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	99.4
DIST WALL	100 FT		MED TRUCK SLE DIST	99.3
DIST W/OB	0 FT		HVY TRUCK SLE DIST	99.3
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)	
AUTOMOBILE	15		
MED TRUCKS	15		
HVY TRUCKS	15		
BARRIER	0	(0=WALL,1=BERM)	
ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	55.4	53.5	51.8	45.7	54.9
MEDIUM TRUCKS	50.0	48.5	42.2	40.6	49.3
HEAVY TRUCKS	52.8	51.4	42.4	43.6	52.1
VEHICULAR NOISE	58.1	56.4	52.6	48.6	57.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	12	26	57	90
DISTANCE TO CNEL (FT)	15	31	67	107

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BALSA AVE.
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	9,000		PK HR VOL	900
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)	
AUTOMOBILE	15		
MED TRUCKS	15		
HVY TRUCKS	15		
BARRIER	0	(0=WALL,1=BERM)	
ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	57.3	55.4	53.7	47.6	56.8
MEDIUM TRUCKS	51.9	50.4	44.0	42.5	51.2
HEAVY TRUCKS	54.7	53.3	44.3	45.5	54.0
VEHICULAR NOISE	60.0	58.3	54.5	50.4	59.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	16	35	75	118
DISTANCE TO CNEL (FT)	19	41	88	140

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: BALSA AVE.
LOCATION: N/O HWY. 62
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	18,000		PK HR VOL	1,800
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	63.4	61.5	59.7	53.7	62.9
MEDIUM TRUCKS	57.5	56.0	49.7	48.1	56.8
HEAVY TRUCKS	59.3	57.9	48.9	50.1	58.6
VEHICULAR NOISE	65.6	63.9	60.5	56.0	65.0

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	38	82	176	279
DISTANCE TO CNEL (FT)	45	97	209	332

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: PAXTON RD.
LOCATION: W/O AVALON DR.
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	23,000		PK HR VOL	2,300
SPEED	35 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.4	59.5	57.7	51.7	60.9
MEDIUM TRUCKS	56.0	54.5	48.1	46.6	55.3
HEAVY TRUCKS	58.8	57.4	48.3	49.6	58.1
VEHICULAR NOISE	64.0	62.4	58.6	54.5	63.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	30	65	140	221
DISTANCE TO CNEL (FT)	36	77	165	261

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: W/O PALM AVE.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	12,000		PK HR VOL	1,200
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	61.6	59.7	58.0	51.9	61.1
MEDIUM TRUCKS	55.8	54.3	47.9	46.4	55.1
HEAVY TRUCKS	57.6	56.1	47.1	48.4	56.8
VEHICULAR NOISE	63.8	62.1	58.7	54.3	63.2

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	29	62	134	213
DISTANCE TO CNEL (FT)	34	74	160	253

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: E/O SAGE AVE.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	14,000		PK HR VOL	1,400
SPEED	45 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.3	60.4	58.6	52.6	61.8
MEDIUM TRUCKS	56.4	54.9	48.6	47.0	55.7
HEAVY TRUCKS	58.2	56.8	47.8	49.0	57.5
VEHICULAR NOISE	64.5	62.8	59.4	54.9	63.9

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	32	69	149	236
DISTANCE TO CNEL (FT)	38	82	177	281

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: E/O HWY. 247
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	8,000			PK HR VOL	800
SPEED	45	MPH			
PK HR	10	%			
DIST CTL	100	FT			
DIST N/F	47	FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100	FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0	FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0	FT			
HTH OBS	5	FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	59.9	58.0	56.2	50.2	59.4
MEDIUM TRUCKS	54.0	52.5	46.1	44.6	53.3
HEAVY TRUCKS	55.8	54.4	45.4	46.6	55.1
VEHICULAR NOISE	62.1	60.3	56.9	52.5	61.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	22	48	102	162
DISTANCE TO CNEL (FT)	26	57	122	193

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: SUNNYSLOPE DRIVE
LOCATION: W/O INDIO AVE.
JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	16,000			PK HR VOL	1,600
SPEED	45	MPH			
PK HR	10	%			
DIST CTL	100	FT			
DIST N/F	47	FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100	FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0	FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0	FT			
HTH OBS	5	FT			

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15	
MED TRUCKS	15	
HVY TRUCKS	15	
BARRIER	0	(0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.9	61.0	59.2	53.2	62.4
MEDIUM TRUCKS	57.0	55.5	49.2	47.6	56.3
HEAVY TRUCKS	58.8	57.4	48.4	49.6	58.1
VEHICULAR NOISE	65.1	63.3	59.9	55.5	64.5

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	35	75	163	258
DISTANCE TO CNEL (FT)	42	90	193	307

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA DR.
LOCATION: E/O ACOMA TRAIL

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	10,000	PK HR VOL	1,000
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	47 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.8	59.0	57.2	51.1	60.4
MEDIUM TRUCKS	55.0	53.5	47.1	45.6	54.3
HEAVY TRUCKS	56.8	55.4	46.3	47.6	56.1
VEHICULAR NOISE	63.0	61.3	57.9	53.5	62.4

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	26	55	119	188
DISTANCE TO CNEL (FT)	30	66	141	224

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: JOSHUA DR.
LOCATION: E/O SAGE AVE.

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	13,000	PK HR VOL	1,300
SPEED	45 MPH		
PK HR	10 %		
DIST CTL	100 FT		
DIST N/F	47 FT (M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT	MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT	HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT		
HTH OBS	5 FT		

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	62.0	60.1	58.3	52.3	61.5
MEDIUM TRUCKS	56.1	54.6	48.3	46.7	55.4
HEAVY TRUCKS	57.9	56.5	47.5	48.7	57.2
VEHICULAR NOISE	64.2	62.4	59.0	54.6	63.6

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	30	66	142	224
DISTANCE TO CNEL (FT)	36	78	168	267

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: CAM DEL CIELO
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	13,000		PK HR VOL	1,300
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.6	58.7	56.9	50.8	60.1
MEDIUM TRUCKS	54.9	53.4	47.0	45.5	54.2
HEAVY TRUCKS	57.2	55.7	46.7	48.0	56.4
VEHICULAR NOISE	62.9	61.2	57.7	53.4	62.3

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	25	55	117	186
DISTANCE TO CNEL (FT)	30	65	139	221

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT: YUCCA VALLEY NOISE STUDY
ROADWAY: CAM DEL CIELO
LOCATION: S/O HWY. 62

JN: 636-94-002
DATE: 11-Aug-95
BY: B. LAWSON

ADT	14,000		PK HR VOL	1,400
SPEED	40 MPH			
PK HR	10 %			
DIST CTL	100 FT			
DIST N/F	47 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE	97.3
DIST WALL	100 FT		MED TRUCK SLE DIST	97.2
DIST W/OB	0 FT		HVY TRUCK SLE DIST	97.2
HTH WALL	0.0 FT			
HTH OBS	5 FT			

ROADWAY VIEW:

LF ANGLE	-90 DGR
RT ANGLE	90 DGR
DF ANGLE	180 DGR

SITE CONDITIONS: (HARD SITE=10, SOFT SITE=15)

AUTOMOBILE	15
MED TRUCKS	15
HVY TRUCKS	15
BARRIER	0 (0=WALL,1=BERM)

ELEVATIONS:

PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9700
MEDIUM TRUCKS	0.848	0.049	0.103	0.0200
HEAVY TRUCKS	0.865	0.027	0.108	0.0100

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	60.9	59.0	57.2	51.1	60.4
MEDIUM TRUCKS	55.2	53.7	47.4	45.8	54.5
HEAVY TRUCKS	57.5	56.1	47.0	48.3	56.8
VEHICULAR NOISE	63.3	61.6	58.0	53.7	62.7

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	27	57	123	196
DISTANCE TO CNEL (FT)	32	68	146	232

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL)

PROJECT:	YUCCA VALLEY NOISE STUDY	JN:	636-94-002
ROADWAY:	HWY 62	DATE:	11-Aug-95
LOCATION:	W/O KICKAPOO TRAIL	BY:	B. LAWSON

ADT	50,000			PK HR VOL	5,000
SPEED	45 MPH				
PK HR	10 %				
DIST CTL	100 FT				
DIST N/F	77 FT	(M=76,P=52,S=36)	AUTO SLE DISTANCE		92.4
DIST WALL	100 FT		MED TRUCK SLE DIST		92.3
DIST W/OB	0 FT		HVY TRUCK SLE DIST		92.3
HTH WALL	0.0 FT				
HTH OBS	5 FT				

ROADWAY VIEW:

LF ANGLE	-90	DGR
RT ANGLE	90	DGR
DF ANGLE	180	DGR

SITE CONDITIONS:		(HARD SITE=10, SOFT SITE=15)	
AUTOMOBILE	15		
MED TRUCKS	15		
HVY TRUCKS	15		
BARRIER	0	(0=WALL,1=BERM)	

ELEVATIONS:			
PAD	0 FT	AUTOMOBILES =	0.00 FT
ROAD	0 FT	MEDIUM TRUCKS=	2.30 FT
		HEAVY TRUCKS =	8.01 FT
GRADE:	0 %	GRADE ADJUSTM	0.0 DB TO HEAVY TRUCKS

VEHICLE DISTRIBUTION:

	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.8880
MEDIUM TRUCKS	0.848	0.049	0.103	0.0720
HEAVY TRUCKS	0.865	0.027	0.108	0.0400

UNATTENUATED NOISE LEVELS:

	LEQ PK HR	LEQ DAY	LEQ EVE	LEQ NIGHT	CNEL
AUTOMOBILES	67.8	65.9	64.1	58.1	67.3
MEDIUM TRUCKS	67.9	66.4	60.0	58.5	67.2
HEAVY TRUCKS	70.1	68.7	59.7	60.9	69.4
VEHICULAR NOISE	73.5	71.9	66.5	64.1	72.8

DISTANCES TO CONTOUR LINES:

NOISE LEVEL:	70	65	60	57
DISTANCE TO LEQ DAY (FT)	124	268	577	915
DISTANCE TO CNEL (FT)	143	308	664	1052

APPENDIX E

FULL-SIZE NOISE CONTOUR MAPS

APPENDIX G

INITIAL STUDY
NOTICE OF PREPARATION
AND
RESPONSES TO NOTICE OF PREPARATION

1ST. DRAFT COMPREHENSIVE GENERAL PLAN
AND ENVIRONMENTAL IMPACT REPORT CIRCULATION

PREPARED FOR:

TOWN OF YUCCA VALLEY

PREPARED BY:

TOWN OF YUCCA VALLEY

AND

TERRA NOVA PLANNING AND RESEARCH, INC.

APRIL, 1994

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

Initial Study and Checklist

Title of Proposal: Town of Yucca Valley Comprehensive General Plan

Date Checklist Submitted: 1/30/94

Agency Requiring Checklist: Yucca Valley Community Development Department

Agency Address:

City/State/Zip: Yucca Valley, Ca. 92284

Agency Contact: Shane Stueckle Phone: 619-369-7207

DETERMINATION
(To be completed by the Lead Agency.)

On the basis of this initial evaluation:

a) I find that the proposed project *could not* have a significant effect on the environment, and

A NEGATIVE DECLARATION will be prepared ☐

b) I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the *mitigation* measures described on an attached sheet have been added to the project.

A NEGATIVE DECLARATION will be prepared ☐

c) I find the proposed project *may* have a significant effect on the environment, and

An ENVIRONMENTAL IMPACT REPORT is required ☒

Signature

Shane Stueckle
Print Name

Town of Yucca Valley
For

1/30/94
Date

Revised December 1990

Supplementary Document F

ENVIRONMENTAL CHECKLIST FORM

PROJECT LOCATION: Town of Yucca Valley (*City*) San Bernardino County (*County*)

PROJECT ADDRESS: 57090 29 Palms Highway
Yucca Valley, Ca. 92284

DESCRIPTION OF PROJECT: Comprehensive General Plan for the Town of Yucca Valley General Plan, replacing the current San Bernardino County General Plan. Planning effort covers 38± square miles results in a maximum of 20,500± dwelling units and generally a halving of buildout population and assooc-iated effect.

ENVIRONMENTAL IMPACTS:

(CEQA requires that an explanation of all "yes" and "maybe" answers be provided along with this checklist, including a discussion of ways to mitigate the significant effects identified. You may attach separate sheets with the explanations on them.)

	Yes	*Maybe*	*No*
I. EARTH. *Will the proposal result in:*			
a) Unstable earth conditions or in changes in geologic substructures?	☐	☐	☒
b) Disruptions, displacements, compaction or overcovering of the soil?	☐	☒	☐
c) Change in topography or ground surface relief features?	☐	☒	☐
d) The destruction, covering or modification of any unique geologic or physical features?	☐	☐	☒
e) Any increase in wind or water erosion of soils, either on or off the site?	☐	☒	☐
f) Changes in deposition or erosion of beachsands, or changes in siltation, deposition or erosion whichmay modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	☐	☒	☐
g) Exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	☐	☒	☐
II. AIR. *Will the proposal result in:*			
a) Substantial air emissions or deterioration of ambient air quality?	☐	☒	☐
b) The creation of objectionable odors?	☐	☐	☒
c) Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	☐	☐	☒
III. WATER. *Will the proposal result in:*			
a) Changes in currents, or the course of direction of water movements, in either marine or freshwaters?	☐	☐	☒

b) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	☒	☐	☐
c) Alterations to the course or flow of flood waters?	☐	☒	☐
d) Changes in the amount of surface water in any water body?	☐	☐	☒
e) Discharge into surface waters, or in any alteration of surface water quality, including, but not limited to, temperature, dissolved oxygen or turbidity?	☐	☐	☒
f) Alteration of the direction or rate of flow of ground waters?	☐	☐	☒
g) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	☒	☐	☐
h) Substantial reduction in the amount of water otherwise available for public water supplies?	☐	☐	☒
i) Exposure of people or property to water related hazards such as flooding or tidal waves?	☒	☐	☐
IV. PLANT LIFE. *Will the proposal result in:*			
a) Change in the diversity of species, or number or any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	☐	☒	☐
b) Reduction of the numbers of any unique, rare, or endangered species of plants?	☐	☒	☐
c) Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	☐	☒	☐
d) Reduction in acreage of any agricultural crop?	☐	☐	☒
V. ANIMAL LIFE. *Will the proposal result in:*			
a) Change in the diversity of species, or numbers of any species of animals (birds; land animals, including reptiles; fish and shellfish, benthic organisms or insects)?	☐	☒	☐
b) Reduction of the numbers of any unique, rare, or endangered species or animals?	☐	☒	☐
c) Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	☐	☒	☐
d) Deterioration to existing fish or wildlife habitat?	☐	☒	☐
VI. NOISE. *Will the proposal result in:*			
a) Increases in existing noise levels?	☒	☐	☐
b) Exposure of people to severe noise levels?	☐	☒	☐
VII. LIGHT and GLARE. *Will the proposal:*			
a) Produce new light or glare?	☐	☒	☐
VIII. LAND USE. *Will the proposal result in:*			
a) Substantial alteration of the present or planned land use of an area?	☒	☐	☐
IX. NATURAL RESOURCES. *Will the proposal result in:*			
a) Increase in the rate of use of any natural resources?	☒	☐	☐
X. RISK OF UPSET. *Will the proposal involve:*			
a) A risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	☐	☐	☒

XVIII. AESTHETICS. *Will the proposal result in:*			
a) The obstruction of any scenic vista or view open to the public?	☐	☒	☐
b) The creation of an aesthetically offensive site open to public view?	☐	☒	☐
XIX. RECREATION. *Will the proposal result in:*			
a) Impact upon the quality or quantity of existing recreational opportunities?	☒	☐	☐
XX. CULTURAL RESOURCES. *Will the proposal:*			
a) Result in the alteration of or the destruction of a prehistoric or historic archaeological site?	☐	☒	☐
b) Result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	☐	☒	☐
c) Have the potential to cause a physical change which would affect unique ethnic cultural values?	☐	☒	☐
d) Restrict existing religious or sacred uses within the potential impact area?	☐	☐	☒
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.			
a) **Potential to degrade:** Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐
b) **Short-term:** Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively, brief, definitive period of time. Long-term impacts will endure well into the future.)	☐	☒	☐
c) **Cumulative:** Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect on the total of those impacts on the environment is significant.)	☒	☐	☐
d) **Substantial adverse:** Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐

XXII. DISCUSSION OF ENVIRONMENTAL EVALUATION.

(This section may be filled out by using narrative, or by using a form, such as the example given in the CEQA Guidelines.*)*

See Attached Addendum to Environmental Checklist Form

XXIII. DISCUSSION OF LAND USE IMPACTS.

(An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls.)

See Attached Addendum to Environmental Checklist Form

b) Possible interference with an emergency response plan or an emergency evacuation plan?	☐	☐	☒
XI. POPULATION. *Will the proposal:*			
a) Alter the location, distribution, density or growth rate of the human population of an area?	☒	☐	☐
XII. HOUSING. *Will the proposal:*			
a) Affect existing housing, or create a demand for additional housing?	☐	☒	☐
XIII. TRANSPORTATION/CIRCULATION. *Will the proposal result in:*			
a) Generation of substantial additional vehicular movement?	☒	☐	☐
b) Effects on existing parking facilities, or demand for new parking?	☐	☒	☐
c) Substantial impact upon existing transportation systems?	☒	☐	☐
d) Alterations to present patterns of circulation or movement of people and/or goods?	☒	☐	☐
e) Alterations to waterborne, rail or air traffic?	☐	☒	☐
f) Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?	☐	☒	☐
XIV. PUBLIC SERVICES. *Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:*			
a) Fire protection?	☒	☐	☐
b) Police protection?	☒	☐	☐
c) Schools?	☒	☐	☐
d) Parks or other recreational facilities?	☒	☐	☐
e) Maintenance of public facilities, including roads?	☒	☐	☐
f) Other governmental services?	☒	☐	☐
XV. ENERGY. *Will the proposal result in:*			
a) Use of substantial amounts of fuel or energy?	☒	☐	☐
b) Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?	☒	☐	☐
XVI. UTILITIES and SERVICE SYSTEMS. *Will the proposal result in a need for new systems, or substantial alterations to the following utilities:*			
a) Power or natural gas?	☐	☒	☐
b) Communications systems?	☐	☒	☐
c) Water?	☒	☐	☐
d) Sewer or septic tanks?	☒	☐	☐
e) Storm water drainage?	☒	☐	☐
f) Solid waste and disposal?	☒	☐	☐
XVII. HUMAN HEALTH. *Will the proposal result in:*			
a) Creation of any health hazard or potential health hazard (excluding mental health)?	☐	☐	☒
b) Exposure of people to potential health hazards?	☐	☐	☒

XXIV. DETERMINATION

(To be completed by the Lead Agency.)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED. ☐

I find the proposed project May have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☒

January 30, 1994
Date

Signature

For

TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN

ADDENDUM
TO
ENVIRONMENTAL CHECKLIST FORM

I.b. While the Project will not in and of itself affect soils, development facilitated may have the potential of inducing disruption, displacements compaction or overcovering of soils. These issues should be further addressed.

I.c. While the Project will not in and of itself affect topography or ground surface relief, development facilitated may have the potential of inducing mass grading, alterations to topographic features on some sites, and may otherwise affect surface relief. These issues should be further addressed.

I.e. While the General Plan will not directly increase soils erosion, facilitated development has the potential to have this effect and should be further addressed.

I.f. Continued development in the Town facilitated by the Plan has the potential of increasing siltation and/or deposition and should be further addressed.

I.g. The Town and region are subject to significant seismic and other geologic hazards, which should be further addressed through technical study and development of mitigation measures.

II.a. Development facilitated by the new General Plan may have an adverse impact on existing air quality through disruption of soils, and the generation of pollutants from stationary and mobile sources. These should be evaluated and measures to mitigate developed.

III.b. Future development will increase the amount of impervious surfaces and increase stormwater runoff. Local drainage patterns may need to be modified and detention facilities constructed to control runoff. Associated issues should be further addressed.

III.c. See response to III.b.

III.g. While increased growth inducement is not expected from implementation of the proposed General Plan, continued growth will place further demands on limited ground water supplies. The impacts of Plan buildout and the availability of additional resources should be further examined.

III.i. The development of stormwater detention facilities marginally increases the threat of inundation, especially in the unlikely event of concurrent seismic activity. Development within or adjacent to flood plains and other natural drainage areas and courses should also be addressed, as should be development of stormwater detention and/or recharge basins and their potential to cause inundation.

IV.a. As buildout of the General Plan occurs, the potential loss of certain plant species within the community is possible. While the proposed plan greatly reduces development impacts over those expected from current County designations, potential impacts should nonetheless be further examined and measures to minimize impacts developed.

IV.b. The rural character of the community and maintenance of same with General Plan buildout limit these impacts. Nonetheless, even with the limited possibility of occurrence of unique, rare, or endangered plants, additional study should be given to this issue.

IV.c. Development always brings the threat of exotic and other non-native plant species in the community, and development can result in the development of barriers to the natural revegetation of native plant communities. This issue should be addressed through further analysis.

V.a. As buildout of the General Plan occurs, the potential loss of certain animal species within the community is possible. While the proposed plan greatly reduces development impacts over those expected from current County designations, potential impact should nonetheless be further examined and measures to minimize impacts developed.

V.b. The rural character of the community and maintenance of same with General Plan buildout limit, but do not appear to eliminate, these impacts. Nonetheless, the likelihood of occurrence of unique,rare, or endangered animals, especially the federally listed desert tortoise and a wide variety of bird species, additional study should be given to this issue.

V.c. As discussed in IV.c., development always brings the threat of exotic and other non-native animal species in the community, and development can result in the development of barriers to the natural repopulation of native animal species and communities. This issue should be addressed through further analysis.

V.d. Continued development will remove and/or further fragment wildlife habitat. While the greatly reduced development densities and proposed policies and programs will significantly reduce potential impacts, these should still be assessed.

VI.a. Continued development in the community and the region is expected to result in proportionately increases in vehicular traffic, particularly along State Highway 62 and major arterials, the primary noise source in the community. Buildout traffic and resulting noise environment should be assessed further.

VI.b. A limited potential exists for people to be exposed to occasionally severe noise levels associated with industrial development, service commercial, aircraft noise and other sources. While the potential appears limited, this issue should be further examined.

VII.a. Expanded commercial and possibly other development, including lighting for ball fields and other recreation areas, can be expected to create additional glare. While this impact is not expected to be significant, it should be further addressed.

VIII.a. The proposed general Plan will result in a significant reduction in the intensities of various land uses in the community. The net effect will be a reduction in impacts in a broad number of areas over those that would result from buildout of the County General Plan.

IX.a. Buildout will increase the overall use of natural resources. However, policies and programs of the Plan are designed to reduce per capita demand and use of these resources. Nonetheless, the impacts of Plan buildout should be assessed.

XI.a. The proposed General Plan will result in an overall lowering of the residential densities and focus future medium and high density development closer to retail and service commercial areas. The growth rate is not expected to be affected by implementation of the General Plan.

XII.a. The distribution of future housing will be largely consistent with current land use patterns, with lower overall densities and provision of affordable and senior housing planned in closer proximity to commercial services.

XIII.a. The project constitutes a halving of the total number of dwelling units at buildout, compared to implementation of the County General Plan. Therefore, future Town-generated traffic is expected to be greatly reduced by this Plan. However, the buildout of the proposed General Plan will result in potentially significant traffic impacts which must be assessed and mitigated.

XIII.c. See XIII.a. above. Impacts compared to current land use designations will be substantially less. Inherent problems in circulation system still need to be analysed and addressed.

XIII.d. Solutions to congestion on State Highway 62 are proposed by upgrading several arterials parallel to highway, relieving some intra-Town traffic from this roadway.

XIII.e. Plan encourages greater use of the Yucca Valley Airport, which has substantial unused capacity.

XIII.f. The inevitable increase in traffic volumes has the potential to increase the incidence of auto accidents, as well as accidents involving bicyclists and pedestrians. Potential impacts and possible mitigation measures should be addressed.

XIV.a,b,c,d,e,f,: The buildout of the General Plan will require an incremental expansion of a full range of public services, staffing and facilities. Increased traffic will require increased road and other infrastructure maintenance. There should be an evaluation of the quantifiable impacts associated with General Plan buildout. The halving of the ultimate number of dwelling units and residents, and the strength of the commercial sector of the economy should prove a good long-term position for the Town. Nonetheless, the potential impacts to the various governmental services provided by the Town should be assessed.

XV.a. Continued population and visitor and commercial growth will increase the rate of use of fuels and energy. The relationship between growth and energy consumption and the possible means by which these resources may be conserved should be assessed.

XV.b. See XV.a. above. New sources of energy are currently being developed in the region, including wind energy, solar power, and the use of natural gas for mass transit. These and similar issues should be discussed in the context of continued growth.

XVI.a. Natural gas service is not provided to all portions of the Town, some areas relying upon propane. The demand for and availability of natural gas to service continued growth should also further addressed.

XVI.b. Telecommunications are an essential part of the local infrastructure. As such, it is essential that continued service and its timely extension is made. The availability of this service should be assessed.

XVI.c. Water resource issues are major factors in the continued growth in Yucca Valley. Current regulation limits the number of hookups available each year. Current ground water resources, the long-term availability of additional resources and the potential for conservation should all be thoroughly addressed.

XVI.d. There is no central sewage system serving the Town. All development is serviced by on-lot septic tanks. The proposed General Plan greatly reduces the ultimate number of residences that will utilize either septic or centralized waste water treatment systems.

XVI.e. The Town is affected by several major drainages that originate in the surrounding hills and mountains and converge in the Yucca Creek Wash. Significant local drainage is also generated during high intensity thunder showers. Issues of flooding protection and stormwater management should be assessed and mitigation measures developed.

XVI.f. Increased residential and commercial development will result in the increased generation of solid waste. The limited availability of landfill capacity and the need to encourage recycling and use of recycled materials is a continuing challenge. This issue should be further assessed.

XVIII.a. Development, especially large scale commercial and industrial development have the potential to significantly impact scenic resources of the community. The high value of scenic and open space resources in the community require that a thoughtful assessment of this subject be given.

XVIII.b. See XVIII.a.

XIX.a. Continued population growth and the increased number of children in new household formations indicate a growing need for additional recreation facilities. The ability of the community to provide adequate open space and recreation facilities for a growing population needs to be further assessed.

XX.a,b,c,d. Although the General Plan land use plan has been developed to avoid direct impacts to sensitive cultural resources, an increasing population and the tendency to intrude into sensitive areas poses a potentially significant indirect threat to these resources. These issues need further attention.

XXI.a. The proposed General Plan constitutes a significant reduction in the intensity of development currently permitted under the San Bernardino County General Plan. Nonetheless, based upon the responses set forth in this checklist and staff review, the Project does have the potential to generally degrade the environment and adversely impact sensitive biological and cultural resources.

XXI.b. There may be a risk to the long-term environmental goals of the community by the less than thoughtful implementation of the general Plan. The short-term benefits vs. the long-term impacts of the Plan should be carefully assessed.

XXI.c. The buildout of the General Plan is an on-going cumulative impact on the natural and portions of the built environment. Whether these impacts are significant will depend upon the sensitivity with which the Plan is implemented.

XXI.d. While the proposed Yucca Valley General Plan takes a major step toward correcting overly intense planning and urbanization represented by buildout of the County General Plan, any development of the scope addressed on a community-wide level has the potential to adversely affect the residents and others who live, work or visit in the community.

Notice of Preparation

To: _____
(Agency)

_____
(Address)

_____

Subject: Notice of Preparation of a Draft Environmental Impact Report

Lead Agency:

Agency Name: Town of Yucca Valley

Street Address: 57090 29 Palms Highway

City/State/Zip: Yucca Valley, Ca. 92284

Contact: Shane Stueckle

Consulting Firm (if applicable):

Firm Name: Terra Nova Planning & Research Inc.

Street Address: 400 S. Farrell, Suite B-205

City/State/Zip: Palm Springs, Ca. 92262

Contact: John D. Criste

Town of Yucca Valley will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study (☒ is ☐ is not) attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but *not later than 30 days* after receipt of this notice.

Please send your response to Shane Stueckle at the address shown above. We will need the name for a contact person in your agency.

Project Title: Comprehensive General Plan for the Town of Yucca Valley

Project Location: Town of Yucca Valley (City (nearest)) San Bernardino (County)

Project Description: (brief)

PLEASE SEE ATTACHMENTS

Date: March 1, 1994

Signature: _____

Title: Town Planner

Telephone: 619-369-6575

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Revised October 1989

Notice of Completion

See NOTE below

SCH # _____

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Town of Yucca Valley Comprehensive General Plan

Lead Agency: Town of Yucca Valley — Contact Person: Shane Stueckle

Street Address: 57090 29 Palms Highway — Phone: (619) 369-6575

City: Yucca Valley, CA. Zip: 92284 — County: San Bernardino

Project Location

County: San Bernardino — City/Nearest Community: Town of Yucca Valley

Cross Streets: State Hwys. 62 & 247 — Zip Code: 92284 — Total Acres: 24,390 ±

Assessor's Parcel No. N/A — Section: See NOP — Twp. _____ Range: _____ Base: _____

Within 2 Miles: State Hwy #: 62 & 247 — Waterways: N/A

Airports: Yucca Valley — Railways: N/A — Schools: Morongo Basin Unified

Document Type

CEQA: ☒ NOP ☐ Supplement/Subsequent ☐ Early Cons ☐ Neg Dec ☐ Draft EIR ☐ EIR (Prior SCH No.)_____ ☐ Other _____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other_____

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan

☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan

☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other_____

Development Type

☐ Residential: Units_____ Acres_____

☐ Office: Sq.ft._____ Acres_____ Employees_____

☐ Commercial: Sq.ft._____ Acres987.5 Employees_____

☐ Industrial: Sq.ft._____ Acres 716 Employees_____

☐ Educational _____

☐ Recreational _____

☐ Water Facilities: Type_____ MGD_____

☐ Transportation: Type_____

☐ Mining: Mineral_____

☐ Power: Type_____ Watts_____

☐ Waste Treatment: Type_____

☐ Hazardous Waste: Type_____

☐ Other:_____

Project Issues Discussed in Document

☒ Aesthetic/Visual ☐ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☐ Coastal Zone ☒ Drainage/Absorption ☒ Economic/Jobs ☒ Fiscal

☒ Flood Plain/Flooding ☒ Forest Land/Fire Hazard ☒ Geologic/Seismic ☒ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities ☒ Recreation/Parks

☒ Schools/Universities ☒ Septic Systems ☐ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☒ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation ☒ Vegetation

☒ Water Quality ☒ Water Supply/Groundwater ☐ Wetland/Riparian ☒ Wildlife ☒ Growth Inducing ☒ Landuse ☒ Cumulative Effects ☐ Other _____

Present Land Use/Zoning/General Plan Use See Attached NOP

Project Description See Attached NOP

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document) please fill it in.

Revised October 1989

Reviewing Agencies Checklist

Supplementary Document N

KEY
S = Document sent by lead agency
X = Document sent by SCH
✓ = Suggested distribution

____Resources Agency
____Boating & Waterways
____Coastal Commission
____Coastal Conservancy
____Colorado River Board
____Conservation
____Fish & Game
____Forestry
____Office of Historic Preservation
____Parks & Recreation
____Reclamation
____S.F. Bay Conservation & Development Commission
____Water Resources (DWR)

Business, Transportation & Housing
____Aeronautics
____California Highway Patrol
____CALTRANS District #_____
____Department of Transportation Planning (headquarters)
____Housing & Community Development

Food & Agriculture

Health & Welfare
____Health Services _____

State & Consumer Services
____General Services
____OLA (Schools)

Cal-EPA
____Air Resources Board
____APCD/AQMD
____California Waste Management Board
____SWRCB: Clean Water Grants
____SWRCB: Delta Unit
____SWRCB: Water Quality
____SWRCB: Water Rights
____Regional WQCB #_____ (_____)

Youth & Adult Corrections
____Corrections

Independent Commissions & Offices
____Energy Commission
____Native American Heritage Commission
____Public Utilities Commission
____Santa Monica Mountains Conservancy
____State Lands Commission
____Tahoe Regional Planning Agency

____Other _____

Public Review Period (to be filled in by lead agency)

Starting Date March 1, 1994 — Ending Date April 1, 1994

Signature _____ — Date February 28, 1994

Lead Agency (Complete if applicable):

Consulting Firm: Terra Nova Planning & Research

Address: 400 S Farrell Drive

City/State/Zip: Palm Springs, CA 92262

Contact: Mr. John Criste

Phone: (619) 320-9040

Applicant: Town of Yucca Valley

Address: 57090 29 Palms Hwy

City/State/Zip: Yucca Valley, CA 92284

Phone: (619) 369-6575

For SCH Use Only:

Date Received at SCH _____

Date Review Starts _____

Date to Agencies _____

Date to SCH _____

Clearance Date _____

Notes:

Revised October 1989

NOTICE OF PREPARATION

OF AN

ENVIRONMENTAL IMPACT REPORT

FOR THE

COMPREHENSIVE GENERAL PLAN

FOR THE

TOWN OF YUCCA VALLEY

SAN BERNARDINO COUNTY

Introduction

The newly incorporated Town of Yucca Valley, San Bernardino County, California is in the process of drafting its first Comprehensive General Plan. As an essential part of this effort, the Town and its consultant have been collecting a broad range of data and information of the physical and environmental conditions within the Town and a broader study area. A series of special studies have been prepared covering such subjects as traffic and circulation, geotechnical conditions, noise, as well as the occurrence of biological and cultural resources in the community and surrounding areas. With the nature of the General Plan project and the broad scope of the project, as well as the need for subsequent environmental analysis for specific projects within the community, a Program EIR is currently envisioned. The following provides a description of the study area and the areas of environmental concern that will be addressed in the EIR.

Project Description

The Town of Yucca Valley incorporated an area encompassing approximately 38 square miles. The incorporated boundaries and the Town's Sphere-of-Influence are co-terminus. Over the past two years the Town government and a broadly based General Plan Advisory Committee have held extensive public meetings to discuss overall and specific goals for the community, as well as specific policies and programs for inclusion in the Comprehensive General Plan. A detailed assessment of the San Bernardino County Land Use/Zoning designations was conducted and a new set of land use designations and their assignments have been considered. In addition to land use, additions to the circulation system have also been considered to relieve volumes on State Highways 62 and 247, which serve as the backbones of the Town's transportation system. The Comprehensive General Plan has been conceived as twenty six (26) elements encompassed in five major chapter. The Plan includes purpose and intent statements, extensive background and technical information, and goals, objectives, policies and programs.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Residential (R-HR) Hillside Reserve Residential	0-1 du/40 ac.	This designation provides limited single-family residential development within hillside areas. It serves as an intermediate land use designation between Open Space lands constrained by topography, etc., and more intense residential uses. It precludes premature or inappropriate expansion of urban development. Development in this designation is restricted by topography/ slopes and drainage.
(R-E) Residential Estate	0-1 du/5 ac.	This designation reflects the extensive government lotting in five acre subdivisions, as well as lands constrained by topography and surrounding patterns of subdivided land. Lands so designated are suitable and desirable as single family estates.
(R-R) Rural Residential	Varies	This designation provides for single-family residential development on a range of lot sizes, including 1, 2.5, 10 and 20 acres. This land use provides intermediate steps in development between more typical urban residential densities and "reserve" densities, providing lots sufficient for rural lifestyle maintenance of animals and country living.
(R-L) Low Density Residential	0-2 du/ac	This low density designation provides for single -family residential development on individual lots of about one-half acre. These lands serve to buffer standard single-family subdivision development from rural residential uses, and may be appropriate in areas with some site constraints.
(R-L-10M) Low Density Residential	3.5 du/acre	This designation provides for low density subdivisions with minimum lot sizes of 10,000 sq. feet. This designation serves to transition between lower and more moderate (medium) residential densities.This is the most common type of residential development in the Town.
(R-M) Medium Density Residential	0-5 du/ ac	Appropriate residential development under this designation is limited to single family. Residential uses may also be developed as Planned Residential Developments (PRD's) with shared recreation and other amenities.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Residential (con't)		
(R-MF) High Density Residential	0-10 du/ac	This designation allows for the greatest diversity of residential development, ranging from single family to apartments. This designation is most suitable for planned communities and affordable and senior housing, where smaller units and higher densities may be appropriate. Duplex and multiplex development is the most common and provides for PRD's comprised of a varying range of residential types, including apartments and condominiums. Mobile home parks or subdivisions with PRD type development are also allowed with the approval of a Conditional Use Permit (CUP).
(R-PD) Planned Development Residential	0-14 du/ac	The purpose of this designation is to promote planned residential development and amenities beyond those expected under conventional development, to achieve greater flexibility in design, varying ranges in densities, and encourage well planned neighborhoods through creative and imaginative planning, to provide for an appropriate mix of housing types, which are unique in their physical characteristics to warrant special methods of residential development. A full range of residential development is permitted, with apartments and condominiums being typical.
Commercial		
(C-MU) Mixed Use Commercial	Varies	This designation is intended for a mix of land uses, including commercial, professional office, recreational and high density residential uses in and near the downtown area. Its purpose is to allow highly integrated uses with residential development that can rely on pedestrian access to commercial services and employment centers , and to create new consumer retail markets in the downtown area. Senior housing and convalescent homes may also be appropriate in these areas. Development in this designation shall require a Specific Plan.
(C-S) Service Commercial		This designation allows for the development of small scale commercial centers that provide a limited range of convenience commercial services, smaller grocery and convenience stores, service stations, and other limited retail operations. Developments typical range between 1-2 acres with up to 15,000 square feet of gross leasable floor area.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Commercial (con't)		
(C-N) Neighborhood Commercial		This designation provides for neighborhood scale shopping centers conveniently located near residential areas. These development areas anchored by supermarkets and super drugstores. A wide range of other uses, including banking, barbers/beauty salons, dry cleaners, restaurants and other related activities are typically found in these planned centers. Typical sizes are 8 to 10 acres providing approximately 80,000 to 100,000 square feet of gross leasable floor area.
(C-G) General Commercial		These lands includes a wide variety of smaller commercial centers, specialty retail shops, a broad range of clothing and apparel, jewelry stores and a variety of personal service businesses. Smaller, moderately priced department stores may also be appropriate under this designation. Development may range from free-standing retail buildings and restaurants, to planned commercial centers. Typical sizes range between 2 to 8 acres with gross leasable square footage varying with uses. Hotels and Motels may also be appropriate on these lands.
(C-C) Community Commercial		This designation provides for larger, community scale shopping centers and malls, which may be anchored by several department stores, a variety of retail outlets, and restaurant and entertainment uses. Hotels and motels may also be appropriate on these lands. Typical sizes range between 100 - 200,000 square feet or more of gross leasable floor area. This type of development requires approval of a Specific Plan. While smaller than regional facilities, the community commercial center will serve the entire community, as well as the surrounding market area.
(C-O) Office Commercial		This designation is limited to a variety of professional office development, including administrative and corporate, law, medical, financial and insurance, real estate, and government offices. It may also be combined with Neighborhood, General and Community scale commercial uses. These less intense uses may also be compatible with medium and higher density residential development.

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Commercial (con't)		
(C-RR) Resort/Recreation Commercial		This designation allows for the development of hotel and motels, and destination resort development with limited commercial uses such as restaurants, lounges and small retail shops that directly support the primary use. In addition, recreational facilities may include golf courses, tennis courts, swimming pools and spas, theaters, miniature golf and batting cages. Recreational vehical (RV) parks, campgrounds and similar types of limited stay occupancy may also be appropriate.
(SP) Specific Plan Overlay		This designation is used in conjunction with other underlying designations. It requires the development of a Specific Plan of Land Use. Designation is applied as an overlay on the General Plan Land Use Map and can be added to any land use designations. It is also an integral part of the Mixed Use Commercial (C-MU) land use designation and is required as a means of processing community scale commercial development proposals. Specific Plans provide detailed design and analysis of large scale and/or complex mixed use projects indicating the distribution, location, and intensity of proposed land uses. It also examines the required level of public facilities and services and their availability, establishes economic viability of proposed development.
(I) Industrial		This designation provides for the development of any and all industrial uses operating entirely in enclosed buildings, and those requiring limited outdoor storage. Examples include clean manufacturing operations, warehousing and mini-warehouse storage, fabrication of cabinets and other wood products, and contractor's storage facilities. Preferred development includes master planned business and industrial parks with integrated access and internal circulation. This designation may also allow conditional development of more intense industrial uses with the potential to generate objectionable levels of noise, smoke, dust, glare, traffic vibration or other nuisance. Examples include the manufacturing of durable goods such as appliances, furniture, fabricated metal products, and light

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Commercial (con't)		
(I) Industrial (con't)		electrical and transportation equipment. Potential for greater dependence on outdoor storage. Proponents would be required to mitigate any adverse impacts to levels of insignificant, demonstrate conformance with all community environmental standards and compatibility with existing and planned land uses.
Public Services and Facilities		
(P/QP) Public/Quasi-Public		As noted herein and on the Land Use Map, this designation provides for the Civic Center, other Town and County offices, libraries, airport, schools, hospitals, parks, floodways, police and fire stations, utility substations, as well as other public administrative offices.
(AP) Airport		Yucca Valley Airport District
(CC)		Town Hall
(FS) Fire Station		Fire Station
(PS) Police Station		Police Station
(H) Hospital		Hospitals and similar in / out patient medical services. Also may be assigned to convalescent and skilled nursing facilities.
(S)		Provides for educational facilities such as day care, elementary, intermediate, high schools, special schools and technical schools.
(L)		Libraries
(U-SS)		Utility Substation - designates electric, gas, telephone, water and other similar facilities.
(FW)		Flood ways such as natural or man-made floodway/drainage channels.
Open Space (OS)		This designation is assigned to those lands which constitute a special, important or valuable natural resource, which warrant protection. The designations is primarily assigned to park lands, which carry a designation of (P). The Blue Skies Golf Course is also defined as open space. The

Town of Yucca Valley General Plan Land Use Designations

Land Use Designation	Density	Purpose of Land Use
Open Space (OS) (con't)		designation may also be used to define special resource areas or those that may pose threats or hazards to development. Lands important for their recreational, biological, or regional economic value are also candidates for inclus - ion in this land use designation. Examples of resource lands and hazards include liquefaction hazard areas, detention/retention basins, trails, estuaries and large habitat areas for biological resources.
(P)		Public Parks

Statistical Summary of Land Uses for the Town of Yucca Valley

Category	Density	Acres	% of Total Acreage
R-HR	0-1 du/40 acres	4,511	18%
R-E-5	0-1 du/5 acres	5,380	22%
R-R-10	0-1 du/10 acres	1,607	6.5%
R-R-2.5	0-1 du/acre	3,446	14%
R-R-1	0-1 du/1 acre	750	3%
R-L	0-2 du/ 1 acre	4,651.5	19%
R-L-10	0-3 du/acre	73	2.9%
R-M	0-5 du/acre	1,066	4%
R-MF	0-10 du/acre	461	2%
C-MU	Varies	329	1%
C-S	N/A	63	.25%
C-N	N/A	63	.25%
C-G	N/A	471	1.9%
C-C	N/A	21.5	.08%
C-O	N/A	26	.1%
C-RR	N/A	40	.02%
I	N/A	716	3%
P-QP	N/A	357	1%
O-S	N/A	358	1%
TOTAL		24,390	100%

TOWN OF YUCCA VALLEY GPAC PREFERRED ALTERNATIVE LAND USE BUILDOUT

Land Use	Total A	Dev. A	Vac. A.	Exist Units	Potential U	Buildout
R-HR	4511	489.5	4021.5	26	101	127
R-E-5	5380	1166	4214	691	843	1534
R-L	4651.5	2083.5	2568	2831	5136	7967
R-L-10	73	6	67	29	292	321
R-M	1066	368	698	1300	3490	4790
R-MF	461	330	131	1646	1310	2956
R-R-1	750	121.5	628.5	272	628	900
R-R-2.5	3446	1166.5	2279.5	877	912	1789
R-R-10	1607	102.5	1504.5	33	150	183
R-PD	0	0	0	0	0	0
SubTotal	21,945.5	5833.5	16,112	7705	12,862	20,567
C-MU	329	151.5	177.5	247	247	329
C-S	63	39	24	6	6	63
C-N	63	12	51	6	6	63
C-G	471	172.5	298	6	6	471
C-C	21.5	21.5	0	0	0	21.5
C-O	26	17.75	8.25	26	26	26
C-RR	40	0	40	0	0	40
I	716	261	455	0	0	716
P-QP	357	199.5	157.5	15	15	357
OS-P	358	0	358	0	0	358
Com Units				280		280
SubTotal	2444.5	874.75		1569.75		2444.5
Total	24,390	6708.24	17,681.75	7985	12,862	20,847

Project Location

The boundaries of the Town of Yucca Valley Comprehensive General Plan can generally be described as follows: on the east by La Contenta/Yucca Mesa Road; on the west by the ridgeline of the foothills separating Morongo Valley with the Town; on the south by the Joshua Tree National Monument; and on the north by Alters Hill and Buena Vista Drive. The Town of Yucca Valley can be more particularly described as including all or portions of the following sections:

TOWN OF YUCCA VALLEY
EXISTING COUNTY LAND USE BUILDOUT

Land Use	Total Acres	Devveloped Acres	Vacant Acres	Exist Units	Ac	Potential Units	Ac	Buildout Units	Ac
Residential									
RL	6179	1369	4810	412		12,025		12,437	
RS8M	244.5	197	47.5	694		169.5		863.5	
14.5MRM	60	0	60	0		150		150	
PD	35	0	35	0		490		490	
RL10	230	29	201	2		20		22	
RL20	25	0	25	0		1		1	
RL5	3684	760	2924	99		537		636	
RC	2426	318	2108	8		54		62	
RS1	1649.5	536	1113.5	683		1113.5		1769.5	
RS18M	2673.5	1094.5	1579	2017		3513		5560	
RS10M	4093	1205	2888	1895		11836		13,731	
3MRM	260	143	117	898		1696.5		2594.5	
4MRM	520	320.5	299.5	1196		3280.5		4476.5	
Total	22,179.5	5972	16,206.5	7934		34,936		42,870	
Non-Residential									
CG/SPC	622.5	275	347.5	19	243.5A		347.5A	19	591A
IC	1182	323	859	15	301A		859A	15	1160A
OS	24	15	9		15A		9A		24A
CO	88	40	48	2	38A		48A	2	86A
IN	157	60	97		35A		97A		132A
CS	16	10	6		10A		6A		16A
CN	75	13	62	15	6A		62A	15	67A
PQP	46	46	0		0A		0A		0A
Total	2210.5	784	1428.5	51	647.4A		1428.5A	51	2076A
Residential	22,179.5	5972	16,206.5	7934		34,936		42,870	
Non-Res.	2210.5	784	1428.5	51	647.4A		1428.5A	51	2076A
Total	24,390	6764	17,636	7985	647.5A	34,936	1428.5A	42,921	2076A

All of Sections 14, 22, 23, 24, 25, 26, 27,32, 33, 34, 35 & 36, and portions of 13, Township 1 North, Range 5 East; Sections 19, 20, 21, 29, 30, 31, 32 and portions of Sections 16, 17 and 18 of Township 1 North, Range 6 East; Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, and portions of Section 5 of Township 1 South, Range 5 East; Sections 5, 6, 7, 8, 17 and 18 of Township 1 South, Range 6 East of the San Bernardino Baseline and Meridian. Also see attached Exhibit A.

Environmental Setting
The following briefly describes the Yucca Valley General Plan area and the surrounding environment. It also identifies the current state of development and the existing land use designations and acreage assignments under the San Bernardino County General Plan. Environmental resources, which may be adversely affected by the proposed development and environmental hazards which currently or may in the future impact the community are also briefly discussed.

Current Land Use
The current land use pattern in the Town of Yucca Valley can be best characterized as a rural residential community with generally low densities, bisected by a well traveled state highway that also serves as the primary commercial corridor for the Town. The most intense land uses occur along State Highway 62 and generally progressively decrease further north and south of this corridor.

Current residential development is predominantly low density detached single family on larger lots within large lot subdivisions, including government lots of five acres and larger holdings of up to 40 acres. Higher density residential development occurs primarily in multi-family condominium and apartment developments with total units ranging from four to 20 units each, making even these types of development more consistent with the rural residential character of the Town.

Commercial development is concentrated along State Highway 62 and ranges from free standing restaurants and general merchandise outlets, through smaller strip-type malls, to larger community scale shopping centers anchored by large chain outlets. In between, the Town is well serviced by neighborhood shopping centers and a wide range of general commercial and professional services. Newer commercial development has occurred in the central and eastern portions of the Town, where larger blocks of vacant and and limited topographic constraints have allowed larger scale development to occur.

Industrial development is currently limited to a few areas and types. These are largely focused on light industrial uses serving the local market. However, there are important industrial lands adjacent to the Yucca Valley Airport, where major warehousing and storage facilities are located, as well at the northern Town-limits northwest of the Highway 247 and Buena Vista intersection. Other important industrial lands are located in Section 32 in the eastern portion of the incorporated limits.

Surrounding Land Use

The communities of Morongo Valley and Joshua Tree are located immediately west and east of the Town, respectively. Both of these communities are primarily residential, with very limited commercial or other types of development. Immediately east of Town is the Institute of Mental Physics, which is located on a large holding. To the immediate south are the federally managed lands of the Joshua Tree National Monument and mountainous terrain to the south west. North of the Town limits are large lots residential subdivisions with substantial subdivided land developed with scattered homes, and including the community of Yucca Mesa.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Land Use Compatibility

Land use compatibility is an essential part of the planning effort to create a new General Plan for the Town. The General Plan elements, especially the Land Use Element, have been developed to reflect basic goals and policies for a low density, rural residentially oriented community, with distinctive high desert character preserved and enhanced. This has meant reduction in half of the maximum possible number of residences permitted under the County General Plan. Patterns of low density and open space preservation have been assigned to lands adjacent to the National Monument and other sensitive open space lands. Intra-Town and especially lands on the Town perimeter are consistent with residential densities within an surrounding the community. The pattern of land uses within the community are designed to complement existing patterns, while enhancing the functional and aesthetic relationships of future land uses and development.

Hydrology

Several major drainages pass through the community, including Covington, Water Canyon and Yucca Creek Washes. Yucca Creek Wash provides backbone drainage through the community, roughly paralleling the Town's geographic and roadway layout. Areas of 100-year flooding are largely limited to the confluence of major drainages, especially along Yucca Creek. A master drainage plan for the community is currently underway, under the supervision of the San Bernardino County Flood Control District.

Air Quality

In the Yucca Valley region, the responsibility for establishing criteria by which air quality is measured rests with the Mojave Desert Air Quality Management District (MDAQMD).

Compared to other areas of Southern California, the Town of Yucca Valley has generally good air quality. In the past few decades noticeable deterioration of air quality has occurred due to increased development and population growth, traffic, construction activity and various site disturbances. It is apparent that although air pollution is emitted from various sources in the Morongo Basin, the most evident degradation of air quality may be attributed mainly to sources outside of the area, including the Los Angeles County and San Bernardino/Riverside air basins.

Regionally representative air quality measurements, especially for ozone, are taken at the Twentynine Palms Monitoring Site. The Yucca Valley area has exceeded the State standard for Ozone (.09 ppm/hr.) 164 days, and has exceeded the federal standard (.12 ppm/hr.) 10 days from 1989 to 1992. For PM_{10} measurements at the Twentynine Palms Monitoring Site have exceeded the State standard ($50\mu g/m^3$) twenty-seven times, and the federal standard ($150\mu g/m^3$) two times from 1989 to 1992.

Of all pollutants, Ozone and PM_{10} are the most prevalent. Other pollutants are more difficult to infer and are not believed to constitute significant threats to public health. Present air quality in the Town can generally be expected to be equal or superior to that of all but one of the other communities in the MDAQMD region, with the possible exception of occasionally high amounts of ozone and suspended particulates which are generally transported from other areas of the region.

Water Resources
Domestic water resources for the Town of Yucca Valley are provided by the Hi-Desert Water District (HDWD) which utilize approximately sixteen (16) wells to extract groundwater from the Warren Valley Groundwater Basin. Water storage facilities are provided by sixteen (16) above-ground welded steel reservoirs with a total capacity of 12.41 million gallons.

Depths to groundwater on the Warren Valley Groundwater Basin vary, with approximately 45,000-59,000 acre feet estimated to currently be in storage. The current per capita water usage excluding non-residential uses is approximately 103 gallon per day compared to the statewide average of 140 gallons per day. Some groundwater recharge comes from natural sources such as precipitation and infiltration of runoff from the surrounding hills and mountains. Additional sources of groundwater recharge will include the imminent deliver of State Water Project to the community in 1994. Groundwater quality is generally good, with one inactive well have unacceptable levels of nitrates.

Biological Resources
The Morongo Basin region is home to a wide variety of plants and animals that are well adapted to the high desert environment. Of special concern are the Parish's Daisy (proposed for federal listing) and the Desert Tortoise (federally listed "Threatened"). The area is dominated by the Joshua Tree woodland habitat, which here is typically associated with Mojave yucca, California juniper, boxthorn, joint fir, creosote bush and other common shrubs. Mojavean pinyon-juniper woodland scrub, Blackbush scrub and other plant communities also occur in the area.

These varying habitats support a wide variety of reptiles, birds and small to medium sized mammals. In addition to cited sensitive species, the area supports the desert iguana, zebra tailed lizard, red diamond rattlesnake, Cooper's and Sharp-shinned hawks, Golden eagle, Western Yellow-billed cuckoo, and Townsend's Big-Eared and Spotted bat s. Portions of Joshua Tree National Monument are being considered in the Draft Recovery Plan for the Desert Tortoise.

Noise
The predominant noise source in the Town of Yucca Valley and the General Plan Study Area is vehicular traffic. In general, the existing noise environment in the Town and Study Area is typical of a rural community with a limited number of heavily traveled roadways. The major sources of vehicular noise are local and through traffic traveling on the two Highways 62 and 247, major arterials, including Yucca Trail, Onaga Trail, and Joshua Lane.

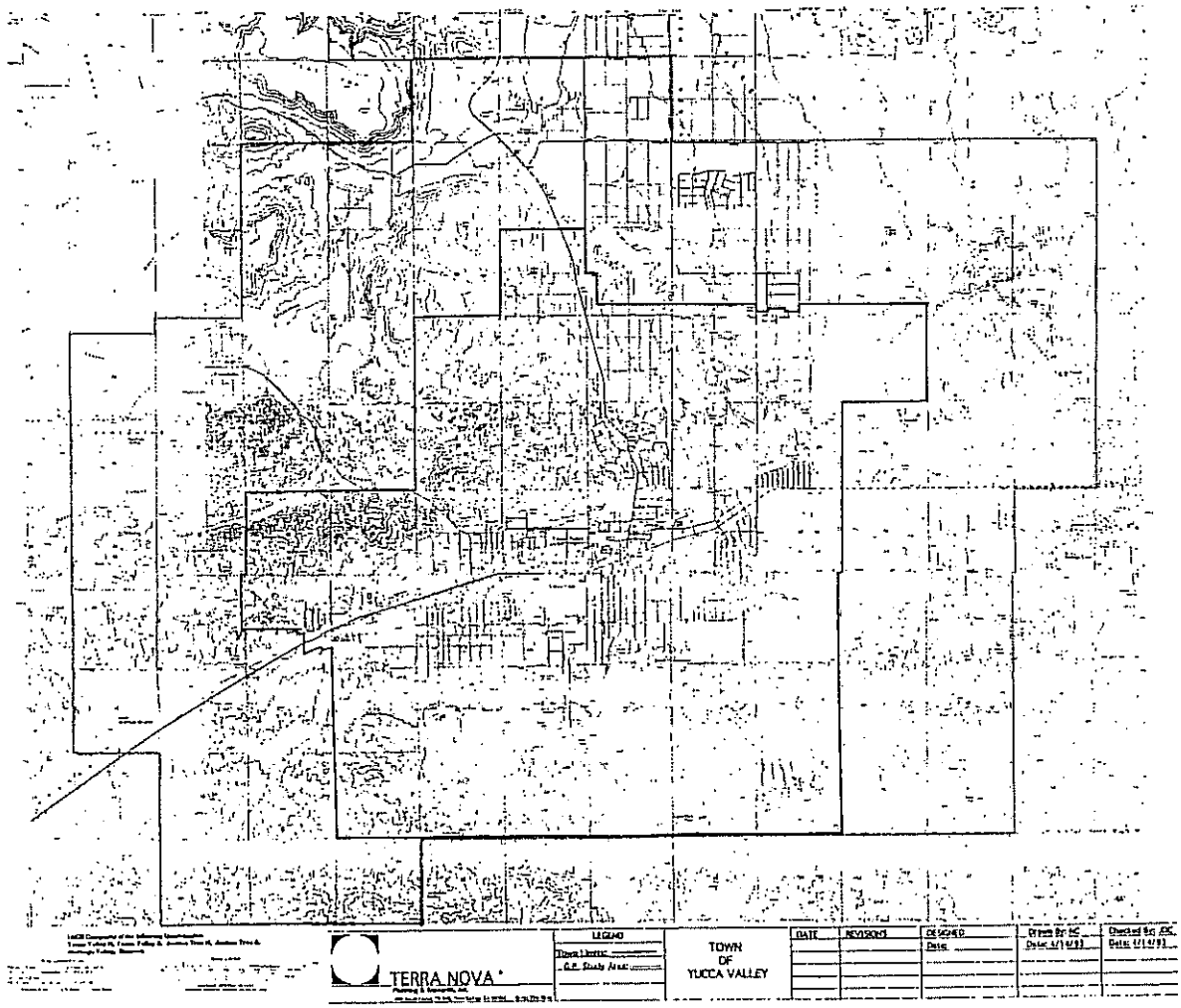
Archaeological and Cultural Resources
The Yucca Valley region was first occupied some time between 12,000 and 7,000 years ago. A wide variety of cultural artifacts, including arrowheads, spear points and cutting tools have been found in the region. These include habitation sites, as well as pictographs, petrographs and cupule boulders. Historic resources include the original Warren's Well site and early homesteading use for many purposes, including residential over the past 100 years.

Transportation/Circulation
The western portion of the Morongo Basin and is served by local, regional and inter-regional roadway networks including State Highways 62 and 247, Pioneertown Road, Joshua Lane, Onaga Trail, and Yucca Trail. State highways 62 and 247, provide major access outside the planning area boundaries. In the Morongo Basin State Highway 62 is designated "Conventional (No Access Control)". In 1993 this four lane road carried approximately 18,950 ADT east of Acoma Trail in Yucca Valley, 22,300 ADT west of Hwy 247, and 14,490 west of Yucca Mesa Road/La Contenta Road. Highway 62 is planned for an ultimate six travel lanes with a controlled (raised median) center turn lane.

State Highway 247 begins at Highway 62 and proceeds north to service other Mojave Desert communities to the north. Currently(1993), this highway is a two lane facility north of the airport, widening to five lanes southward to the intersection at Highway 62. In 1993 traffic volumes were 9,330 south of Buena Vista, and 14,250 north of Highway 62. This roadway is planned for an ultimate six travel lanes with a controlled (raised median) center turn lane.

The circulation system for the Town and other basin communities has developed peripherally from the City's two major regional roadways/highways, as residential areas and strip commercial development has occurred along Highway 62. Existing traffic counts indicate that traffic volumes in the Town are low, and that all roadways are operating at acceptable levels of service, general LOS A. There are seven traffic signals currently(1993) installed within the Town, all along Highway 62. Additional signals are also proposed along HWY 247 at Sunnyslope Drive and Buena Vista Drive/Skyline Ranch Road.

Socio-Economic Impacts
Socio-economic conditions have been rapidly evolving the in the past few years. With a steady increase in family-type household formation lowering the average age to 40.8 years in 1990 with an average household size of 2.35. The per capita median income in 1990 was $13,697 and the median household income was $23,741. Residential development over the past few years has been slow, effected by the restrictions on domestic water hook-ups, but primarily being affected by the regional recession. Housing is primarily single family in nature. Strong commercial development in the past four years has expanded community scale services. The community shows strong retail sales trends, especially when compared to Town population and median income levels. A jobs/housing imbalance seems to exist, with a need for more local jobs with higher salary levels. Major employers include the Morongo Unified School District, major retailers, health care facilities, and general and service commercial.


TERRA NOVA
LEGEND
TOWN
OF
YUCCA VALLEY
DATE
REVISIONS

STATE OF CALIFORNIA

PETE WILSON, Governor

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED
MAR 14 1994
Planning

DATE: March 8, 1994

TO: Reviewing Agencies

RE: TOWN OF YUCCA VALLEY COMPREHENSIVE GENERAL PLAN
SCH# 94032021

Attached for your comment is the Notice of Preparation for Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

SHANE STUECKLE
TOWN OF YUCCA VALLEY
57090 29 PALMS HIGHWAY
YUCCA VALLEY, CA 92284

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Mari Lemos at (916) 445-0613.

Sincerely,

Michael Chiriatti, Jr.
Chief, State Clearinghouse

cc: Lead Agency

Notice of Completion

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

SCH # [illegible]2021 (See NOTE below)

Project Title: Town of Yucca Valley Comprehensive General Plan

Lead Agency: Town of Yucca Valley

Street Address: 57090 29 Palms Highway

City: Yucca Valley, CA.

Zip: 92284

Contact Person: Shane Stueckle

Phone: (619) 369-6575

County: San Bernardino

Project Location

County: San Bernardino

City/Nearest Community: Town of Yucca Valey

Cross Streets: State Hwys. 62 & 247

Zip Code: 92284

Total Acres: 24,390 ±

Assessor's Parcel No. N/A

Section: See NOP Twp. ___ Range: ___ Base: ___

Within 2 Miles: State Hwy #: 62 & 247

Waterways: N/A

Airports: Yucca Valley

Railways: N/A

Schools: Morongo Basin Unified

Document Type

CEQA: ☒ NOP ☐ Early Cons ☐ Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) ___ ☐ Other ___

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other ___

Local Action Type

☒ General Plan Update
☐ General Plan Amendment
☐ General Plan Element
☐ Community Plan
☐ Specific Plan
☐ Master Plan
☐ Planned Unit Development
☐ Site Plan
☐ Rezone
☐ Prezone
☐ Use Permit
☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
☐ Annexation
☐ Redevelopment
☐ Coastal Permit
☐ Other ___

Development Type

☒ Residential: Units ___ Acres ___
☐ Office: Sq.ft. ___ Acres ___ Employees ___
☒ Commercial: Sq.ft. ___ Acres 987.51 Employees ___
☒ Industrial: Sq.ft. ___ Acres 716 Employees ___
☐ Educational ___
☐ Recreational ___
☐ Water Facilities: Type ___ MGD ___
☐ Transportation: Type ___
☐ Mining: Mineral ___
☐ Power: Type ___ Watts ___
☐ Waste Treatment: Type ___
☐ Hazardous Waste: Type ___
☐ Other: ___

Project Issues Discussed in Document

☒ Aesthetic/Visual
☐ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☐ Coastal Zone
☒ Drainage/Absorption
☒ Economic/Jobs
☒ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☐ Wetland/Riparian
☒ Wildlife
☒ Growth Inducing
☒ Landuse
☒ Cumulative Effects
☐ Other

Present Land Use/Zoning/General Plan Use See Attached NOP

Project Description See Attached NOP

Not circ. by SCH.

RECEIVED MAR 4 1994 STATE CLEARING HOUSE

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document) please fill it in.

Revised October 1989

SUPPLEMENTARY INFORMATION

NOP

NOP Distribution List

SCH# ___

S = sent by lead agency
X = sent by SCH

654-4678

Thill

2/25/94

TRANSPORTATION/FLOOD CONTROL
DEPARTMENT

825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-2800
Fax No. (909) 387-2667

COUNTY OF SAN BERNARDINO
PUBLIC WORKS GROUP

KEN A. MILLER
Director

24 [illegible]

March 23, 1994

File: 8(CTY)-98.26

Town of Yucca Valley
57090 Twentynine Palms Highway
Yucca Valley, Ca. 92284

Attn: Shane Stueckle, Town Planner

Re: Zone 6, Comprehensive General Plan for the Town of Yucca Valley - Notice of Preparation of Draft Environmental Impact Report (DEIR)

Dear Mr. Stueckle:

This letter is in response to the referenced Notice of Preparation dated March 1, 1994. As indicated on the environmental checklist, the DEIR should address several flood hazard, flood control, drainage and transportation/circulation issues. Transportation/Flood Control Department staff will be pleased to provide any support we can to assist the Town in development of its general plan. We would also like to review the DEIR and draft general plan to help ensure consistency between County's and Town's circulation and flood control elements of their general plans.

Should you have any questions, please contact Robert Corchero, Chief, Flood Control Planning Division at (909) 387-2525, or Ted Golondzinier, Chief, Transportation Program Management at (909) 387-2724.

Sincerely,

CHARLES L. LAIRD, Assistant Director
Transportation/Flood Control

CLL:RWC:ss

MAR 2 3 1994

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Barstow Resource Area
150 Coolwater Lane
Barstow, California 92311-3221

IN REPLY REFER TO

619-256-3591

1791
(CA-068.02)

Town of Yucca Valley
Attn: Shane Stueckle
57090 29 Palms Highway
Yucca Valley, CA 92284

Dear Mr. Stueckle,

Thank you for informing us of your intent to develop a Comprehensive General Plan and accompanying Environmental Impact Report for the town of Yucca Valley. Because public lands are within the planning and town boundaries, the Bureau of Land Management (BLM) is very interested in the project, of possible impacts to public lands, of staying informed of your activities, and of commenting on the environmental documents. Currently, BLM-managed lands within and adjacent to the project area are designated "Unclassified". Any land use designations that you would overlay on these lands could affect their potential for disposal (sale or exchange out of public ownership) or use, and we would therefore like the opportunity to comment on these designations. In addition, we would like to review your proposed land-use designations on private lands adjacent to public holdings so that we may assess potential impacts, if any, to public lands. BLM also requests that you indicate in the document that some scattered parcels of BLM-managed public lands are within the project planning area, in your discussion of Current Land Use or other appropriate section of your document, so that the public is aware of this fact.

The BLM contact on this project will be Edy Seehafer of our office. If you have questions or comments you may direct them to Ms. Seehafer at the above phone number.

Sincerely

Karla K. H. Swanson
Barstow Resource Area Manager

c.c. John Criste, Terra Nova Planning

SCAG
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

818 West Seventh Street,12th Floor ● Los Angeles, California 90017-3435 (213) 236-1800 ● FAX (213) 236-1825

March 28, 1994

RECEIVED
MAR 31 1994
Town of Yucca Valley
Planning

Mr. Shane R. Stueckle
City Of Yucca Valley
57090 29 Palms Highway
Yucca Valley, CA 92320

RE: SCAG Clearinghouse #: I9400104
Project Title: COMPREHENSIVE GENERAL PLAN FOR THE TOWN OF YUCCA VALLEY

Dear Mr. Stueckle:

We have reviewed the above referenced document for regional significance and determined that no comments will be submitted at this time. When you complete the Draft Environmental Impact Report we would appreciate the opportunity to review and comment at that time.

A description of the project was published in the March 15, 1994 Intergovernmental Review Report for public review and comment.

The project title and SCAG number should be used in all correspondence with SCAG concerning this project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact Dan Akins at (213) 236-1972.

Sincerely,

Eric H. Roth

ERIC H. ROTH
Manager, Intergovernmental Review

Cadell Tompers Orange County-President, Stella Mendoza City of Brawley-First Vice President, Ed Edelman Los Angeles County-Second Vice President, John Longville City of Rialto-Third President, Richard Alatorre City of Los Angeles, Richard Alatorre City of Los Angeles, Robert Herbst City of Moorpark, George Bass City of Bell, Ron Bates City of Los Alamitos, George Barrey, Jr. City of Burbank, Hal Bernson City of Los Angeles, Walter Bowman City of Cypress, Marvin Braude City of Los Angeles, Susan Brandt City of Rancho Palos Verdes, Art Brown City of Buena Park, Yvonne Brathwaite-Burke Los Angeles County, Jim Bozby, Jr. City of Victorville, Bob Buster Riverside County, Laura Chick City of Los Angeles, John Cox City of Newport Beach, Cynthia Coulman City of Moreno Valley, Elsie Disposa City of Lomita, Richard Dixon City of Lake Forest, Doug Drummond City of Long Beach, Jerry Eaves San Bernardino County, John Ferraro City of Los Angeles, John Flynn Ventura County, Terry Frizzel City of Riverside, Ruth Galanter City of Los Angeles, Roxelen Gentle City of Costa Mesa, Jackie Goldberg City of Los Angeles, Claudeen Haugerud City of San Clemente, Garland Hardeman City of Inglewood, Robert Hargraves City of Lawndale, Mike Hernandez City of Los Angeles, Rose Holden City of Los Angeles, Robert Jacobson City of Artesia, Jeff Kellogg City of Long Beach, Jim Kelly City of South El Monte, Richard Kelly City of Palm Desert, Bob Kuhn City of Glendora, Abbe Land City of West Hollywood, John Lehtinen City of Santa Paula, Barbara Messina City of Alhambra, Judy Mikels City of Simi Valley, David Myers City of Palmdale, Katherine Nack City of Pasadena, Dee Perry City of Brea, Carmen Nemeo Perry City of Chino Hills, Ron Parks City of Temecula, Irv Pickler City of Anaheim, Michael Pinkey City of Oxnard, Beatrice Proo City of Pico Rivera, Larry Rabinehart City of Montclair, Dick Riordan City of Los Angeles, Mark Ridley-Thomas City of Los Angeles, Albert Robles City of South Gate, Jerry Shurtz Imperial County, Rudy Svorinich City of Los Angeles, Bob Steve City of Bellflower, Tom Sykes City of Walnut, Jeff Thomas City of Tustin, Leonie Tully-Payne City of Highland, Joel Wachs City of Los Angeles, Rita Walters City of Los Angeles, Judy Wright City of Claremont, Zev Yaroslavsky City of Los Angeles ●

LTE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

EPARTMENT OF TRANSPORTATION
STRICT 8, P.O. BOX 231
N BERNARDINO, CALIFORNIA 92402
O (909) 383-5939

March 28, 1994

08-SBd-62-12.4
SCH #94032021

Mr. Shane Stueckle
Town of Yucca Valley
57090 Twentynine Palms Highway
Yucca Valley, CA 92284

Dear Mr. Stueckle:

Notice of Preparation of a Draft
Environmental Impact Report (DEIR) for the
Town of Yucca Valley Comprehensive General Plan

We have reviewed the above-referenced document and request consideration of the following comments:

- A traffic study is needed for the DEIR and should include the following from a worst case scenario viewpoint: existing and future average daily traffic (ADT) volumes, traffic generation (including peak hour), traffic distribution, analysis of peak hour demand and capacity using delay methodology for intersections along with current and projected capacities of local roads, state highways and freeways that might be impacted. Special attention should be given to State Route 62 (SR 62) and State Route 247 (SR 247).

- The analysis of the traffic study should identify improvements needed to mitigate the impacts to State transportation facilities and the funding sources of these improvements.

- SR 62 between Interstate 10 (I-10) and the San Bernardino County line is designated as a freeway.

- The proposed signals along SR 247 at Sunnyslope Drive and Buena Vista Drive/Skyline Ranch Road must meet the State warrant guidelines before they are approved by Caltrans. For coordination and permit process on this matter, please contact:

  Jerry Lunt
  Development Review
  California Department of Transportation
  P.O. Box 231
  San Bernardino, CA 92402

When available, please send the DEIR and traffic study to Maisoon Afaneh, Transportation Planning, San Bernardino Coordination Branch, at the above address.

If you have any questions, please contact Maisoon Afaneh at (909) 383-5928 or FAX (909) 383-7934.

Sincerely,

HARVEY J. SAWYER, Chief
Transportation Planning
San Bernardino County
Coordination Branch

State of California—Business, Transportation and Housing Agency PETE WILSON, Governor

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
HCR 1, Box 61
63683 - 29 Palms Highway
Joshua Tree, CA 92252-9707
(619) 366-3707

March 28, 1994

RECEIVED
MAR 31 1994
Town of Yucca Valley
Planning

Town of Yucca Valley
57090 - 29 Palms Highway
Yucca Valley, CA 92284

Attention: Shane Stueckle

Dear Mr. Stueckle:

This office has reviewed the Notice of Preparation of an Environmental Impact Report for the Comprehensive General Plan for the Town of Yucca Valley. Since the primary traffic law enforcement responsibilities of this Department are entirely outside of the town limits of Yucca Valley, this plan will not have a significant impact upon the operations of the California Highway Patrol.

There are, however, two items in the plan's addendum, dealing with the mitigation of traffic congestion within the town limits which will have a peripheral effect on this Command. Specifically items XIII.d. and XIII.f. focusing on upgrading several arterial roadways parallel to State Highway 62 will impact the operations of this Department where these roadways enter the Unincorporated County Area.

In light of this impact, it will be imperative to keep this office advised and involved in the above mentioned issues. This office is also available to assist in any traffic related matter that you may encounter during the preparation of this plan. Should you have any questions, please contact me at (619) 366-3707.

Sincerely,

J.P. TALBOTT
Commander
Morongo Basin Area

cc: Office of Special Projects
Inland Division

APPENDIX H

TRAFFIC STUDY
1ST. DRAFT COMPREHENSIVE GENERAL PLAN
AND ENVIRONMENTAL IMPACT REPORT CIRCULATION

PREPARED FOR:

TOWN OF YUCCA VALLEY

PREPARED BY:

PAUL SINGER, P.E.
TRANSPORTATION ENGINEERING & PLANNING

JULY, 1994

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact Yucca Valley Town Hall at (619) 369-6575.

TRAFFIC CIRCULATION AND TRANSPORTATION PLAN FOR THE TOWN OF YUCCA VALLEY CALIFORNIA

PAUL SINGER, P.E.
TRANSPORTATION ENGINEERING & PLANNING

Ref No. 9408.02
August 1994

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I. INTRODUCTION

The following narrative is intended to acquaint the reader with the existing and future traffic conditions in the Town of Yucca Valley, California.

Transportation facilities have historically played a significant role in the development and shaping of cities. Therefore, an adequate system of streets and highways is vital to continued orderly growth.

The growth of the City is directly dependent upon a safe and efficient roadway system. This system, when firmly established, provides the necessary impetus for orderly growth and encourages commesurate land use development.

The Town of Yucca Valley Circulation and Transportation System serves primarily community needs and provides circulation and access to community, business and recreational facilities. The Town Transportation System is designed to provide personal mobility and for transportation of goods and access to services. A map of the street system in the Town of Yucca Valley is illustrated in the "Existing Conditions" section of this Study as FIGURE 1.

A. Project Description

The Town of Yucca Valley is located in San Bernadino County in the State of California. The following study evaluates existing traffic conditions serving the Town and based on accepted engineering standards and methodologies forecasts traffic conditions for future years. The Planning area comprises 33 square miles. State Route 62 is the only east-west arterial access to and from the Town. This Highway comprizes the "backbone" of the Town's transportation system. Various land use scenarios were evaluated and future traffic generation assumptions estimated. Land uses of a developed area are directly proportional to transportation needs. The following study details four distinct scenarios of future land use densities within the Town and show the resulting traffic impacts. For acreage breakdown of the internal land uses for each alternative scenario, refer to TAZ Tables shown in the Discussion section of each respective Alternative.

STUDY OBJECTIVES

The goals of this study are to establish a plan for a street and highway system consistent with the anticipated and projected growth of the Town. This plan, of necessity, will reflect the existing street and highway network and how it can best be adopted, modified and improved to serve public needs of the future. Wherever possible, attempts are made to minimize impacts on adjacent private properties while at the same time plan for future growth requirements. Even a cursury overview of the Town's street pattern shows needs for future improvements.

This study is designed to identify locations, street segments and intersections that may require widening, increased lanes and traffic safety measures. The study shows minimum number of travel lanes at street segments and number of turn and through lanes at selected study intersections.

B. Analysis Methodology

Two distinct study methodologies were selected to evaluate the circulation system of the Town.

COMPUTERIZED TRAFFIC MODEL

The Transportation Engineering Firm of Robert Kahn, John Kain and Associates was engaged to produce a Traffic Model for the Town of Yucca Valley. This modeling effort was to be based on the existing Traffic Model prepared for the County of San Bernardino. A preliminary input was made to provide a Traffic Model for the Town of Yucca Valley that would be consistent for the study area. The data files used by Robert Kahn, John Kain and Associates consisted of land use spread sheets, network link data, network coordinates and job control statements which specified key parameters for creating and running the Traffic Model. The Moreno Valley Traffic Model was intended to be employed in this endeavor. Unfortunately, the intended model is inactive since approximately July 1992 when the County of San Bernardino issued a stop-work order to the consultant.

This work was therefore not completed. The Firm of Robert Kahn, John Kain and Associates did prepare a preliminary report. This report along with the initial work on this study are enclosed in the APPENDIX of this study.

TRADITIONAL TRAFFIC FORECASTING METHODOLOGY

Not having the benefit of an operating, viable computerized traffic modeling format, a manual traffic distribution procedure was employed. This procedure consists basically of the same elements employed by computerized modeling program. The data used to develop the base for the manual traffic distribution program includes existing land uses, traffic generated by the land uses

using the Transportation Engineers "Traffic Generation" Manual 5th Edition and mapping of land use categories into Traffic Analysis Zones (TAZ). A reduced scale TAZ map is shown in the APPENDIX of this report.

A tabulation of all land uses were classified by TAZ number. A separate listing for each land use scenario was prepared. The scenarios include:

a. Existing land uses
b. County of San Bernardino General Plan Build-out
c. Preferred alternative per Town of Yucca Valley
d. Higher density land use intensity of the Preferred Alternative
e. Lower density land use intensity of the Preferred Alternative

Each TAZ in each of the alternatives was tabulated by trip production and trip attraction of each land use. The trips for both in-bound and out-bound trips at each TAZ was noted on a map showing potential traffic routing. Both in-bound and out-bound trips for each TAZ were anotated and assigned to the plotted roadway network. The traffic accumulation of the existing land use scenario was compared and validated to existing traffic volumes.

Existing traffic volumes were obtained from special traffic counts. The highest peak hour was manually counted by Traffic Counts Incorporated of Newport Beach at 14 intersections. Each of the intersections show all turn movements at the P.M. peak hour. Link traffic volume counts were obtained from Mr. Leo Hanes, Traffic Operations Special Studies Caltrans, San Bernardino District Office for State Route 62 at the junction of State Route 247. The traffic count summaries are included in the APPENDIX of this Report.

Both the manual traffic counts conducted by T.C.I. as well as counts conducted by Caltrans were plotted on the TAZ map and a comparison was made to the trip generation produced by the various land uses produced by each TAZ. A total of 90 TAZs were identified, each with it's own traffic generating forecast for each of the alternatives. The TAZ map listing is shown on TABLE 1. This Table shows the acreage for each TAZ, number of existing dwelling units, number of acres currently used for commercial, industrial and open space uses as well as existing traffic generation per Transportation Engineers "Traffic Generation" Manual.

The peak hour traffic volumes from each TAZ was distributed throughout the roadway network in a manner commesurate with the existing traffic count turn movements. This traffic distribution follows closely the existing traffic demand. Inbound and out

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
1.	YV/RL	360	60/24	24	15.7	8.3
2.	IC	172	20/30	84	33.8	50.2
3.	IC	17	1/1	9	2	7
4.	IC	92	46/17	522	90.7	431.3
5.	YV/RL	20	0			
6.	CG/SPC	15	0			
7.	RL	155	97.5/39	39	25.6	13.4
8.	RL5	25	25/5	5	3.3	1.7
9.	RL5	58	0			
10.	RL20	25	0			
	RL5	625	15/3			
	Total	650	15/3	3	1.9	1.1
11.	RL5	1074	175/35			
	RC	480	120/3			
	RL	988	440/176			
	RS1	385.5	109/109			
	FW	5	5/Flood	327	212.7	114.3
	CG/SPC	2.5	1/1	11	5.5	5.5
	Total	2935	850/324	338	218.2	119.8
12.	RL	1820	495/198			
	RL5	612	265/53			
	RS1	655	170/170			
	PQP	10	10/Flood			
	RS18M	235	39/94			
	RS10M	20	1/6			
	3MRM	50	3/18dup 29sfd			
	Total	3402	983/568	574	372.9	201.1
13.	RS1	40	23/23			
	3MRM	115	24/188sfd 124dup 40mfu			
	CO	20	0			
	Total	175	47/375	379	246.2	132.8
14.	RC	760	0			
	RL	120	0			

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	RS10M	120	8/35			
	RS18M	215	22/53			
	RL5	80	20/4			
	4MRM	28	2/5sfd			
			18dup			
	PQP	5	5/Flood	118	76.8	41.2
	CN	2	2/2	22	11	11
	Total	**1330**	**59/117**	**140**	**87.8**	**52.2**
15.	RC	180	40/1			
	RL5	130	25/5			
	RL	80	0			
	RS10M	45	0			
	RS18M	20	.5/1			
	Total	**455**	**79.5/59**	**6**	**3.9**	**2.1**
16.	RC	180	40/1			
	RL5	188	20/4			
	RS10M	45	3/14			
	RS18M	275	16.5/40			
	Total	**690**	**79.5/59**	**59**	**38.7**	**20.3**
17.	RS18M	80	18.5/45			
	RS10M	52	7.5/33			
	Total	**132**	**26/78**	**79**	**51.2**	**27.8**
18.	IC	77	0			
19.	IC	51.5	15/3	141	29.6	111.4
	PQP	22	2.5			
	Total	**73.5**	**17.5/3**	**141**	**29.6**	**11.4**
20.	RS10M	62	6.5/29	29	19.4	9.6
	CG/SPC	10	3/2	33	16.5	16.5
	Total	**72**	**9.5/31**	**62**	**35.9**	**26.1**
21.	CG/SPC	35	10/2	109	54.5	54.5
22.	CG/SPC	10	0			
23.	IC	70	0			
	CN	45	0			
	Total	**115**	**0**			
24.	IC	255	0			
25.	IC	265	150/5	633	253.2	379.8
26.	CG/SPC	30	5/4	54	27	27

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
27.	RS18M	197	81/196	198	128.7	69.3
	CG/SPC	3	1/3	11	5.5	5.5
	Total	**200**	**82/199**	**209**	**134.2**	**74.8**
28.	CG/SPC	70	1/1	11	5.5	5.5
29.	CG/SPC	20	10/1	110	55	55
30.	CG/SPC	60	10/1	110	55	55
	4MRM	25	0			
	Total	**85**	**10/1**	**110**	**55**	**55**
31.	CG/SPC	20	7/11	76	38	38
32.	IC	10	1/1	9	2	7
33.	RS10M	40	9/39	39	25.6	13.4
	IN	15	10/7	110	55	55
	CO	5	0			
	Total	**60**	**19/46**	**149**	**80.6**	**68.4**
34.	CG/SPC	17	7/13	76	38.0	38
	CO	15	5/14	141	21.2	119.8
	CS	13	8/5	87	43.5	43.5
	Total	**45**	**20/32**	**304**	**102.7**	**201.3**
35.	4MRM	50	4/16sfd			
			28dup	44	28.9	15.1
	CG/SPC	10	2/2	22	11.0	11.0
	Total	**60**	**6/46**	**66**	**39.9**	**26.1**
36.	4MRM	30	5/26sfd	26	17.1	8.9
			32mfu	32	21.0	11.0
	CG/SPC	15	5/8	55	27.5	27.5
	Total	**45**	**10/66**	**113**	**65.6**	**47.4**
37.	CG/SPC	25	7/5	76	38.0	38.0
38.	OS	20	10/28			
	CG/SPC	20	12/4			
	Total	**40**	**22/32**	**131**	**65.5**	**65.5**
39.	RS18M	45	1/3			
	PQP	5	5/Flood			
	Total	**50**	**6/3**	**3**	**1.9**	**1.1**
40.	IN	27	22/1 BallFld	87	17.4	69.6
			7Bldg			
	3MRM	18	6/47sfd			
			8dup	94	61.0	33.0

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
			38mfu			
	CG/SPC	5	4/8	44	22.0	22.0
	Total	50	32/108	225	100.4	124.6
41.	4MRM	30	1.5/6sfd			
			11mfu	17	11.2	5.8
42.	CG/SPC	30	30/9	327	163.5	163.5
43.	RS10M	140	14/63			
			1 ball fld			
	4MRM	25	2.75/12sfd			
			18dup			
	PQP	10	10/Flood			
	Total	175	26.75/93	94	61.1	32.9
44.	CG/SPC	30	15/15	164	122.0	122.0
45.	CG/SPC	23	12/7	131	65.5	65.5
	RS10M	47	7/32	32	21.0	11.0
	Total	70	19/39	163	86.5	76.5
46.	RS10M	119	84/219sfd			
			148mfu			
	PQP	6	6/Flood			
	Total	125	90/367	375	243.6	131
47.	PQP	2	2/Flood			
	CG/SPC	33	20/9	218	109.0	109.0
	CO	18	10/6	283	42.4	240.6
	RS10M	2	.5/4	4	2.6	1.4
	Total	55	32.5/19	505	154	351
48.	RS10M	90	25.5/84sfd			
			28mfu	113	73.5	39.5
49.	IC	70	15/14	141	29.6	111.4
	CN	5	1.5/2	16	8.0	8.0
	Total	75	16.5/16	157	37.6	119.4
50.	RS18M	68	5.5/14			
	RS10M	22	0			
	Total	90	5.5/14	14	9.2	4.8
51.	4MRM	20	0			
52.	IC	36	20/10	218	109.0	109.0
	CG/SPC	2	2/9	22	11.0	11.0
	4MRM	2	1.5/3sfd			
			18dup	21	13.8	7.2

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	Total	40	23.5/40	281	133.8	127.2
53.	CG/SPC	5	5/5	54	27.0	27.0
54.	CG/SPC	20	8/17	87	43.5	43.5
55.	CG/SPC	20	6/15	65	32.5	32.5
56.	CG/SPC	2.5	2.5/1	27	13.5	13.5
57.	3MRM	28	3/46sfd			
			17mfu			
			20dup	84	54.5	29.5
	CO	12	3/4	85	12.7	72.3
	Total	40	6/87	169	67.2	101.8
58.	CG/SPC	14	8/10	87	43.5	43.5
59.	4MRM	14	.25/1sfd	1	0.6	0.4
			33/145sfd	156	94	62
	CG/SPC	26	4/4	44	22.0	22.0
	Total	40	4.25/5	201	116.6	84.4
60.	PQP	.5	.5/Flood			
	CG/SPC	6.5	6.5/7			
	4MRM	3	0			
	Total	10	7/7	71	35.5	35.5
61.	4MRM	60	13/63sfd			
			84mfu			
	RS10M	105	34/149			
	Total	165	47/296	299	194.3	104.7
62.	CO	1	1/1	28	4.2	23.8
	RS18M	180	76/183			
	RS10M	295	44/191			
	4MRM	24	6.75/21sfd			
			33mfu	452	294.1	157.9
			20dup			
	Total	500	127.75/449	480	298.3	181.7
63.	PD	42	0			
	RS1	180	45/45	359	233.0	126.0
	RS18M	205	102/247			
	CG/SPC	20	3/11	33	16.5	16.5
	RS10M	505	14/63			
	Total	952	164/366	392	249.5	142.5
64.	RS10M	160	13/60	61	39.4	21.6

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
65.	RS10M	190	13/58			
	RS18M	110	35/85			
	RS8M	30	10/54			
	Total	330	58	260	159.7	91.3
66.	IN	55	0			
	4MRM	3	1.5/18dup			
	Total	58	1.5/18	18	11.8	6.2
67.	RS10M	20	0			
	4MRM	40	11/125			
	Total	60	11/125	126	82	44
68.	4MRM	50	14.5/144sfd			
			18dup			
	RS8M	20	3/9			
	Total	70	17.5/181	183	118.8	64.2
69.	RS8M	30	8.5/47	47	30.8	16.2
70.	3MRM	38	8/70sfd			
			53mfu	124	80.7	43.3
71.	RS8M	35	13.5/75	76	49.2	26.8
72.	IN	15	15/School	59	11.8	47.2
	4MRM	5	.5/6sfd			
			25mfu			
	RS8M	25	15/83	115	74.8	40.2
	Total	45	30.5/190	174	86.6	87.4
73.	3MRM	10	1/19sfd			
			89mfu	109	70.9	38.1
	CO	12	3/6	85	12.7	72.3
	Total	22	4/114	194	83.6	110.4
74.	CO	2	1/1	109	70.9	38.1
	CG/SPC	3	0			
	4MRM	25	21.5/156sfd			
			82mfu	240	156.2	83.8
	Total	30	22.5/239	349	227.1	121.9
75.	4MRM	3	0			
	CG/SPC	6	6/1			
	Total	9	6/1	65	32.5	32.5
76.	CO	7	0			
	CG/SPC	6	2/3	22	11	11
	Total	13	2/3	22	11	11

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
77.	CG/SPC	7	3/5	33	16.5	16.5
	4MRM	28	1/3sfd			
			11mfu	14	9.2	4.8
	Total	35	4/19	47	25.7	21.3
78.	4MRM	35	.5/7sfd			
			4mfu			
	RS1	10	6/6			
	RS10M	105	103/8			
	Total	150	8.5	25	16.4	8.6
79.	IC	20	10/4	94	19.7	74.3
80.	4MRM	20	2.75/19sfd			
			11mfu			
	RS8M	110	10/55			
	RS10M	40	8/35			
	Total	170	20.75/120	121	78.8	42.2
81.	RL	740	115/46			
	RL10	230	20/2			
	RC	470	0			
	Total	1440	135/48	48	31.5	16.5
82.	RS10M	300	24/105			
	RS1	60	10/10			
	RS18M	120	21/51			
	RL	720	0			
	RC	240	0			
	Total	1440	55/166	168	109.9	59.0
83.	RL5	620	95/19			
	RL	250	10/4			
	RS18M	290	138/334			
	RS10M	120	18/76			
	Total	1280	261/433	437	284.3	152.7
84.	RS10M	200	0			
	RS18M	530	59/143			
	RS1	220	64/64			
	RL	710	10/4			
	RC	200	0			
	14.5MRM	60	0			
	4MRM	15	1/12sfd			
			11mfu			
	Total	1935	134/234	245	159.5	85.5
85.	RS10M	50	0			

Table 1
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
86.	RS1	200	78/78			
	RL	257	92.5/37			
	RL5	262	15/3			
	PQP	10	10/1BallFld			
	RS10M	1230	43/189			
	RS18M	45	19/47			
	Total	2004	267.5/355	357	232.4	124.6
87.	CO	10	0			
88.	RS18M	7.5	0			
89.	IN	5	0			

Table 1a
TAZ LAND USE KEY
TOWN OF YUCCA VALLEY
EXISTING SAN BERNARDINO COUNTY
LAND USE DESIGNATIONS

R-S-2	Rural Living (1 du/ 2.5 Ac.)
RS8M	Single Family Residential (8,000 sq. ft. lots)
14.5MRM	(14,000 sq. ft. lots)
PD	Planned Development (14 du/ 1 Ac.)
R-S-3.5	Rural Living (1 du/ 10 Ac.)
RL20	Rural Living (1 du/ 20 Ac.)
RL5	Rural Living (1 du/ 5 Ac.)
RC	Resource Conservation (1 du/ 40 Ac.)
RS1	Single Residential (1 du/ 1 Ac.)
RS18M	Single Residential (18,000 sq. ft. lots)
RS10M	Single Residential (10,000 sq. ft. lots)
3MRM	Multiple Residential (3,000 sq. ft. lots)
4MRM	Multiple Residential (4,000 sq. ft. lots)
CG/SPC	General Commercial
CO	Office Commercial
CS	Service Commercial

CN Service Commercial

IC Industrial Community

IN Institutional

P/QP Public/Quasi Public

OS Open Space

Note: This key is to be utilized with the Existing Conditions Taz Table and the Taz Table for the buildout of the County of San Bernardino Land Use Scenario.

bound traffic was plotted on a scaled map of the Town and it's area of influence. The result of this exercise produced an overview of traffic flows throughout the roadway network. This map also helped identification of potential intersections that may be impacted by future traffic growth. Initially 14 intersections were counted to obtain a sample of traffic turn movements and illustrate prevailing traffic flow patterns. Following the production of the existing traffic flow exercise additional intersections were identified for further study.

Using the base information of traffic flows from the existing land uses and validating these against actual traffic counts, additional land use scenarios can be tested using the same methodology employed in obtaining the original validated traffic flow. The scenarios include Preferred and County of San Bernardino future development assumptions. Each of these land use assumptions are addressed and study results shown within this report.

Each of the study alternatives was calculated to be built out by year 2015. The land use density and future traffic impacts at effected intersections was plotted. The identified intersections were further evaluated, Levels of Service calculations performed for each land use alternative and mitigation measures proposed. Based on the findings of this study, specific roadway and intersection improvements are recommended within this report.

In effect, this report provides the Town of Yucca Valley with a Comprehensive Traffic Impact Report that will aid City decision makers in the selection of land use strategies and growth potential for the area. This Study also may be used as a tool to develop long range capital improvement strategies to accomodate future growth.

This study is intended to provide the Town of Yucca Valley with ground transportation strategies and practical recommendations. The product of this Study is the identification of street widths within each roadway classification. Intersection treatment and lane configuration of possible alternate routes bypassing State Route 62 for local traffic distribution.

TRAFFIC DISTRIBUTION

The traffic count data described above was used to establish background for traffic distribution from the various land use scenarios. The basic traffic distribution to/from the residential developments as well as industrial uses were routed from/to each TAZ corresponding to the traffic attractors. The trips for each land use were plotted, accumulated and distributed along the street and highway network in a general pattern corresponding to the prevailing travel desire lines. The travel desire lines were validated by plotting existing traffic distribution

based on actual peak hour and average daily traffic counts. The methodology of this traffic distribution is essentially identical to the computerized traffic modeling that currently is not available for this area of San Bernardino County. In many ways this methodology of traffic distribution is superior because subjective traffic routing decisions can not be accomplished by a pre-set computer program. The manual traffic distribution methodology allows traffic assignments based on pre-selected attractors without overloading any arterial street link. A basic assumption was made; trips originating in the study area with destinations outside of the study area will mainly gravitate westerly and only 10% will be destined easterly. The same assumption was made for trips originating in the area destined northerly outside of the study area will attract 10% or fewer trips.

Using these assumptions and continually comparing attractors and generators of traffic to the currently documented traffic flows, a reliable manual model was constructed. Trip assignments derived from this model were identified at key intersections along specific street links.

The data was recorded manually on a schematic street map of the study area. Specific intersections were identified and data for each of these intersections was included in this study report. The individual traffic count data along with the Level of Service values has been included in each of the alternatives including existing conditions.

PASS-BY TRIPS/BACKGROUND TRAFFIC

The Town of Yucca Valley is situated along State Route 62. The State Highway serves as access and main traffic circulation artery for the Town. Trips originating outside of the Town with destinations also outside of the Town are termed pass-by trips. In order to determine a peak hour trip ratio for these pass-by trips, the Town or study area traffic was compared to the traffic count volume data. The difference between these two values resulted in a pass-by trip ratio. TABLE 2 shows how the average pass-by trips were derived.

The growth rate of the area of the Town is anticipated to progress at a somewhat slower rate than in the past decade of the 1980's. The projected growth of the area's influence on traffic volume may reach up to one-half percent growth per year. Economic factors may effect this figure which is considered conservative. This information was obtained from the Department of Transportation of the County of San Bernardino.

TABLE 2
THROUGH TRIPS
PASS-BY TRIP CALCULATIONS
STATE ROUTE 62

SR-62 LOCATION	TRAFFIC COUNTS DEC. 1993 E/B	W/B	EXIST. LAND USE CALCULATIONS E/B	W/B	PASS-BY TRIPS E/B	W/B
Camino del Cielo	813	650	789	717	24	67
Kickapoo Trail	824	695	757	757	67	62
Deer Trail	857	782	794	863	63	81
Acoma Trail	1000	930	807	712	193	218
Sage	1117	1327	856	923	261	304
Joshua Lane	1063	1081	859	812	209	269
Warren Vista	1297	924	866	834	431	90
Balsa	918	802	879	453	39	349
Avalon	621	732	898	444	277	288
Yucca Mesa	780	724	786	342	6	382
OUT	642	735	627	N/A	15	0
TOTALS	9932	9282	8918	6857	1014	1690
AVERAGE	903	844	811	623	92	188
					8.98%	7.38%

Average Pass-By Trips 8.18%

C. TRAFFIC GENERATION BY LAND USE

The General Plan Alternatives as shown within this Study are based on projected land uses. The land use categories were distributed through the planned area. Traffic generated by each land use was anotated within each TAZ. In order to limit the number of land use calculation as well as to present the "worst case scenarios" for land use grouping as it pertains to traffic impacts, similar land uses were combined and grouped together. TABLE 3 was developed using the grouping of the various land use categories.

TABLE 3
LAND USE TRAFFIC GENERATION*
CATEGORIES

LAND USE	I.T.E. REFERENCE NUMBER	P.M. PEAK HOUR GENERATION	UNIT-U ACRE-A	IN	OUT	COMMENTS
Open Space	0	0	0	0	0	-
Residential	210	1.01	U	65%	35%	Combined residential uses
Elderly Housing	253	0.11	U	53%	47%	
Average Mixed Use*	-	11.71	-	43%	57%	
Office	750	28.28	A	15%	85%	
Commercial	810	10.24	A	50%	50%	40% Pass-by
Mini Warehouse	151	3.95	A	52%	48%	
Institutional		3.95	A	20%	80%	
Industrial	130	9.39	A	21%	79%	20.43 Employees
Heavy Industrial	120	4.22	A	40%	60%	

MIXED USE

*LAND USE	SPLIT	ACRE/UNITS	TRAFFIC GENERATION	IN	OUT
Mixed Use:					
Commercial	50%	Acre	10.9	50%	50%
Office	15%	Acre	28.28	15%	85%
10 per Acre Residential	35%	Unit	1.01	65%	35%
Average			11.71	43%	57%

Source: Institute of Transportation Engineers "Traffic Generation" Manual 5th Edition.

II. EXISTING CONDITIONS

The Town of Yucca Valley and it's immediate area of influence is served primarily by State Route 62 and State Route 247. The Town street network essentially leads to and from those two main arterial highways. The Town decision makers are actively seeking possibilities for finding viable alternate routes bypassing potentially congested intersections located along the main state highways.

A. Existing Roadway System

The street system serving the Town of Yucca Valley consists currently of only two roadway classifications. These are the two California State Highways serving the area and local streets distributing traffic to the business, industrial and residential land uses. The Town of Yucca Valley was only very recently incorporated. This study task is to determine future roadway requirements and to establish a roadway classification plan.

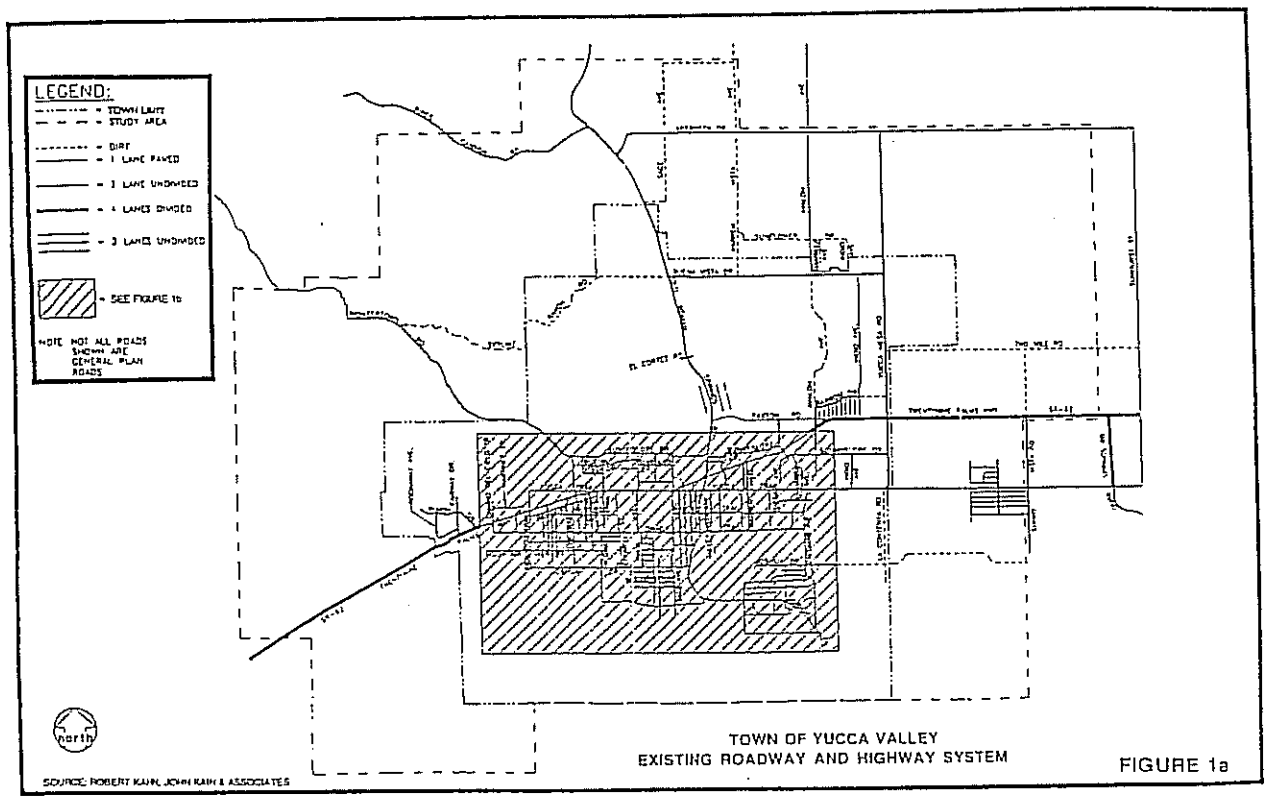
State Route 62 is the main artery serving the Town of Yucca Valley as well as providing highway service for communities east and west of the town. This Route is constructed to carry four lanes of east-west traffic. Separate left turn lanes provide access to/from streets crossing the highway as well as roadside business establishments.

State Route 247 is a two-lane north-south roadway serving the northern portion of the Town of Yucca Valley as well as communities located in the desert area north of the Town.

The internal street system of the Town presently consists of two-lane streets, the majority of which are paved to varying widths from 20 feet to 40 feet wide. The ntent of this study is to establish a plan of Arterial, Collector and Local street systems commensurate with the growth of the community. Figure 1 shows the existing roadway and highway system in the Town of Yucca Valley.

INTERSECTION GEOMETRICS

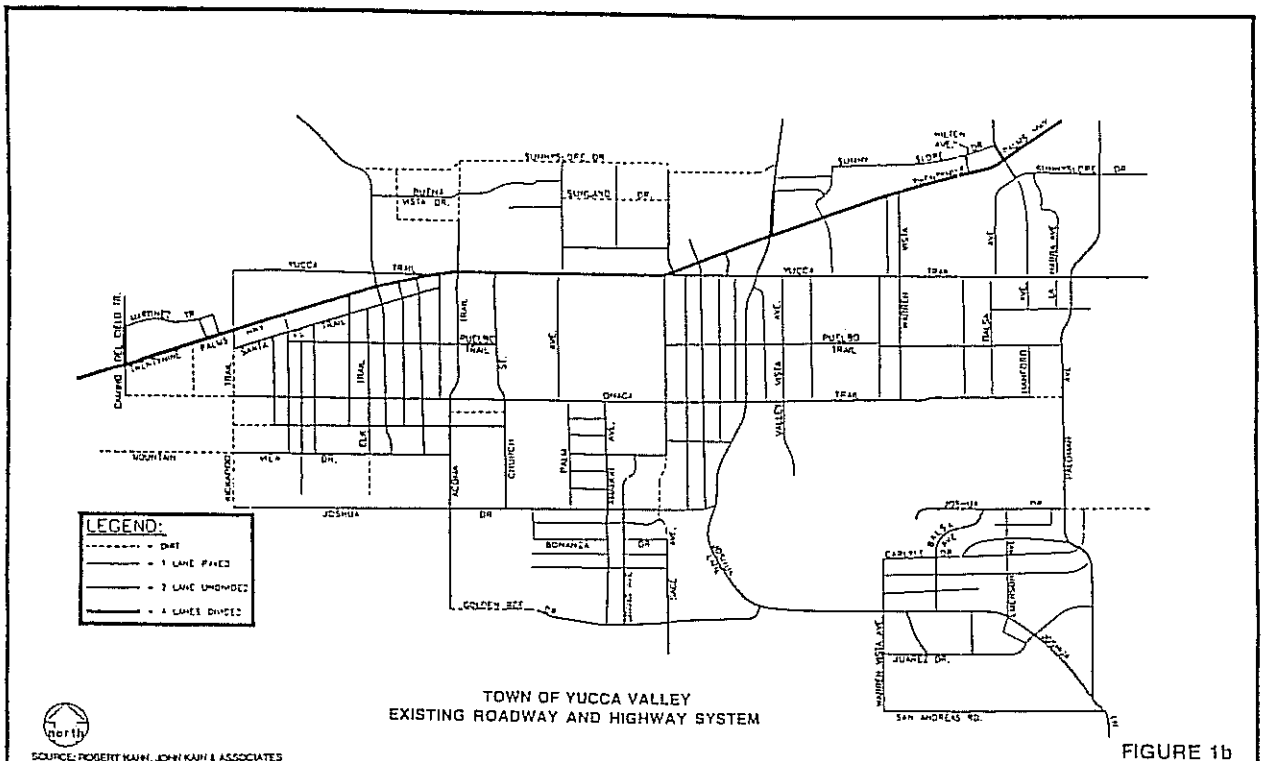
Key intersections were examined, detailing existing right-of-ways and current pavement width. The existing lane configurations as well as current turn lanes are shown on Figures 2a through 2r



TOWN OF YUCCA VALLEY
EXISTING ROADWAY AND HIGHWAY SYSTEM

FIGURE 1a

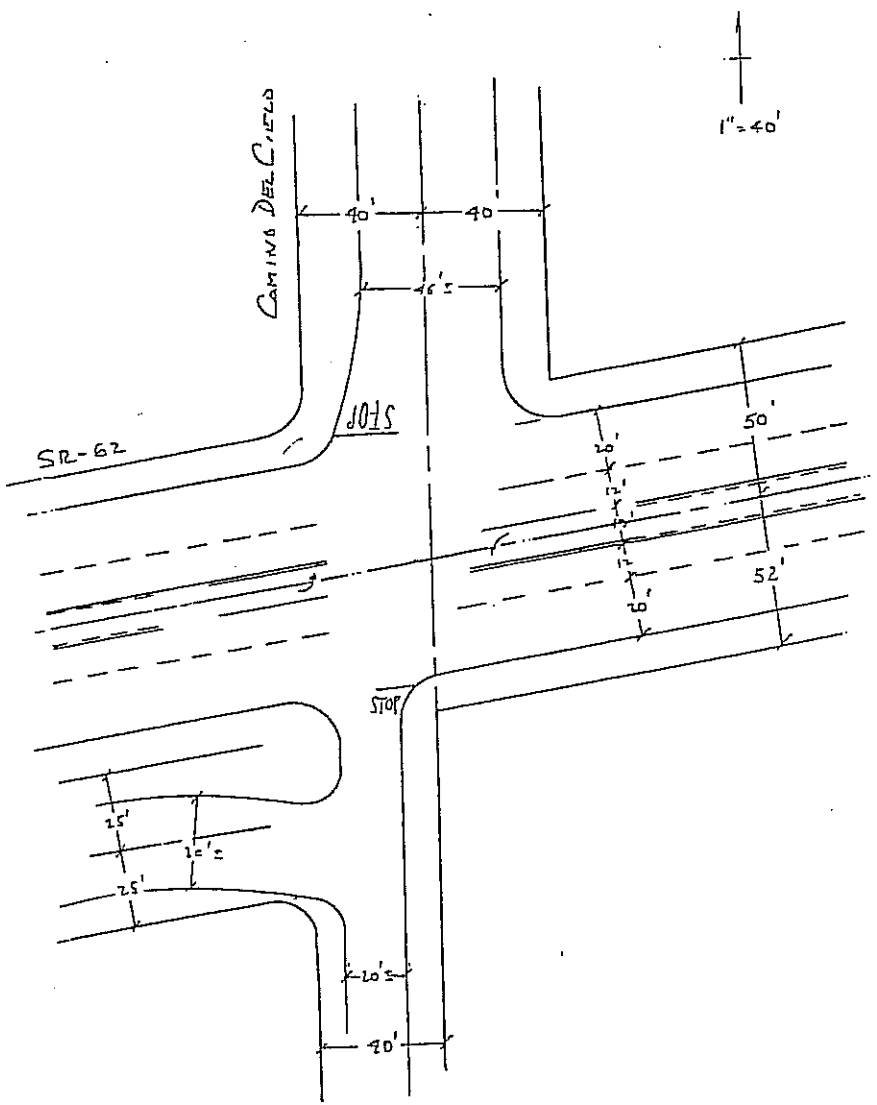
SOURCE: ROBERT KAHN, JOHN KAHN & ASSOCIATES



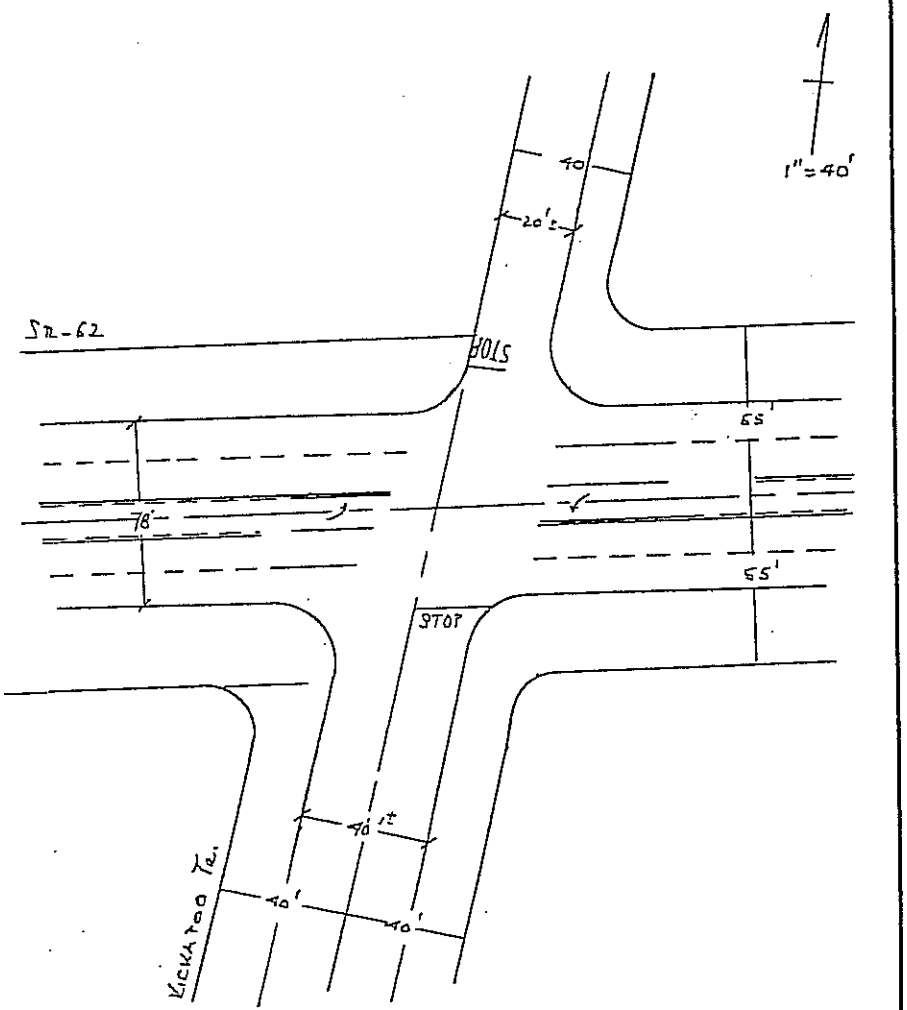
TOWN OF YUCCA VALLEY
EXISTING ROADWAY AND HIGHWAY SYSTEM

FIGURE 1b

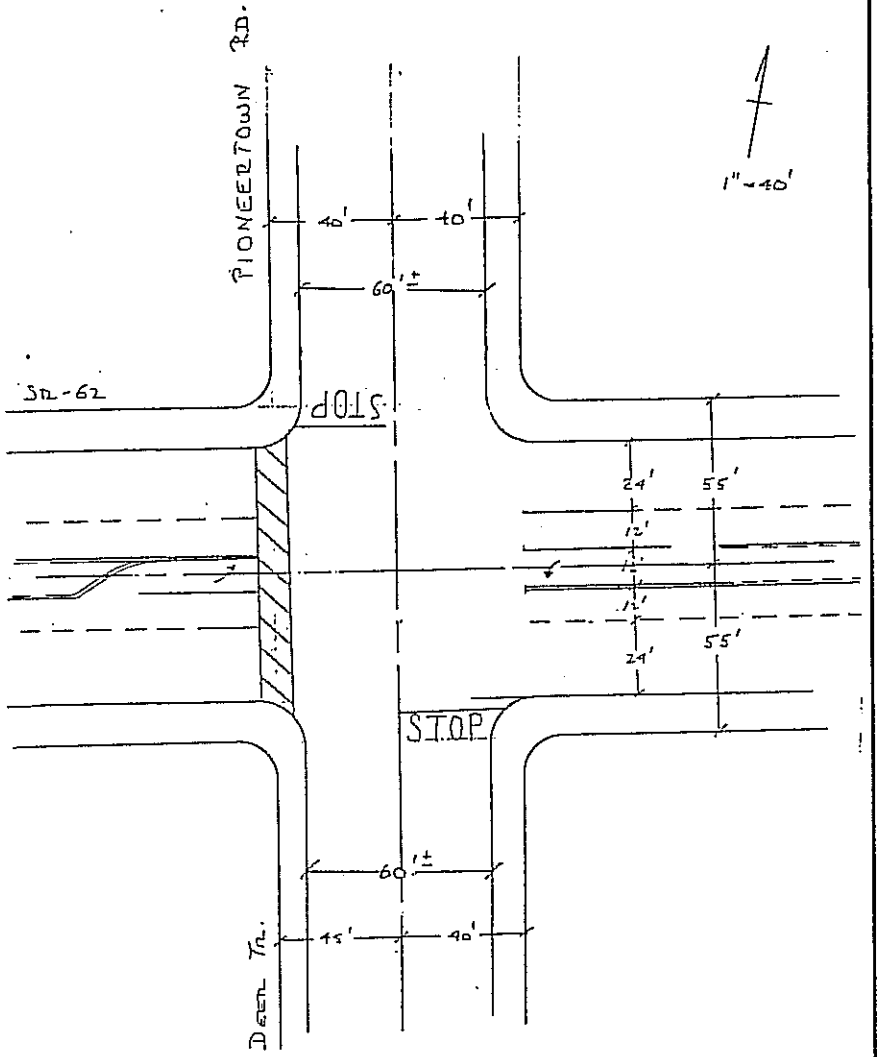
SOURCE: ROBERT KAHN, JOHN KAHN & ASSOCIATES



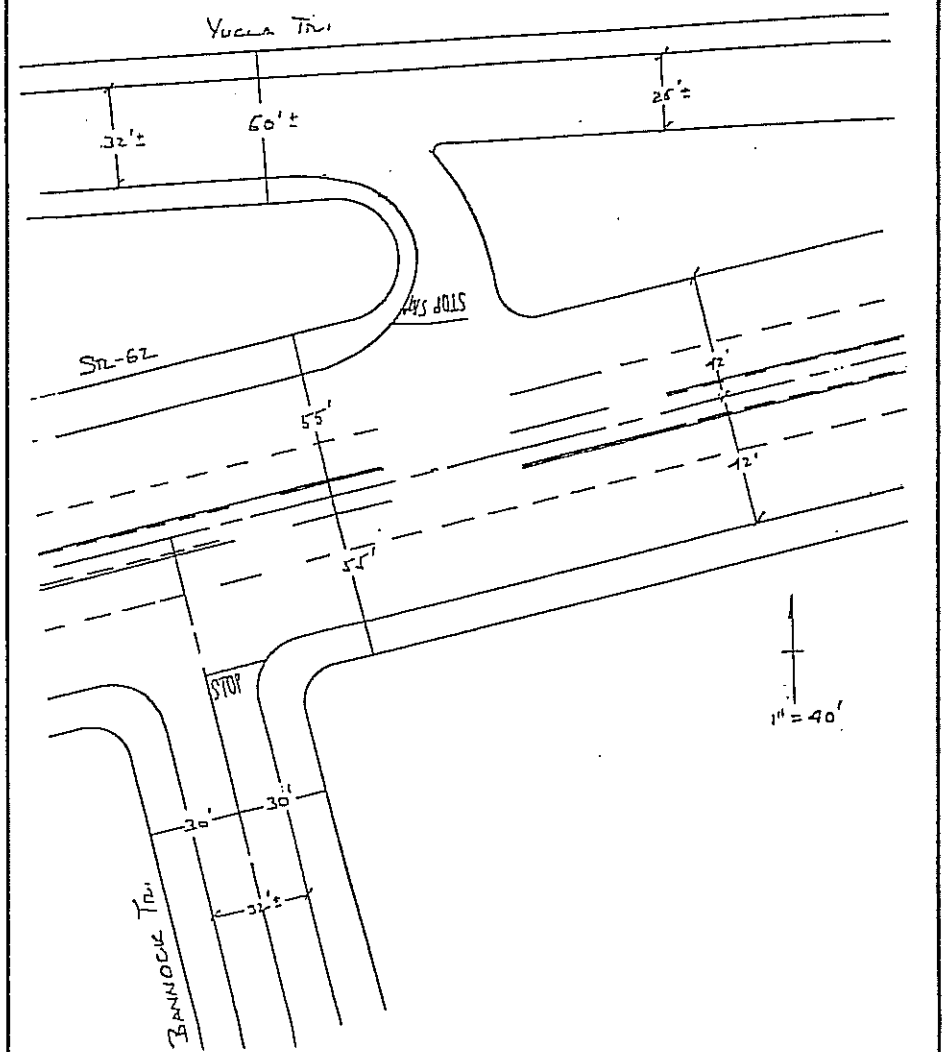
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Camino Del Cielo	Fig.2.A



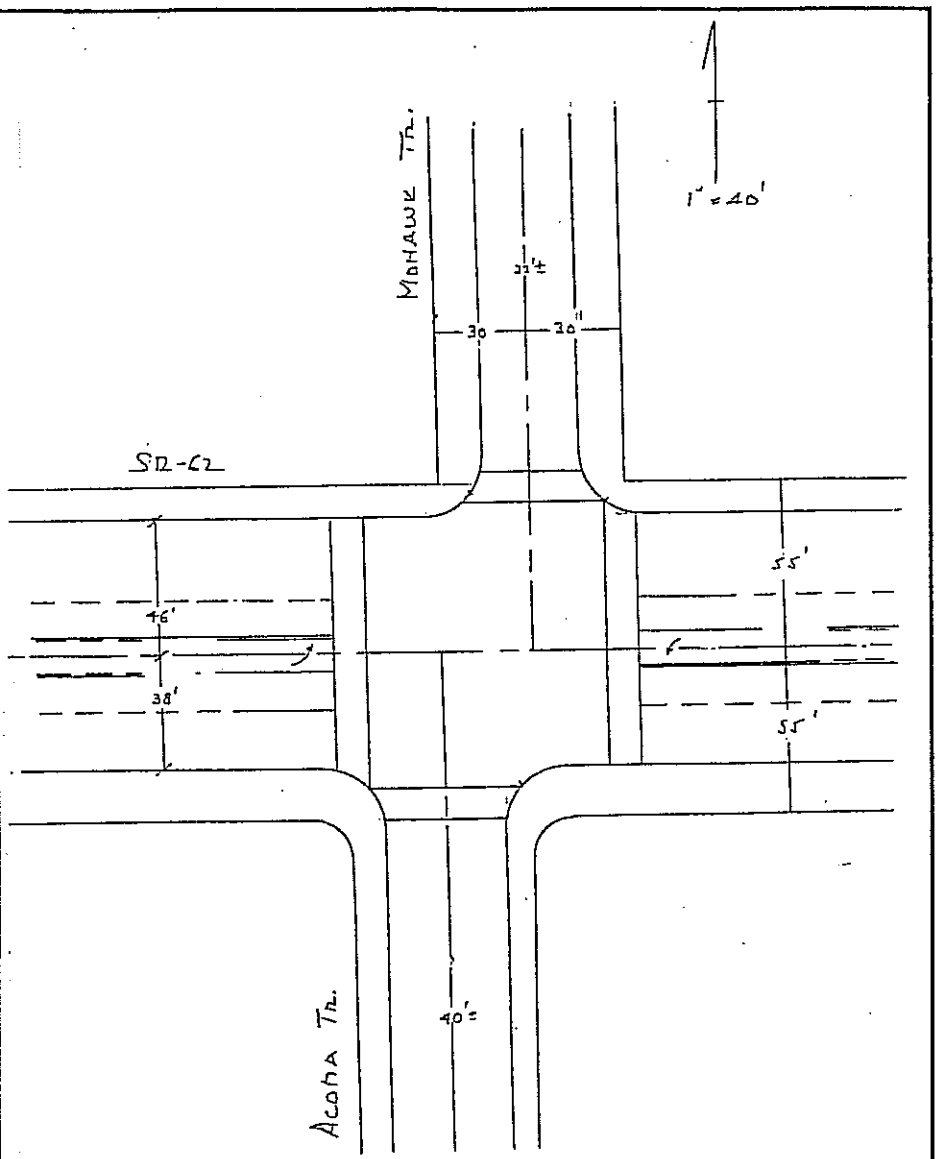
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Kickapoo Trail	Fig.2.B



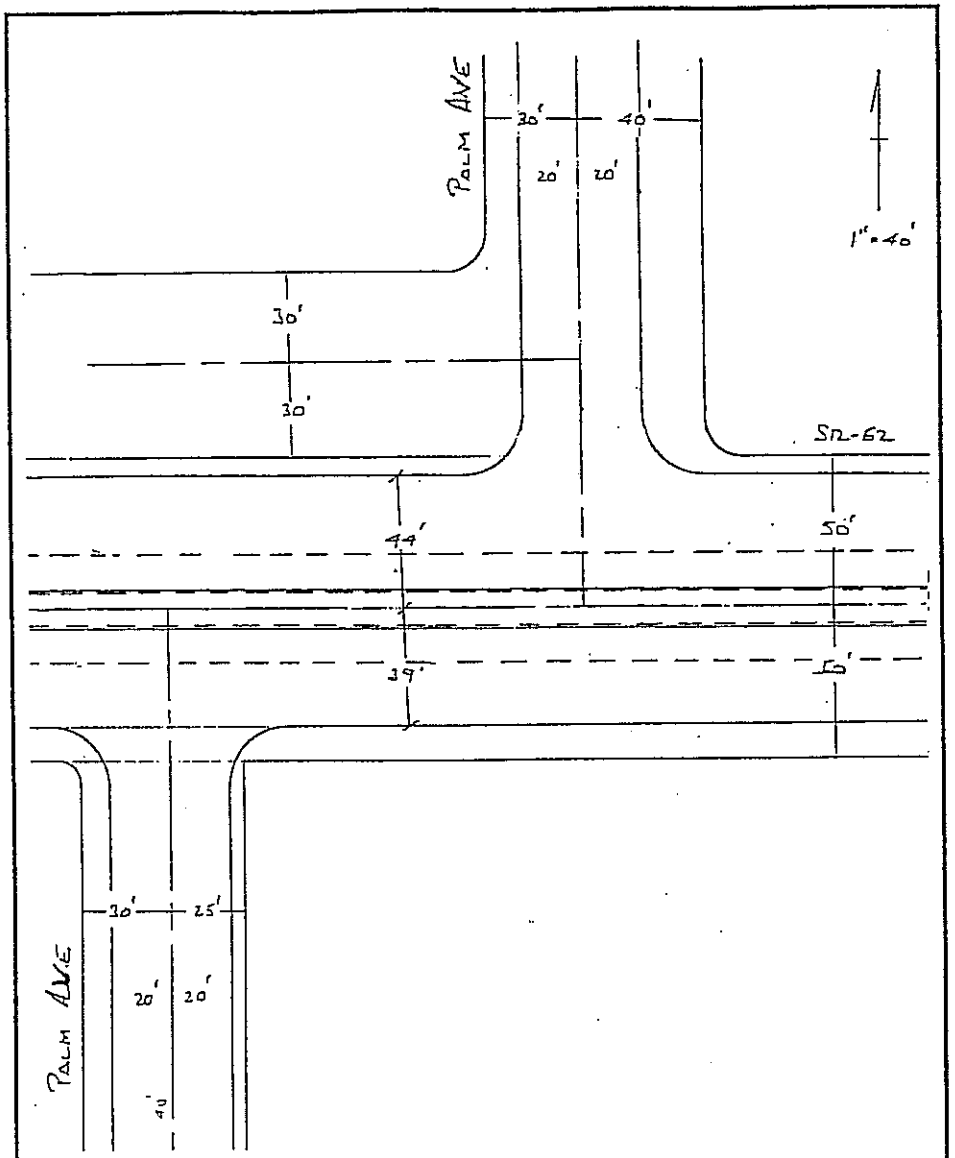
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Pioneertown Road/ Deer Trail	Fig.2.C



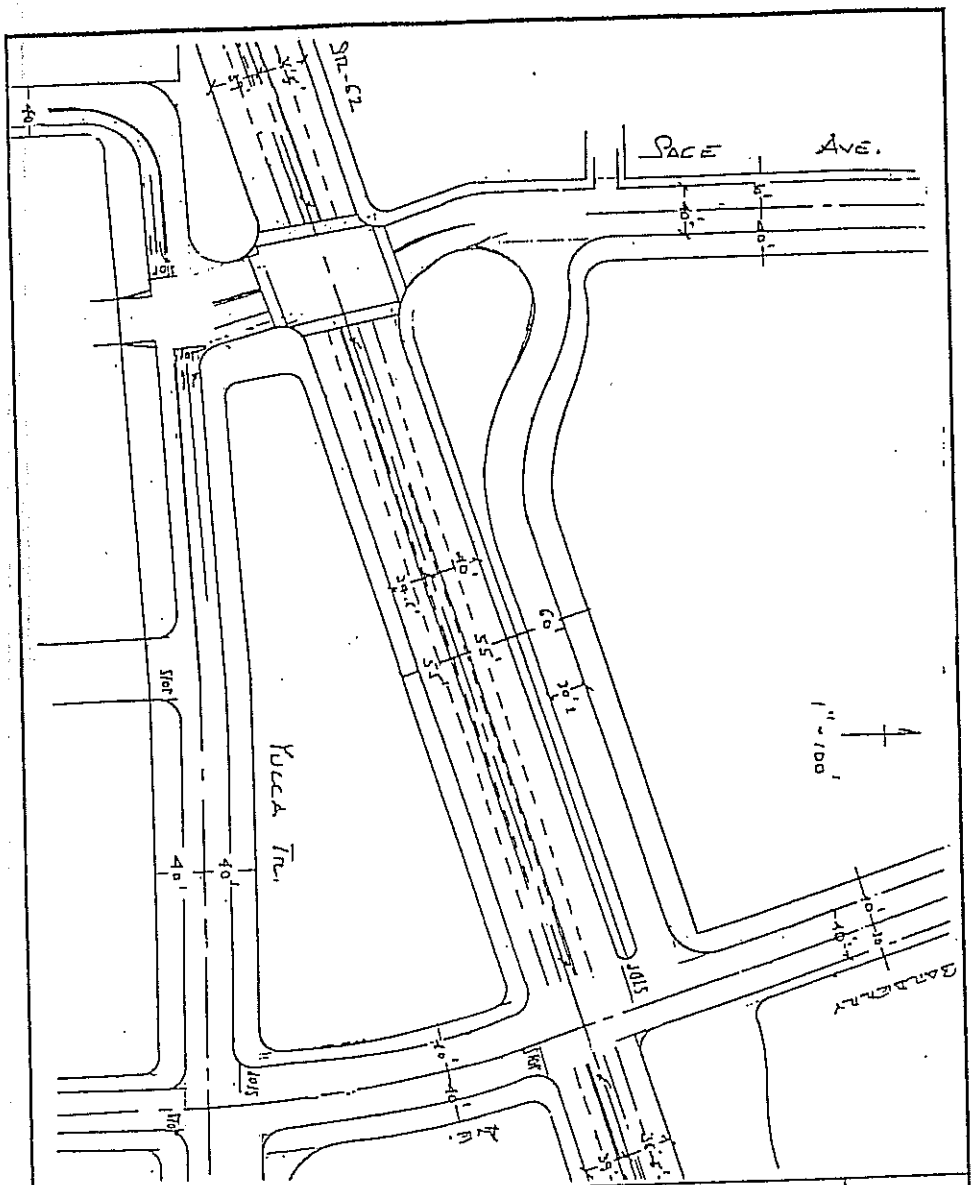
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Bannock Trail SR 62/Yucca Trail	Fig.2.D



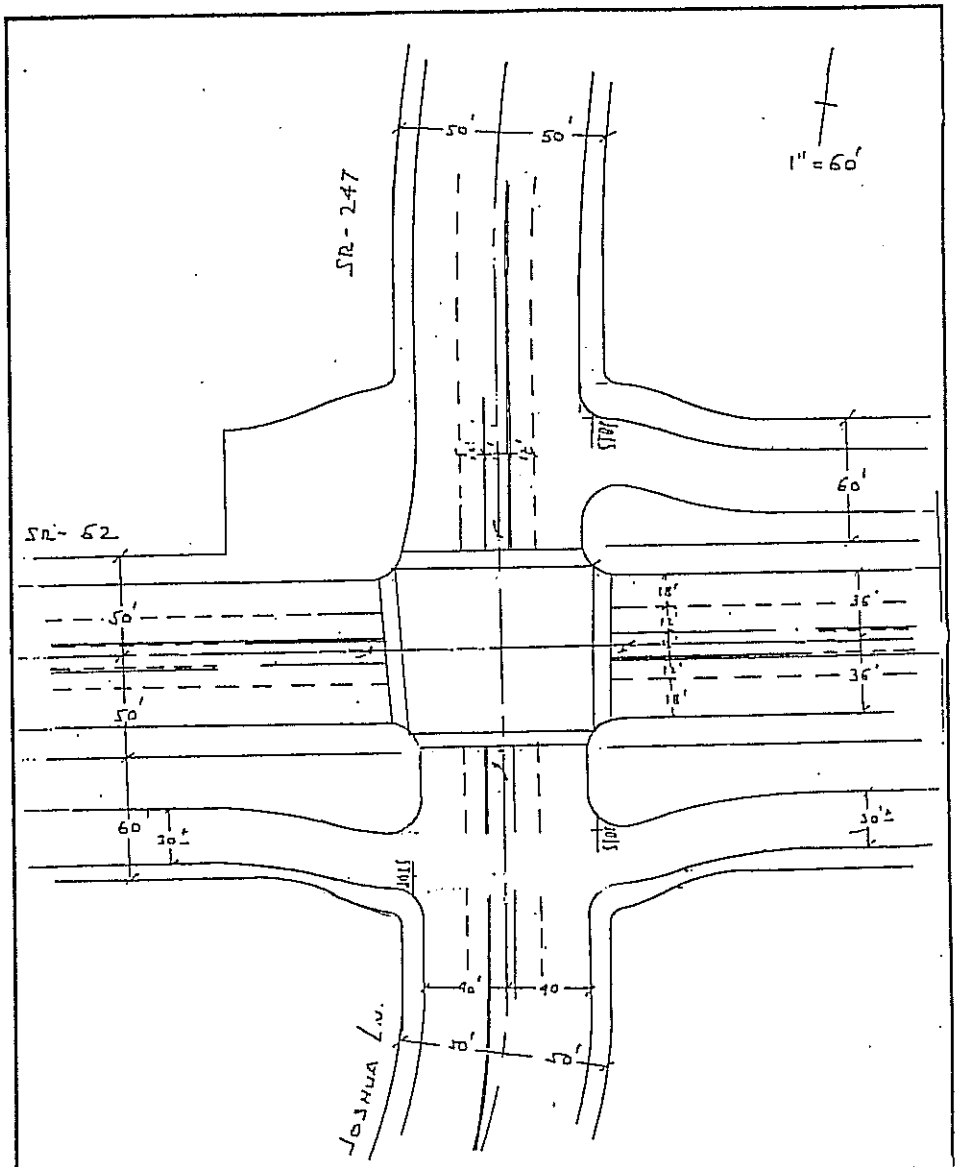
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Mohawk Trail/ Acoma Trail	Fig. 2.E



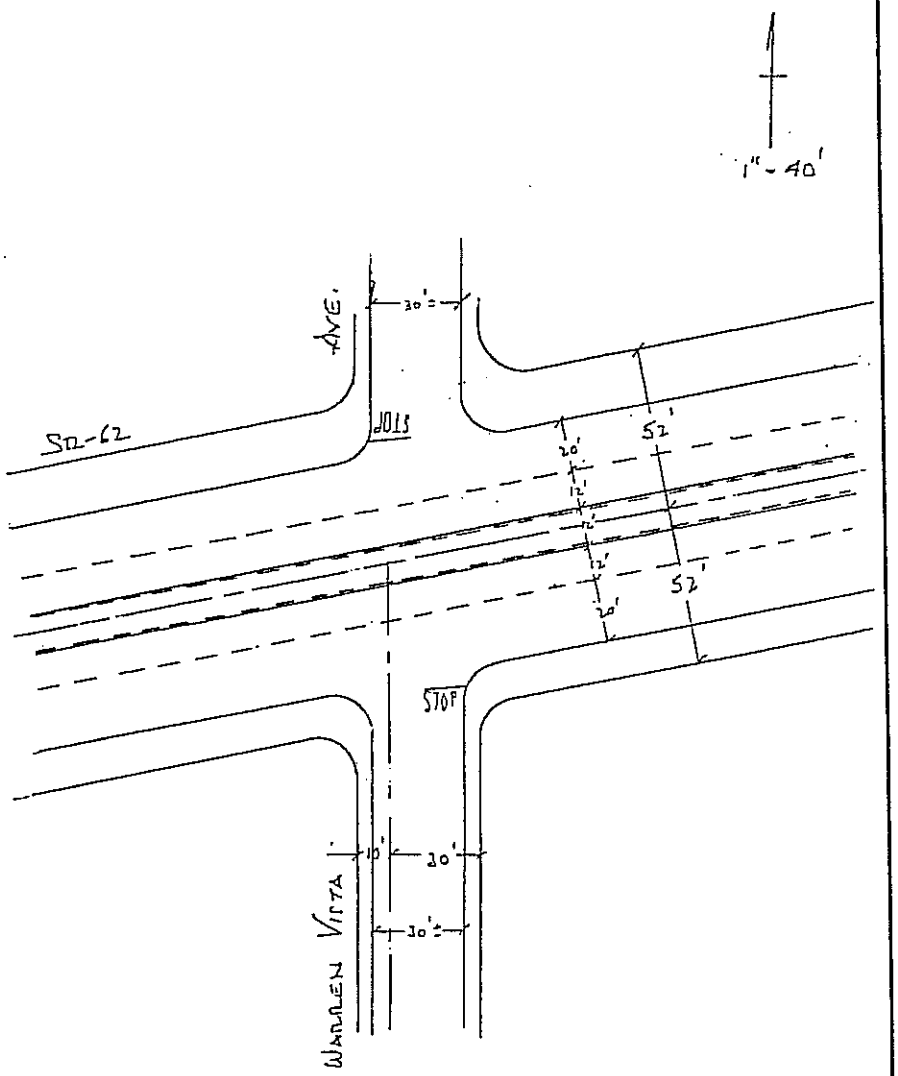
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Palm Avenue	Fig. 2.F



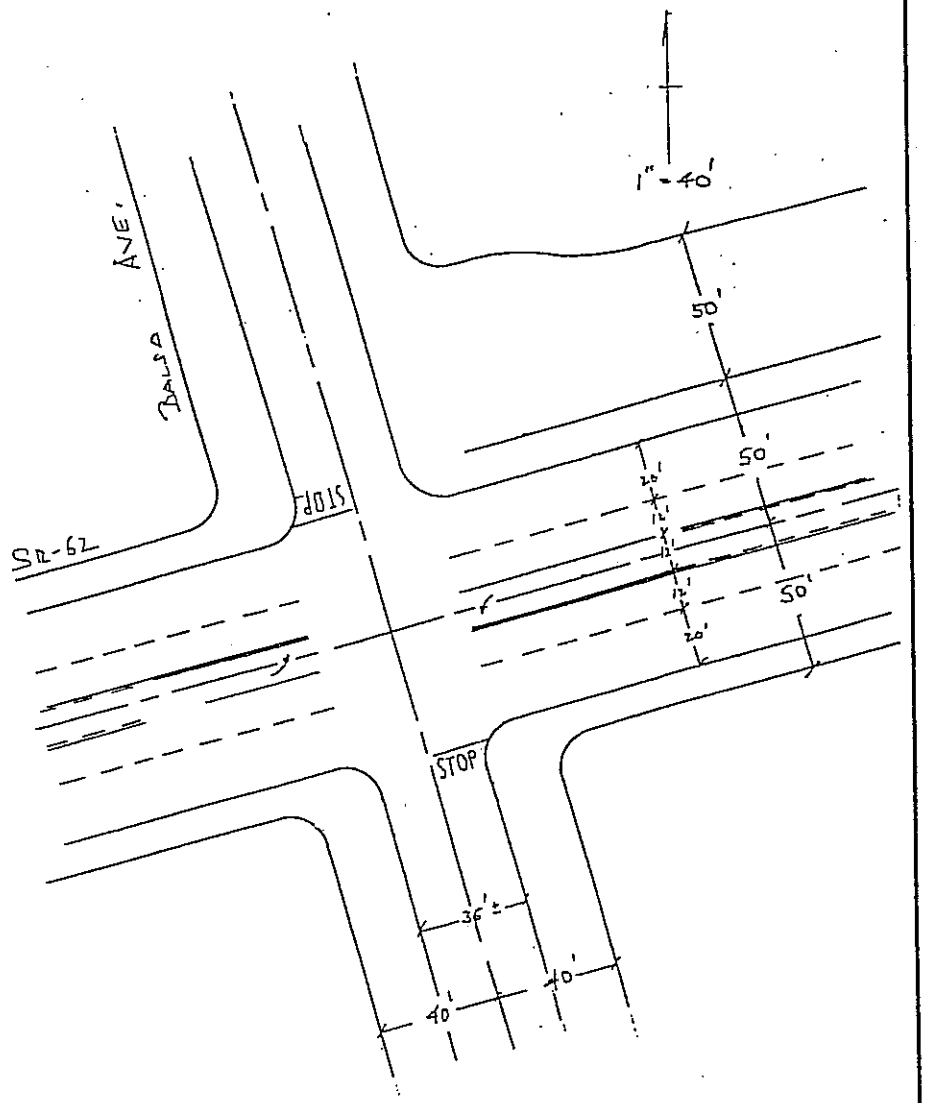
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Sage Avenue SR 62/Barberry Avenue SR 62/Yucca Trail	Fig. 2.G



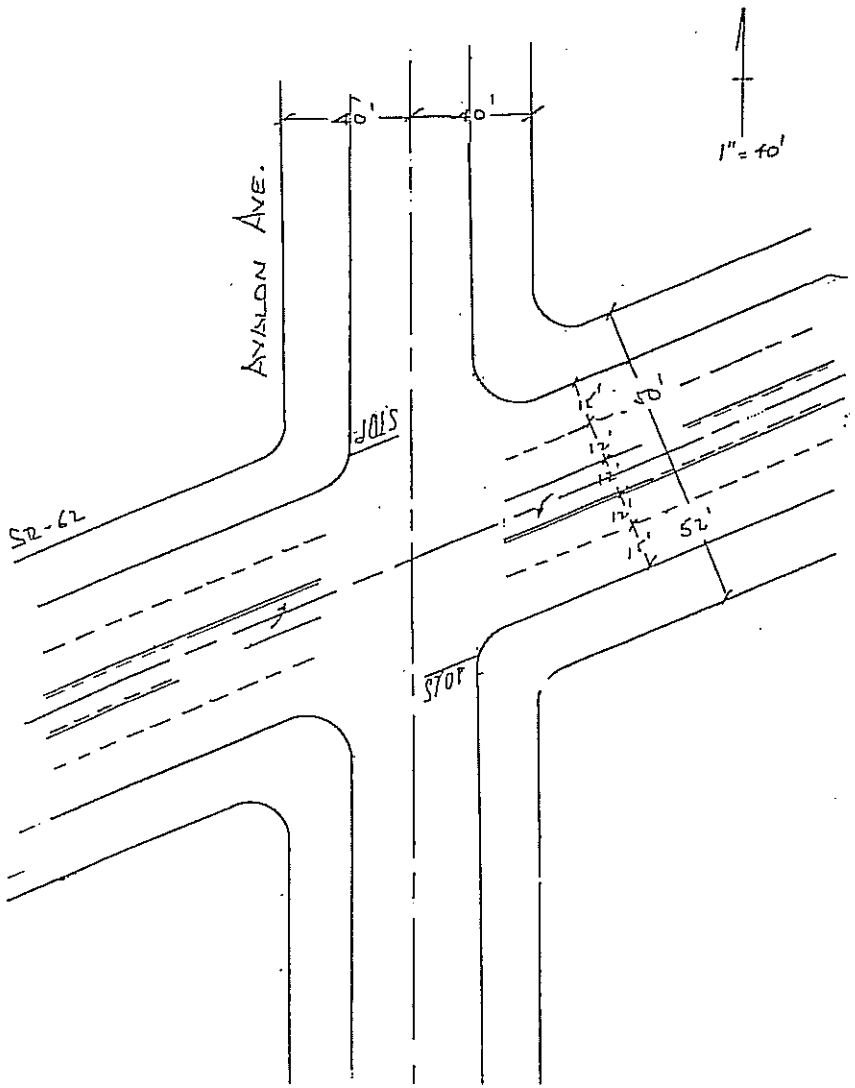
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/SR 247/Joshua Lane	Fig. 2.H



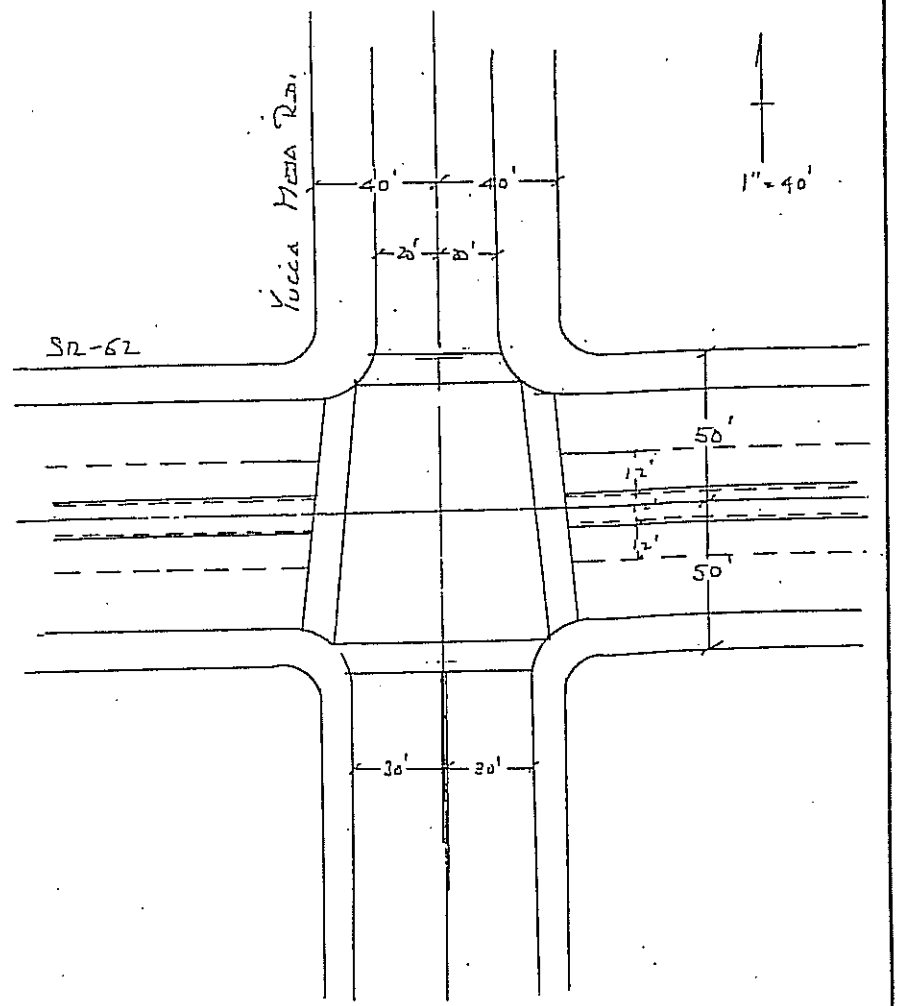
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Warren Vista Avenue	Fig. 2.1



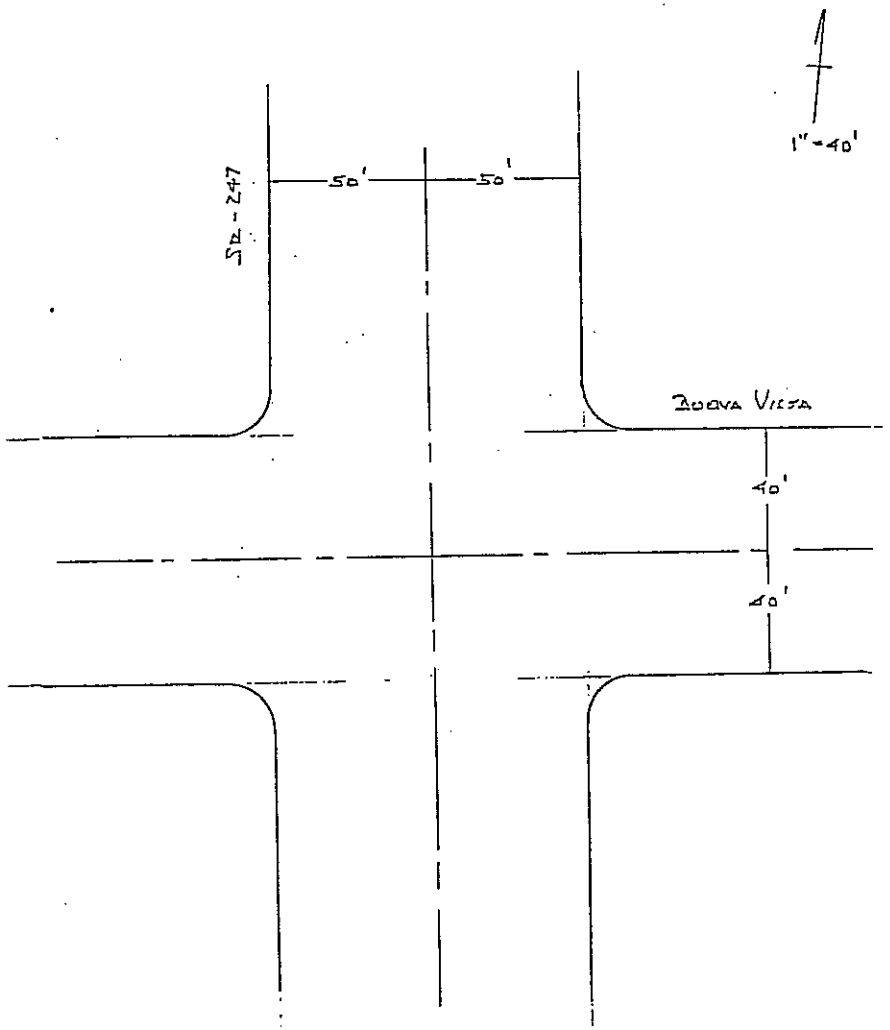
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Balsa Avenue	Fig. 2.2



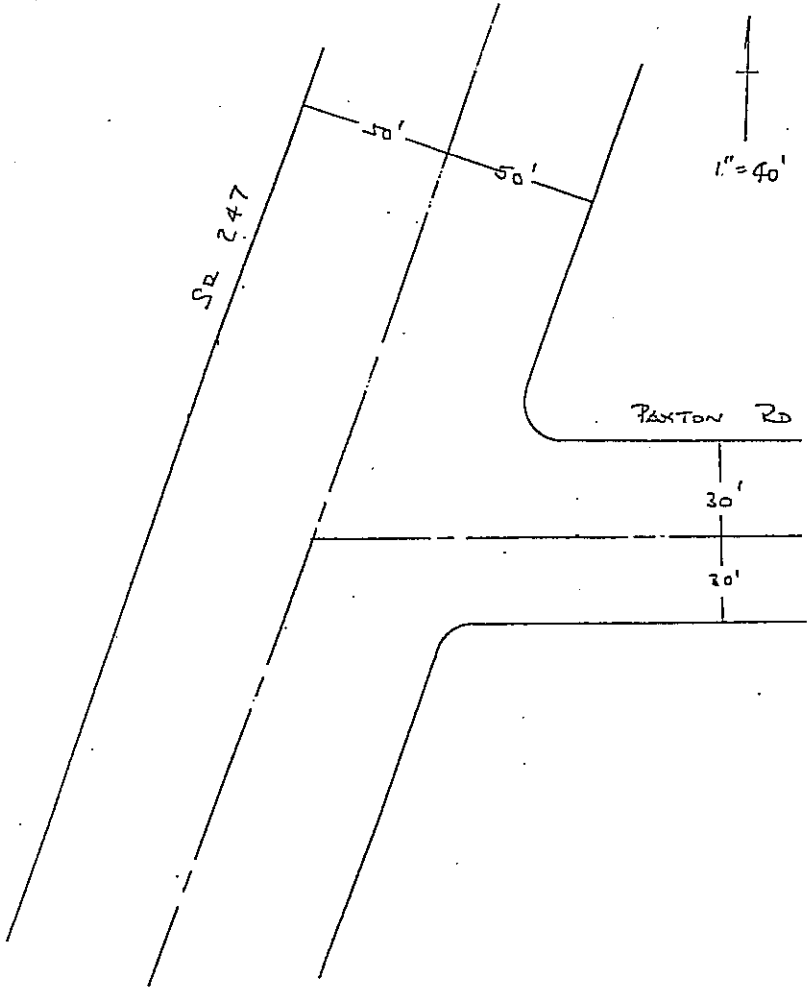
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Avalon Avenue	Fig. 2.K



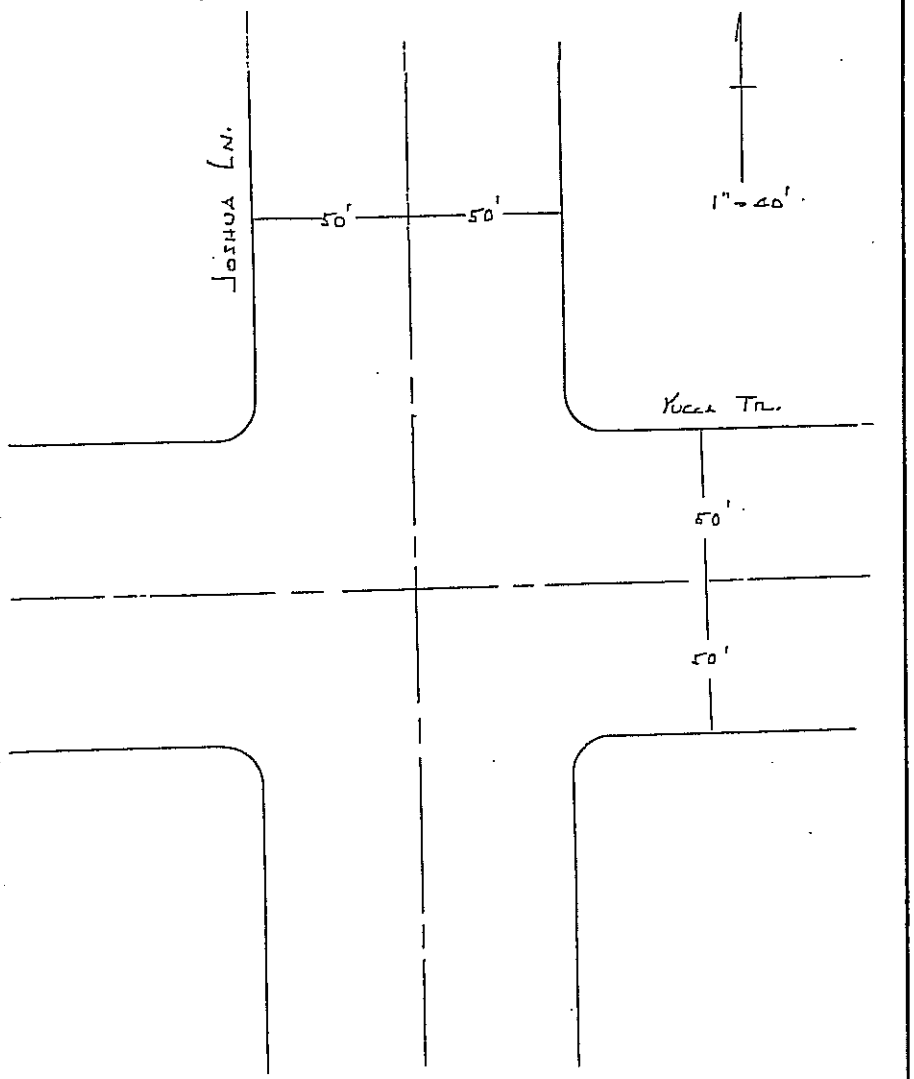
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 62/Yucca Mesa Road	Fig. 2.L



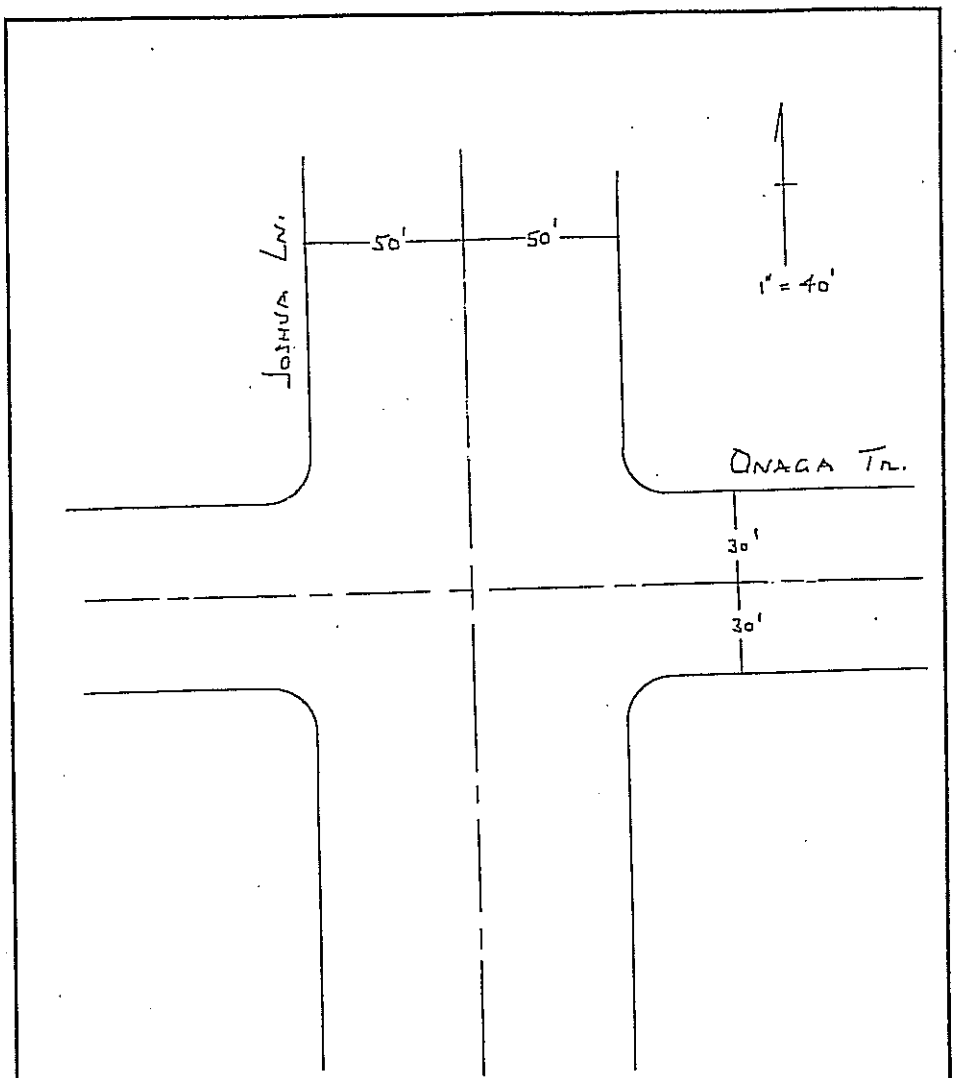
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 247/Buena Vista Drive	Fig.2.M



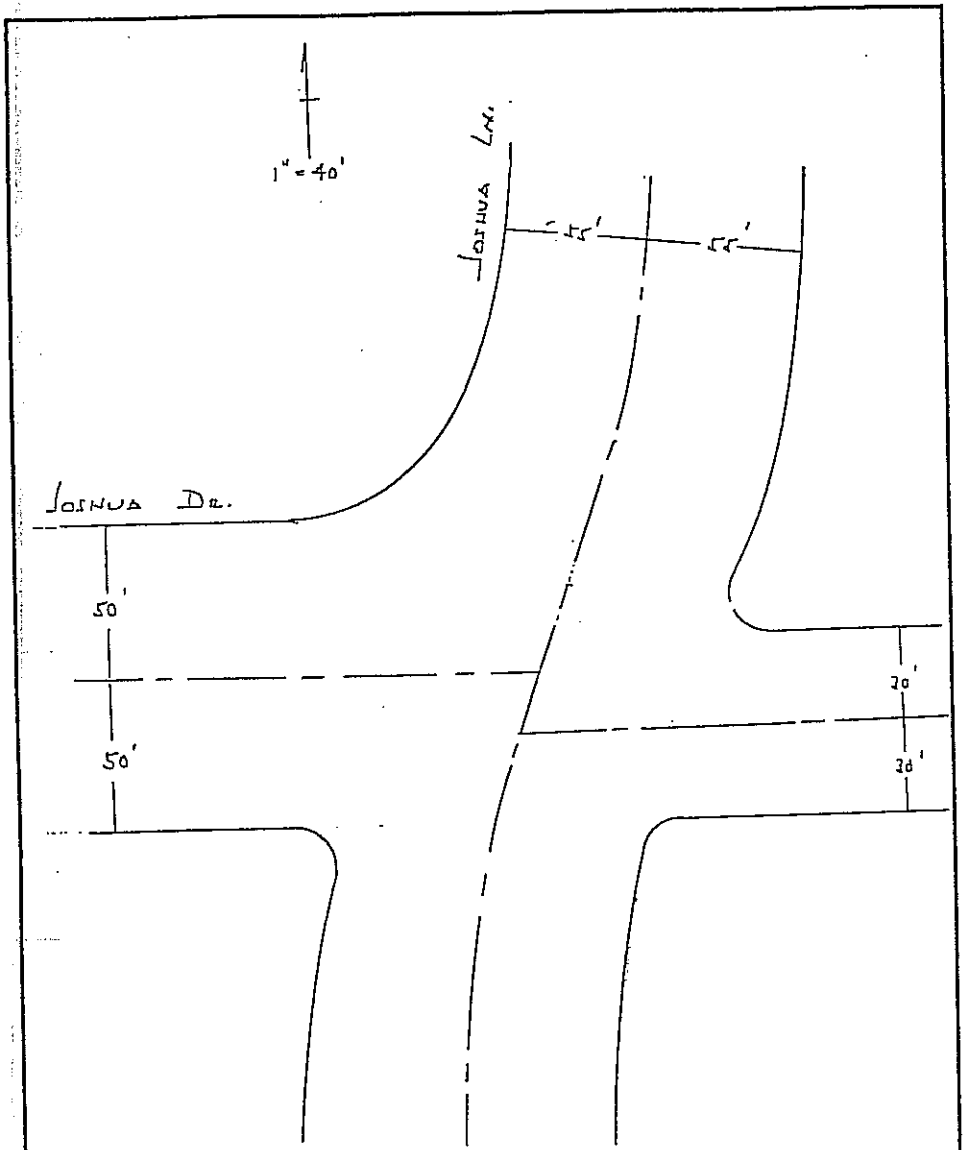
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics SR 247/Paxton Road	Fig.2.N



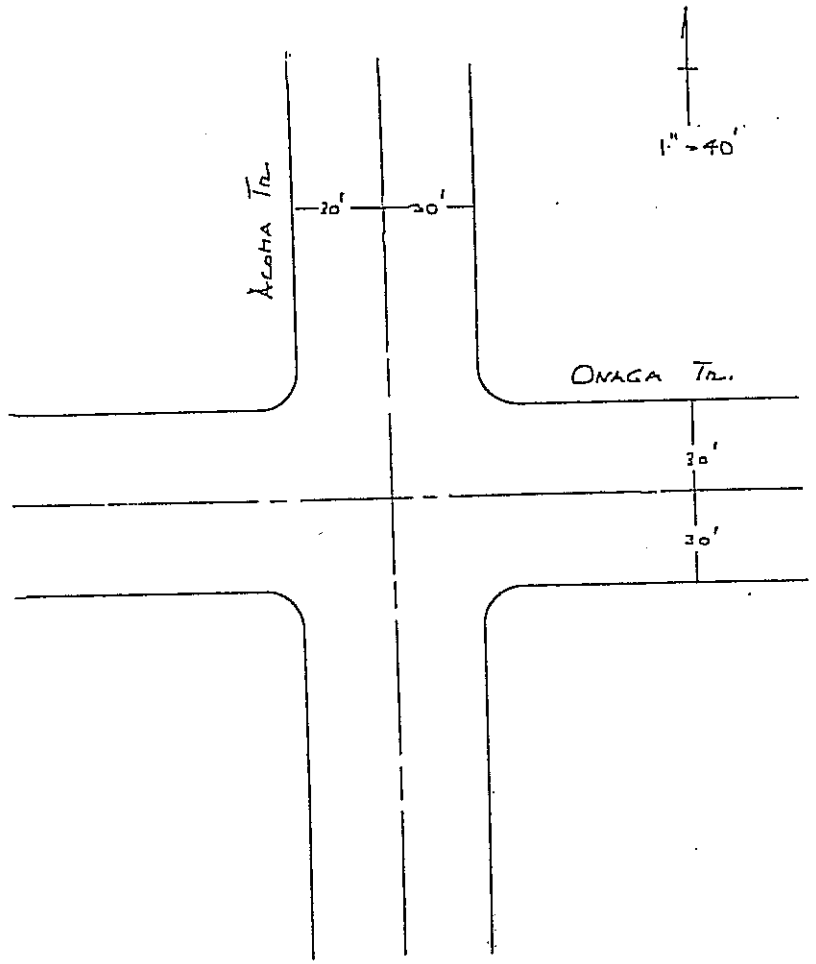
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics Yucca Trail/Joshua Lane	Fig.2.0



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics Onaga Trail/Joshua Lane	Fig.2.P



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics Joshua Drive/Joshua Lane	Fig. 2.Q



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Existing Intersection Geometrics Onaga Trail/Acoma Trail	Fig. 2.R

B. Existing Volumes

In order to evaluate long range traffic volumes and consequential impacts, existing traffic volume information is required. To this end, available data from various sources has been obtained. Individual turn movement, peak hour traffic counts were conducted at fourteen (14) intersections listed on TABLE 4. Figures 3a, 3b and 3c show the existing traffic volumes at the listed intersections during a weekday peak hour.

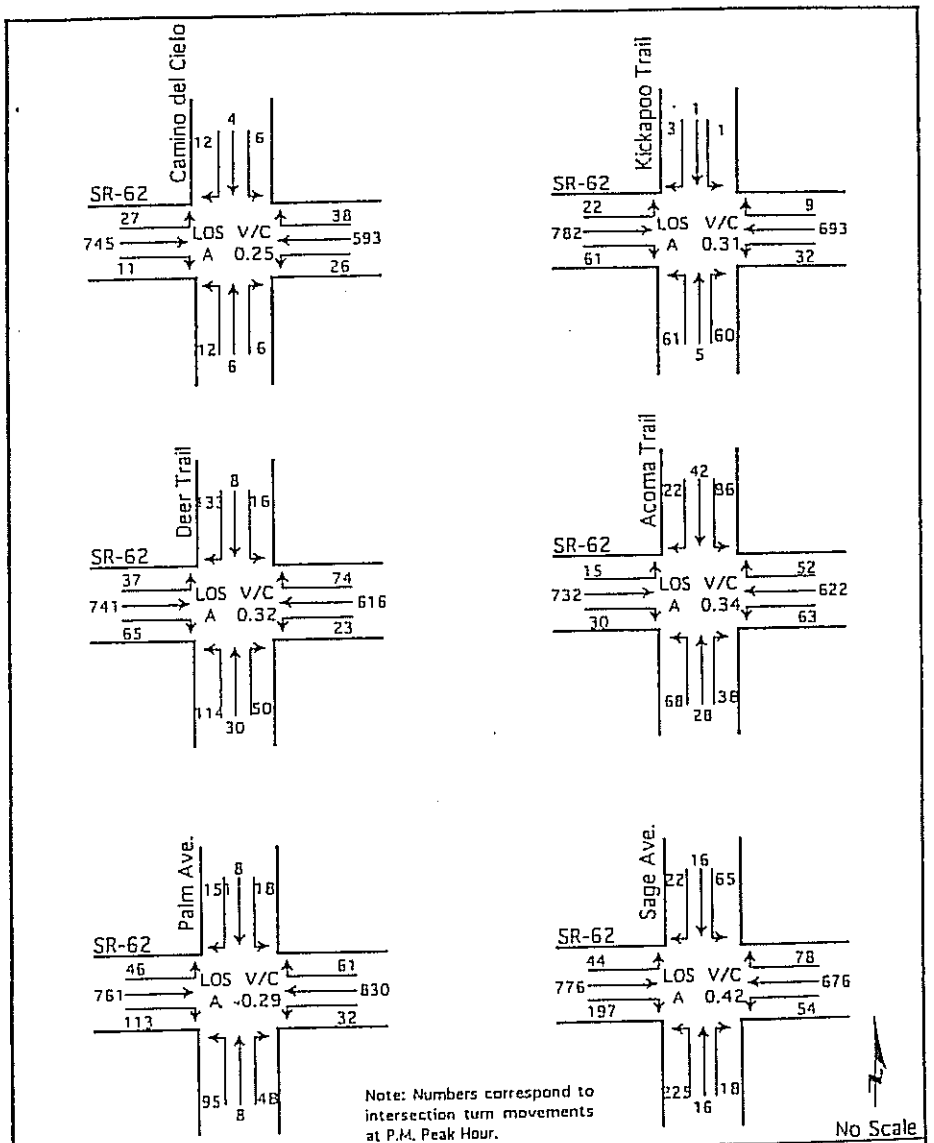
TABLE 4
LIST OF INTERSECTIONS WHERE P.M. PEAK HOUR
TURN MOVEMENT COUNTS WERE CONDUCTED
DECEMBER 1993
WEEKDAY

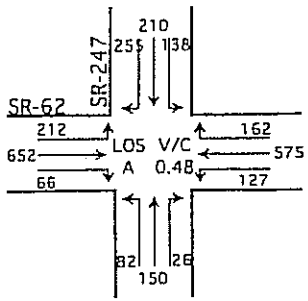
State Route 62 and Camino del Cielo
State Route 62 and Kickapoo Trail
State Route 62 and Deer Trail-Pioneertown
State Route 62 and Acoma Trail
State Route 62 and Sage Avenue
State Route 62 and St. Rt. 247-Joshua Lane
State Route 62 and Warren Vista Avenue
State Route 62 and Balsa Avenue
State Route 62 and Avalon Avenue
State Route 62 and Yucca Mesa Road
Joshua Lane and Yucca Trail
Avalon-Palomar Rd. and Yucca Trail
Acoma Trail and Onaga Trail
Joshua Lane and Onaga Trail

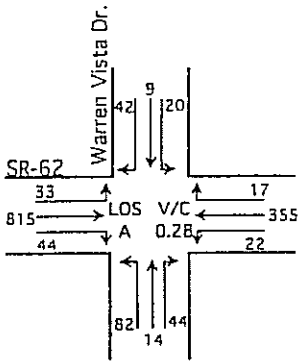
The field sheets of the traffic counts are enclosed in the APPENDIX. Additional traffic count information was obtained from the Staff of the Town of Yucca Valley which produces seasonal traffic volume variations from a permanent traffic count station located on Joshua Lane. A similar permanent traffic count station is also located on State Route 62 at the intersection of State Route 247. The information from both the Town and Caltrans permanent traffic count stations was incorporated with the traffic volume background information.

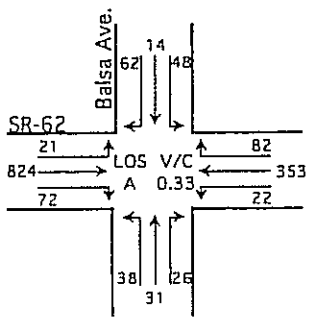
TRAFFIC DISTRIBUTION

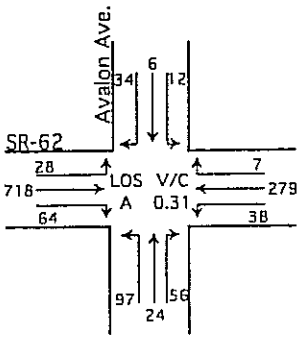
Traffic distribution was achieved by comparison of traffic count turn movements with the land use traffic generation for each TAZ as described in the methodology chapter.The major traffic desire line for external trips is to the west, outside of the planning area, internal trips are primarily for shopping, school trips and limited recreational purposes. The following TAZ Summary Table shows existing land use development and the corresponding trip generation of each TAZ.

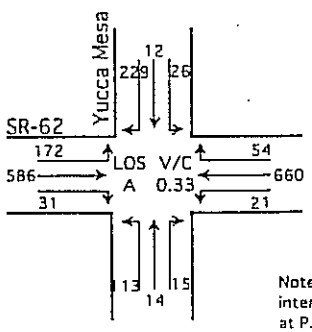


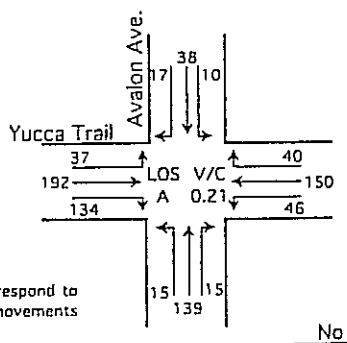








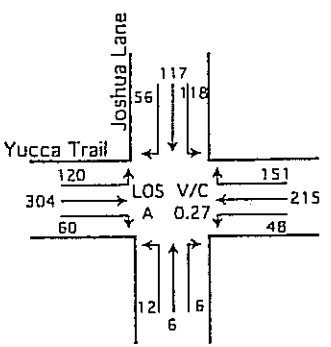


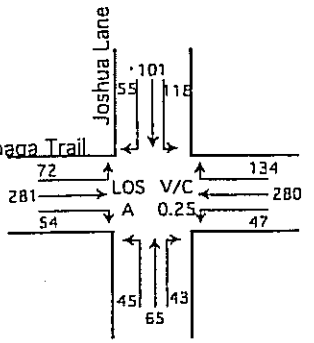


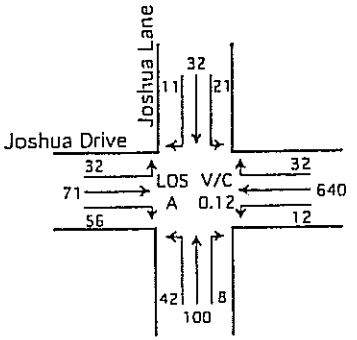
Note: Numbers correspond to intersection turn movements at P.M. Peak Hour.

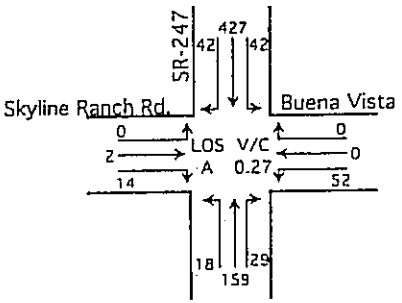
No Scale

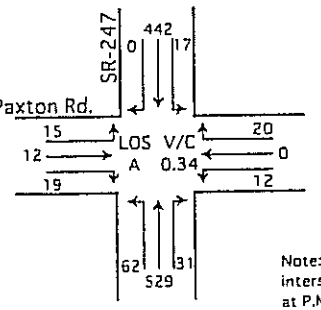
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES LEVEL OF SERVICE 1993 EXISTING CONDITIONS	Fig.3.B











Note: Numbers correspond to intersection turn movements at P.M. Peak Hour.

No Scale

Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES LEVEL OF SERVICE 1993 EXISTING CONDITIONS	Fig.3.C

Through trips were calculated to comprise approximately 8% for eastbound and 9.5% for westbound traffic during highest p.m. peak hour along State Route 62. Seasonal variations are documented by traffic count stations located on State Route 62 at Joshua Lane-State Route 247.

C. Existing Levels of Service

Traffic volumes were obtained from sources as previously described. Projections were made correlating the traffic count information to land use traffic generation. The traffic generation was obtained using the Transportation Engineers "Traffic Generation" Manual 5th Edition.

TABLE 5 shows the study intersections. This Table lists all intersections that represent key locations for traffic distribution and special attention.

TABLE 5
LISTING OF KEY INTERSECTIONS

*1	State Route 62 and Camino del Cielo
*2	State Route 62 and Kickapoo Trail
*3	State Route 62 and Deer Trail - Pioneertown Rd.
*4	State Route 62 and Acoma Trail
*5	State Route 62 and Sage Avenue
*6	State Route 62 and Palm Avenue
*7	State Route 62 and Joshua Lane - St. Rt. 247
*8	State Route 62 and Warren Vista
*9	State Route 62 and Balsa Avenue
*10	State Route 62 and Palomar Avenue-Avalon Road
*11	State Route 62 and Yucca Mesa Rd.
*12	State Route 247 and Buena Vista Dr - Skyline Dr.
*13	State Route 247 and Paxton Rd.
14	State Route 247 and Sunny Slope Dr.
*15	Joshua Lane and Yucca Trail
*16	Joshua Lane and Onaga Trail
*17	Joshua Lane and Joshua Drive
18	Yucca Trail and Palomar Avenue
19	Yucca Trail and Acoma Trail
20	Onaca Trail and Palomar Avenue
21	Onaca Trail and Sage Avenue
22	Onaca Trail and Joshua Lane
23	Onaca Trail and Acoma Trail
*24	Yucca Trail and Avalon Road

*Traffic volumes for each of these intersections were evaluated. Based on the traffic density, selected intersections were identified for detailed study.The selected intersections are marked with an asterisk and for each of these Levels of Service were calculated. The result of these calculations along with the Volume to Capacity Ratios V/C and Levels of Service were identified for existing conditions. The result of these calculations are shown on TABLE 6 as well as graphically shown on FIGURES 3a 3b and 3c

TABLE 6
EXISTING
INTERSECTION CAPACITY CALCULATIONS
FOR KEY INTERSECTIONS

INTERSECTION	PEAK HOUR EXISTING CONDITIONS LOS	V/C
State Route 62 and Camino del Cielo	A	0.25
State Route 62 and Kickapoo Trail	A	0.31
State Route 62 and Deer Trail	A	0.32
State Route 62 and Acoma Trail	A	0.34
State Route 62 and Palm Avenue	A	0.29
State Route 62 and Sage Avenue	A	0.42
State Route 62 and St. Rt. 247	A	0.48*
State Route 62 and Warren Vista	A	0.28
State Route 62 and Balsa Avenue	A	0.33
State Route 62 and Avalon Drive	A	0.31
State Route 62 and Yucca Mesa Dr.	A	0.33
Joshua Lane and Yucca Trail	A	0.27
Avalon Drive and Yucca Trail	A	0.21
Joshua Lane and Onaga Trail	A	0.25
Joshua Lane and Joshua Drive	A	0.12
State Route 247 and Skyline-Buena Vista	A	0.27
State Route 247 and Paxton Road	A	0.34

*Under current conditions traffic at all study intersections is operating at free-flow levels. From time to time, perhaps mainly due to unexpectedly high pass-by trips, the intersection of State Route 62 and State Route 247 - Joshua Lane may experience periodic delays. As growth of the Town and the surrounding area continues, this location may experience significant delays.

AVERAGE DAILY TRAFFIC

Using the existing land use as a base, adding appropriate (see Table 2) pass-by trips, the existing average daily traffic volumes were calculated. These calculations were further validated by comparison of traffic counts obtained from the Town of Yucca Valley, study peak hour counts and machine counts conducted by Caltrans. See TABLE 7.

TABLE 7
CALCULATED AVERAGE DAILY TRAFFIC VOLUMES
EXISTING CONDITIONS
TOWN OF YUCCA VALLEY, CALIFORNIA

STREET	LOCATION	EXISTING ADT
Buena Vista	E/O S. R. 247	2,530*
S. R. 247	S/O Buena Vista	9,330**
S. R. 247	N/O S.R. 62	14,250**
S. R. 62	W/O Kickapoo Trail	19,940**
S. R. 62	E/O Acoma Trail	18,950**
S. R. 62	W/O S.R. 247	22,300**
S.R. 62	W/O Yucca Mesa Rd.	14,490**
Yucca Trail	E/O Joshua Lane	7,390*
Yucca Trail	W/O Avalon-Palomar	6,330*
Yucca Trail	W/O La Contenta	4,530
Avalon Palomar	N/O Yucca Trail	2,200*
Avalon Palomar	N/O Onaga Trail	2,300*
Onaga Trail	W/O Avalon-Palomar	3,660**
Onaga Trail	W/O Joshua Lane	3,550*
Onaga Trail	E/O Acoma Trail	4,630*
Onaga Trail	E/O Deer Trail	2,900*
Sage Ave.	N/O Onaga Trail	3,650*
Joshua Lane	N/O Joshua Drive	3,700*
Joshua Lane	S/O S.R. 62	4,440**
Palm Ave.	S/O S.R. 62	1,020*
Acoma Trail	S/O Onaga Trail	4,630**
Acoma Trail	S/O S.R. 62	2,500*
Deer Trail	N/O Onaga Trail	2,040**
Kickapoo Trail	S/O S.R. 62	2,310**
Paxton Rd.	W/O Avalon Drive	590*
Pioneertown	N/O S.R. 62	820*

Existing intersection configurations as well as right-of-way data were obtained from available records from the Town of Yucca Valley and from Caltrans. The study intersection configurations under existing conditions is shown on Figures 2a through 2r.

NOTE:

* Existing ADT's were obtained from traffic counts conducted by Counts Unlimited Inc., retained by the Town of Yucca Valley.
**All other existing ADT's were obtained from peak hour turn movement counts performed by Traffic Counts, Inc., and from land use traffic distribution calculations.

TRAFFIC SAFETY EVALUATION

The majority of the streets as well as the State Highway are currently paved. Several intersections as well as roadways should be improved to enhance traffic safety. Traffic safety studies should be conducted at the following intersections;

State Route 62 and State Route 247
Pioneertown-Deer Tr. and State Route 62
Yucca Trail, Bannock and State Route 62
Palm Ave. and State Route 62
Sage Avenue and State Route 62
Paxton Rd. and State Route 247
Airway Avenue and State Route 62

Each of these locations under current traffic conditions operate at acceptable Levels of Service, however, in some instances the intersection geometrics or inadequate pavement width may not meet minimum acceptable safety standards.

D. Related General Plan Issues

The Study purpose is to develop a General Plan for the Town of Yucca Valley. The issues regarding development of a General Plan are therefore applicable in all of the chapters of this Report. Future land use densities as they relate to traffic generation, distribution, growth and relative levels of service are addressed. Alternatives are presented to enable decision makers with their policy formulation.

E. Traffic Mitigation Measures

The existing street system and intersection traffic volume impacts show adequate capacity at study intersections. Wherever street intersections are unpaved or unimproved, pavement should be added to accomodate existing travel lanes.

RECOMMENDATIONS-EXISTING CONDITIONS

It is recommended that the seven above listed intersections be further studied and investigated. This study should consider improved geometrics and possible widening. In addition, traffic safety studies should include warrants for traffic signalization at the following intersections:

State Route 62 and Kickapoo Trail
State Route 62 and Pioneertown-Deer Trail
State Route 62 and Palm Avenue
State Route 62 and Airway Avenue
State Route 62 and Camino Del Cielo
State Route 62 and Avalon Ave.
State Route 247 and Buena Vista/Skyline Rd.
State Route 247 and Paxton Rd.

III. FUTURE CONDITIONS

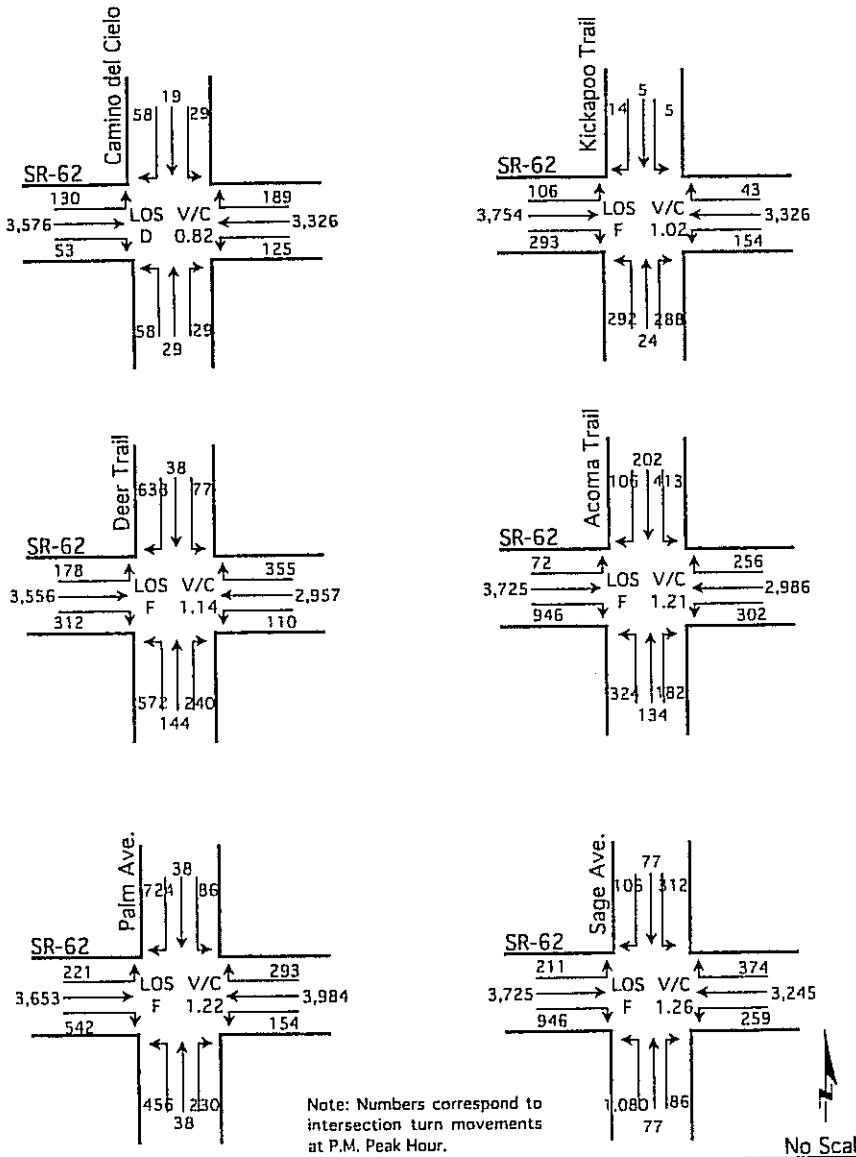
The Town of Yucca Valley is in the process of establishing a General Plan for the development of the Town. In order to assist in this process, the Town formed an Advisory Committee. This Committee was consulted on a regular basis. An Environmental Impact Report was developed which considers four distinct land use scenarios. These include:

The San Bernardino County General Plan
A Preferred Alternative land use scenario
A high intensity development over and above the Preferred Alternative - Alternative One
A lower intensity development scenario of the Preferred Alternative - Alternative Two

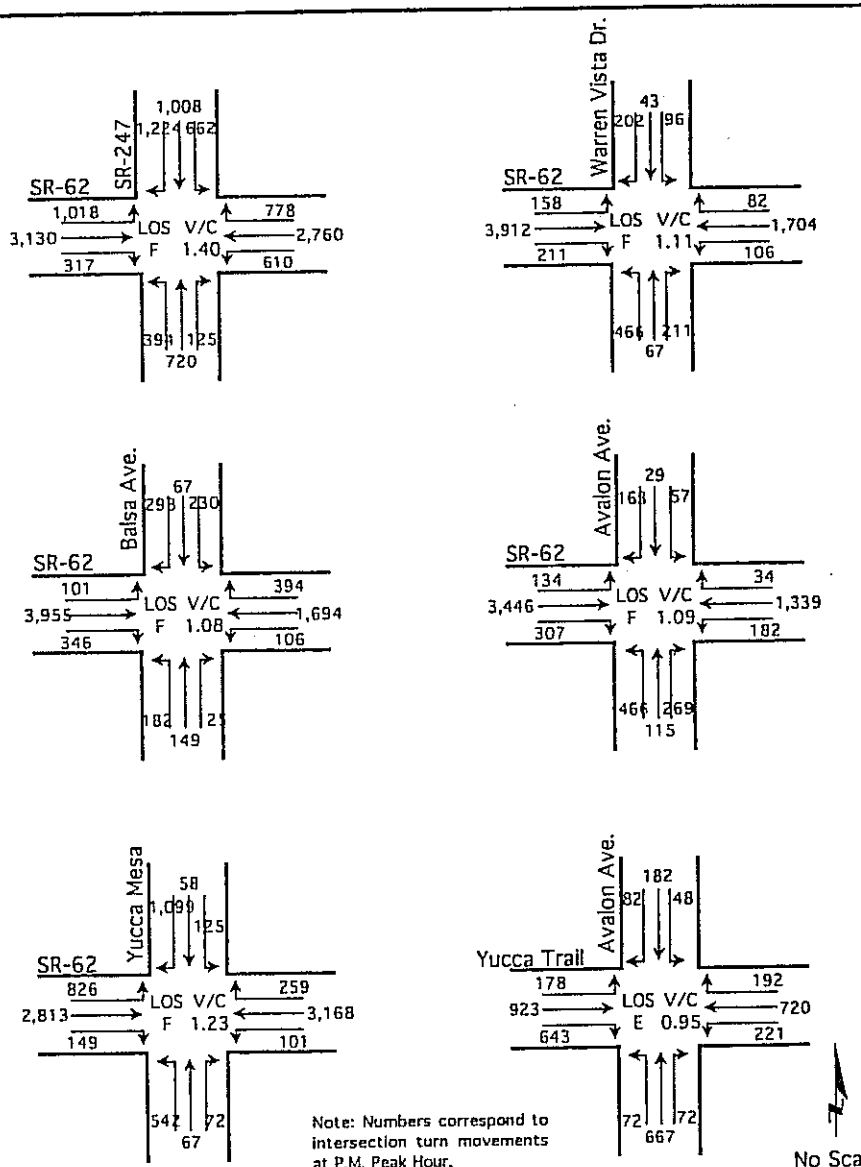
Each of these land use scenarios produce differing traffic attractors and generators. Each therefore increase or decrease traffic demands. In order to determine future traffic consequences as separate traffic scenario commensurate with the land uses proposed for each of the four alternatives, separate traffic volume generation was calculated for each land use. For simplification purposes, similar land uses having approximately average traffic generation were combined. The proposed land use categories within each TAZ were calculated and using the Transportion Engineers "Traffic Generation" Manual 5th Edition, traffic was distributed throughout the roadway and street system of the General Plan Area. Pass-by trips were calculated at a rate of growth of one-half percent per year and added to the assigned traffic. The resulting calculations and traffic assignment distribution was quantified and assigned to effected key intersections. At these locations, the Levels of Service were calculated for each of the alternatives.

A. Traffic Forecasts

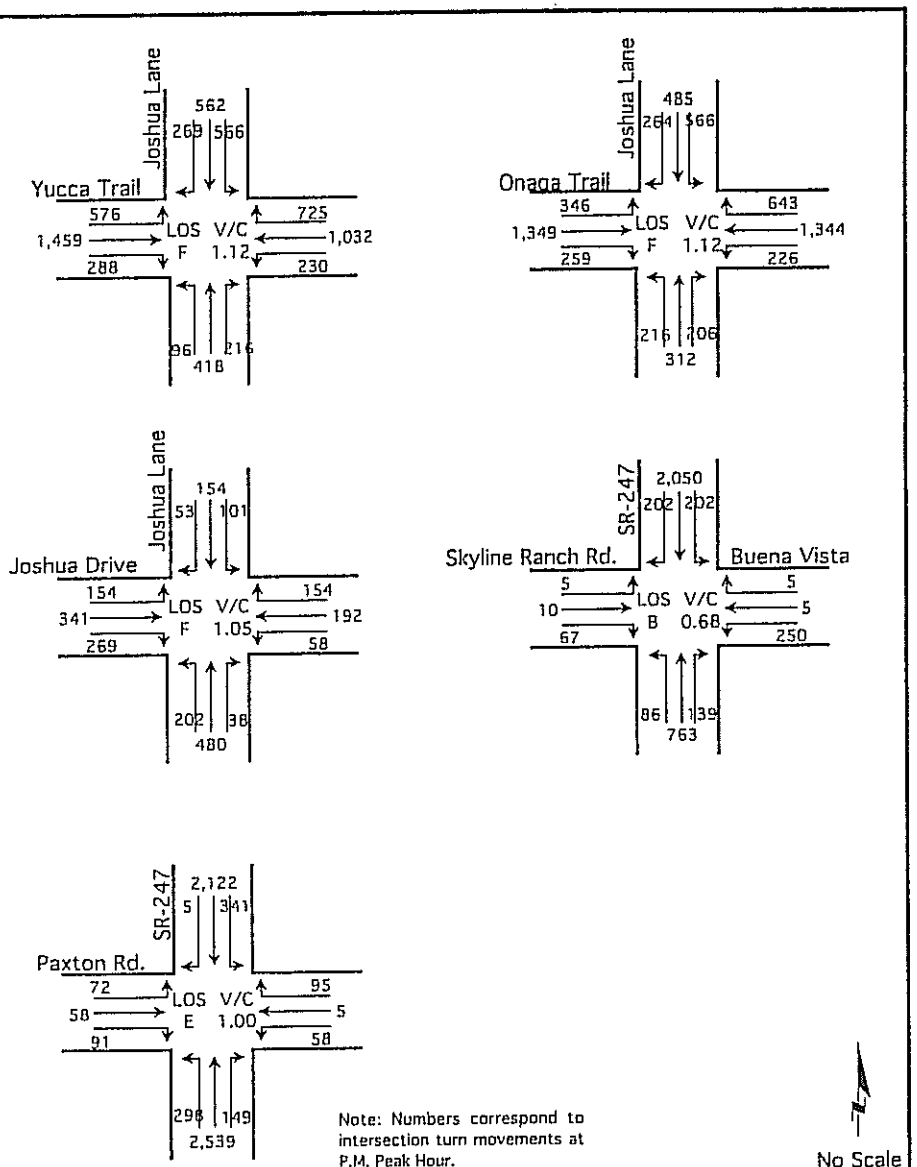
In forecasting future traffic volumes at key street links and key intersections, a hypothetical year for land use build-out is used. For the purposes of this study, the year 2015 was selected being approximately twenty years in the future. Full build-out of the study area may not actually occur. Other unanticipated factors such as fluctuating economy, population migration or other factors effect traffic flows. The traffic study and the corresponding results of forecasting are consistent with the most conservative scenario. The land uses use the highest selected traffic generation and peak hour impacts are not artificially redistributed to less desirable travel desire lines.



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES YEAR 2015 LEVEL OF SERVICE SAN BERNARDINO COUNTY GENERAL PLAN	Fig.4.A



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES YEAR 2015 LEVEL OF SERVICE SAN BERNADINO COUNTY GENERAL PLAN	Fig.4.B



C. Average Daily Traffic

Using the San Bernardino General Plan, traffic assignment and distribution of P.M. peak hour traffic volumes as well as existing twenty-four hour traffic counts, and comparing them mathematically to the projected peak hour traffic volumes, average daily traffic was forecasted. The methodology uses a ratio of growth as reflected by the P.M. peak hour traffic counts of existing traffic volumes to those forecast for the General Plan build-out. The result of this projection shown on TABLE 8 indicates future average traffic volumes along the same roadway links shown in TABLE 5.

Caltrans provided twenty four hour traffic counts from a permanent count station located on State Route 62. The detail sheets are enclosed in the APPENDIX of this Report. The count station records indicate traffic volumes at peak conditions lasting from approximately noon through 6 p.m. on weekdays. Peak hour impacts at study intersections are therefore not consistent with the traditionally accepted 10% ± of the average daily traffic. Highway 62 serves a large recreational area. Pass-by traffic influences average daily trafic volumes. Peak hour impacts are therefore not as great as the average daily traffic volumes. When compared to other urban areas, peak hour traffic consists of approximately 10% of A.D.T. Along State Route 62 in the Town of Yucca Valley, this peak hour volume is reduced and spread over several hours, thereby enabling reasonable mitigation measures at impacted intersections.

Roadway or link capacity, when measured against average daily traffic, does not accurately reflect capacity constraints. Maximum capacity is most accurately measured and achieved at intersections during the highest peak hour. Most commonly, this peak hour occurs between 4 P.M. and 6 P.M. on weekdays. It reflects traffic constraints at key intersections where appropriate mitigation measures can be effected.

D. San Bernardino General Plan Build-Out Conditions Year 2015

As described in previous sections, traffic assignment modeling was performed using Manual Trip Distribution Methodology. The same Traffic Analysis Zones (TAZ) were utilized as the guide for the evaluation of the existing traffic model.

TABLE 9 shows each TAZ, it's planned land use designation scope and traffic attractors and generators. The calculations are based on peak hour volumes and derived from the Transportation Engineers "Traffic Generation" Manual 5th Edition.

E. Traffic Distribution

Traffic generated by each TAZ as referred to in TABLE 9 was distributed to the street and highway network of the Town. Traffic was accumulated using gravity manual methodology as previously described. Pass-by trips and growth factors between the current year and the 2015 Target Year was added. Cumulatively, the future traffic volumes were plotted, assigned to intersections that represent the greatest traffic constraints and Traffic Volume Capacity, Levels of Service were calculated.

Traffic volumes for P.M. peak hour conditions were plotted and are shown on FIGURES 4a, 4b, and 4c.

F. Levels of Service

Using the projected P.M. peak hours volumes, Levels of Service for the key intersections were calculated. TABLE 10 shows the Levels of Service and the relative Volume to Capacity ratios. These figures indicate the projected congestion at key locations if the entire San Bernardino County General Plan were built out to completion. The assumed target year 2015 is used as a projected 20-year scope of completion. New development, redevelopment and in-fill of parcels is assumed.

TABLE 8
FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
SAN BERNARDINO COUNTY GENERAL PLAN
BUILD-OUT CONDITION

STREET	LOCATION	SAN BERNARDINO LAND USE YEAR 2015 FORECAST ADT
Buena Vista	E/O S. R. 247	7,011
S. R. 247	S/O Buena Vista	38,253
S. R. 247	N/O S. R. 62	58,425
S. R. 62	W/O Kickapoo Trail	81,754
S. R. 62	E/O Acoma Trail	77,695
S. R. 62	W/O S. R. 247	91,430
S. R. 62	W/O Yucca Mesa Rd.	59,409
Yucca Trail	E/O Joshua Lane	36,121
Yucca Trail	W/O Avalon-Palomar	22,345
Yucca Trail	W/O La Contenta	18,573
Avalon-Palomar	N/O Yucca Trail	11,521
Avalon-Palomar	N/O Onaga Trail	15,867
Onaga Trail	W/O Avalon-Palomar	15,006
Onaga Trail	W/O Joshua Lane	31,775
Onaga Trail	E/O Acoma Trail	11,808
Onaga Trail	E/O Deer Trail	13,817
Sage Avenue	N/O Onaga Trail	21,566
Joshua Lane	N/O Joshua Dr.	8,897
Joshua Lane	S/O S. R. 62	18,204
Palm Avenue	S/O S. R. 62	12,464
Acoma Trail	S/O Onaga Trail	18,983
Acoma Trail	S/O S. R. 62	15,867
Deer Trail	W/O Onaga Trail	8,364
Kickapoo Trail	S/O S. R. 62	9,471
Paxton Rd.	W/O Avalon	7,503
Pioneertown	N/O S. R. 62	12,710

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
The No Project Alternative Summary

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips			
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
1.	YV/RL	360	60/24	24	15.7	8.3	1.	YV/RL	360	65/24sfd	147	88	59
2.	IC	172	20/30	84	33.8	50.2	2.	IC	172	17225/25ac.	1662	332	1330
3.	IC	17	1/1	9	2	7	3.	IC	17	6/6ac.	159	32	127
4.	IC	92	46/17	522	90.7	431.3	4.	IC	92	51/51ac.	910	182	728
5.	YV/RL	20	0				5.	YV/RL	20	0	50	30	20
6.	CG/SPC	15	0				6.	CG/SPC	15	0	153	76	76
7.	RL	155	97.5/39	39	25.6	13.4	7.	RL	155	102/39sfd	62	37	25
8.	RL5	25	25/5	5	3.3	1.7	8.	RL5	25	10/5sfd	12	6	6
9.	RL5	58	0				9.	RL5	58	0	15	9	6
10.	RL20	25	0				10.	RL20	25	0	1	-	-
	RL5	625	15/3					RL5	625	20/3sfd	126	76	50
	Total	650	15/3	3	1.9	1.1		Total	650	20/3	127	76	51
11.	RL5	1074	175/35				11.	RL5	1076	185/15sfd	197	118	79
	RC	480	120/3					RC	472	140/3sfd	11	74	4
	RL	988	440/176					RL	991	446/159sfd	400	240	160
	RS1	385.5	109/109	327	212.7	114.3		RS1	392.5	114/159sfd	450	270	180
	FW	5	5/Flood					CG/SPC	3.5	1/1sfd2613	26	13	13
	CG/SPC	2.5	1/1	11	5.5	5.5		Total	2935	886/337	1084	648	436
	Total	2935	850/324	348	216.2	119.8							
12.	RL	1820	495/198				12.	RL	1819	506/50sfd	734	441	293
	RL5	612	265/53					RL5	610	275/47sfd	115	69	46
	RS1	655	170/170					RS1	658	170/349sfd	845	507	338
	PQP	10	10/Flood					PQP	10	10/Flood			
	RS18M	235	39/94					RS18M	233	39/138sfd	580	348	232

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
The No Project Alternative Summary

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips			
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	RS10M	20	1/6					RS1	22	1/7sfd	84	50	34
	3MRM	50	3/18dup 29sfd					3MRM	50	3/18dup 39sfd	716	430	286
	Total	3402	983/568	574	372.9	201.1		Total	3402	1004/648	3074	1845	12
13.	RS1	40	23/23				13.	RS1	40	23/33sfd	50	30	20
	3MRM	115	24/188sfd 124dup 40mfu					3MRM	133	106/237sfd 124dup 40mfu	800	480	320
	CO	20	0					CO	2	2/2sfd	56	8	48
	Total	175	47/375	379	246.2	132.8		Total	175	131/436	906	518	388
14.	RC	760	0				14.	RC	760	0	19	11	8
	RL	120	0					RL	120	0	44	26	18
	RS10M	120	8/35					RS10M	125	48/25sfd	296	177	119
	RS18M	215	22/53					RS18M	205	62/148sfd	475	285	190
	RL5	80	20/4					RL5	80	0	16	10	6
	4MRM	28	2/5sfd 18dup					4MRM	28	21/15dup	93	56	37
	PQP	5	5/Flood	118	76.8	41		PQP	10	5/Flood			
	CN	2	2/2	22	11.0	11		CN	2	2/2sfd	20	10	10
	Total	1330	59/117	140	87.8	52.2		Total	1330	138/190	963	575	388
15.	RC	180	40/1				15.	RC	162	0	4	2	2
	RL5	130	25/5					RL5	133	25/5sfd	25	15	10
	RL	80	0					RL	81	0	204	122	82
	RS10M	45	0					RS10M	52	0	186	112	74
	RS18M	20	.5/1					RS18M	27	11/83sfd	107	64	43
	Total	455	79.5/59	6	3.9	2.1		Total	455	36/88	526	315	211
16.	RC	180	40/1				16.	RC	180	58/2sfd	6	4	2
	RL5	188	20/4					RL5	194	38/5sfd	36	21	15
	RS10M	45	3/14					RS10M	40	3/16sfd	186	116	70
	RS18M	275	16.5/40	-				RS18M	276	16/70sfd	662	397	265
	Total	690	79.5/59	59	38.7	20.3		Total	690	115/93	890	538	352

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
17.	RS18M	80	18.5/45			
	RS10M	52	7.5/33			
	Total	132	26/78	79	51.2	27.8
18.	IC	77	0			
19.	IC	51.5	15/3	141	29.6	111.4
	PQP	22.5	2.5			
	Total	73.5	17.5/3	141	29.6	111.4
20.	RS10M	62	6.5/29	29	19.4	9.6
	CG/SPC	10	3/2	33	16.5	16.5
	Total	72	9.5/31	62	35.9	26.1
21.	CG/SPC	35	10/2	109	54.5	54.5
22.	CG/SPC	10	0			
23.	IC	70	0			
	CN	45	0			
	Total	115	0			
24.	IC	255	0			
25.	IC	265	150/5	633	253.2	379.8
26.	CG/SPC	30	5/4	54	27.0	27.0
27.	RS18M	197	81/196	198	128.7	69.3
	CG/SPC	3	1/3	11	5.5	5.5
	Total	200	82/199	209	134.2	74.8
28.	CG/SPC	70	1/1	11	5.5	5.5
29.	CG/SPC	20	10/1	110	55.0	55.0

No Project Alternative Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
17.	RS18M	81	21/58sfd	199	119	80
	RS10M	51	10/20sfd			
	Total	132	31/78	397	238	159
18.	IC	77	0	723	152	571
19.	IC	71	29/29ac.667			
	PQP	2.5	2.5/Flood			
	Total	73.5	31.5/29ac./Fld	667	140	527
20.	RS10M	66	36/42sfd	196	118	78
	CG/SPC	6	6/6ac.	61	31	30
	Total	72	42/42/6a.	257	149	108
21.	CG/SPC	35	10.5/10.5ac.	306	153	153
22.	CG/SPC	10	3/3ac.	173	86	87
23.	IC	71	0	685	144	541
	CN	44	0	479	240	239
	Total	115	0	1164	384	780
24.	IC	255	0	2441	513	1928
25.	IC	261	155/155ac.	2535	532	2003
26.	CG/SPC	30	10/10ac.	255	128	127
27.	RS18M	192	195/254sfd	286	171	115
	CG/SPC	8	1/1ac.	82	41	41
	Total	200	196/254/1ac.	368	212	119
28.	CG/SPC	70	13/2sfd	744	372	372
29.	CG/SPC	20	10/10ac.	153	76	77

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
The No Project Alternative Summary

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
30.	CG/SPC	60	10/1	110	55.0	55.0
	4MRM	25	0			
	Total	85	10/1	110	55.0	55.0
31.	CG/SPC	20	7/11	76	38.0	38.0
32.	IC	10	1/1	9	2.0	7.0
33.	RS10M	40	9/39	39	25.6	13.4
	IN	15	10/7	110	55.0	55.0
	CO	5	0			
	Total	60	19/46	149	80.6	68.4
34.	CG/SPC	17	7/13	76	38.0	38.0
	CO	15	5/14	141	21.2	119.8
	CS	13	8/5	87	43.5	43.5
	Total	45	20/32	304	102.7	201.3
35.	4MRM	50	4/16sfd			
			28dup	44	28.9	15.1
	CG/SPC	10	2/2	22	11.0	11.0
	Total	60	6/46	66	39.9	26.1
36.	4MRM	30	5/26sfd	26	17.1	8.9
			32mfu	32	21.0	11.0
	CG/SPC	15	5/8	55	27.5	27.5
	Total	45	10/66	113	65.6	47.4
37.	CG/SPC	20	7/5	76	38.0	38.0
38.	OS	20	10/28			
	CG/SPC	20	12/4			
	Total	40	22/32	131	65.5	65.5
39.	RS18M	45	1/3			

No Project Alternative Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
30.	CG/SPC	57	20/20ac.	581	290	291
	4MRM	28	0	310	186	124
	Total	85	20/20ac.	891	476	415
31.	CG/SPC	20	7/7ac.	153	76	77
32.	IC	10	6/6ac.	141	30	111
33.	RS10M	40	34/45sfd	49	30	19
	IN	15	0	39	8	31
	CO	5	2/2ac.	141	21	120
	Total	60	36/42/2ac.	229	59	170
34.	CG/SPC	16	8/8ac.	197	98	99
	CO	13	7/7ac.	368	55	318
	CS	16	10/10ac.	163	82	81
	Total	45	25/25ac.	728	235	498
35.	4MRM	50	13/3sfd			
			28dup	442	265	177
	CG/SPC	10	8/8ac.	102	51	51
	Total	60	21/31/8ac.	544	316	228
36.	4MRM	27	17/16sfd			
			42mfu	92	55	57
	CG/SPC	18	10/10ac.	184	92	92
	Total	45	27/58/10ac.	276	147	129
37.	CG/SPC	25	11/11ac.	255	127	128
38.	OS	19	15/15ac.			
	CG/SPC	21	17/17ac.			
	Total	40	32/32ac.	214	107	107
39.	RS18M	43	4/3sfd			

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
The No Project Alternative Summary

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	PQP	5	5/Flood					PQP	7	7/Flood			
	Total	50	6/3	3	1.9	1.1		Total	55	11/3/Fld	103	62	41
40.	IN	27	22/1BallFld 7Bldg	87	17.4	69.6	40.	IN	27	25/BP/20ac.	207	43	164
	3MRM	18	6/47sfd					3MRM	18	16/57sfd			
			8dup	94	61.0	33.0				8dup			
			38mfu							38mfu	133	80	53
	CG/SPC	5	4/8	44	22.0	22.0		CG/SPC	5	4/4ac.	51	25	26
	Total	50	32/108	225	100.4	124.6		Total	50	45/103/24ac.	391	148	243
41.	4MRM	30	1.5/6sfd				41.	CG/SPC	30	1.5/4sfd	240	120	120
			11mfu	17	11.2	5.8							
42.	CG/SPC	30	30/9	327	163.5	163.5	42.	CG/SPC	16	16/16ac.	164	82	82
								4MRM	14	19/18sfd			
										11mfu	29	18	11
								Total	30	35/29/16ac.	193	100	93
43.	RS10M	140	14/63				43.	RS10M	149	47/119sfd			
			1 ball fld							15dup	499	299	200
	4MRM	25	2.75/12sfd					PQP	26	8/BP			
			18dup					Total	175	55/134/BP	499	299	200
	PQP	10	10/Flood										
	Total	175	26.75/93	94	61.1	32.9							
44.	CG/SPC	30	15/15	164	122.0	122.0	44.	CG/SPC	30	15/15ac.	255	127	128
45.	CG/SPC	23	12/7	131	65.5	65.5	45.	CG/SPC	18	6/7sfd	184	92	92
	RS10M	47	7/32	32	21.0	11.0		RS10M	52	28/50sfd	108	65	43
	Total	70	19/39	163	86.5	76.5		Total	70	34/57	292	157	135
46.	RS10M	119	84/219sfd				46.	RS10M	89	71/282sfd			
			148mfu							148mfu	501	304	203

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
The No Project Alternative Summary

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	PQP	6	6/Flood					PQP	1	1/Flood			
	Total	125	90/367	375	243.6	131.4		Total	90	72/430/Fld	507	304	203
47.	PQP	2	2/Flood				47.	PQP	2	2/Fld			
	CG/SPC	33	20/9	218	109.0	109.0		CG/SPC	33	11/11ac.	245	117	118
	CO	18	10/6	283	42.4	240.6		CO	18	11/11ac.	368	55	313
	RS10M	2	.5/4	4	2.6	1.4		RS10M	2	1/3sfd	7	4	3
	Total	55	32.5/19	505	154.0	351.0		Total	55	25/3/22ac./Fld	620	176	434
48.	RS10M	90	25.5/84sfd				48.	RS10M	90	45/72sfd			
			28mfu	113	73.5	39.5				28mfu	383	170	113
49.	IC	70	15/14	141	29.6	111.4	49.	IC	70	29/29ac.	779	164	615
	CN	5	1.5/2	16	8.0	8.0		CN	5	3/3ac.	82	41	41
	Total	75	16.5/16	157	37.6	119.4		Total	75	32/32ac.	861	205	656
50.	RS18M	68	5.5/14				50.	RS18M	68	12.5/20sfd	153	92	61
	RS10M	22	0					RS10M	22	0	97	58	39
	Total	90	5.5/14	14	9.2	4.8		Total	90	12.5/20	250	150	100
51.	4MRM	20	0				51.	4MRM	20	0	167	100	67
52.	IC	36	20/10	218	109.0	109.0	52.	IC	36	22/15dup	141	30	111
	CG/SPC	2	2/9	22	11.0	11.0		CG/SPC	2	6/3sfd	51	25	26
	4MRM	2	1.5/3sfd					Total	40	28/18	192	55	137
			18dup	21	13.8	7.2							
	Total	40	23.5/40	261	133.8	127.2							
53.	CG/SPC	5	5/5	54	27.0	27.0	53.	CG/SPC	5	10/5ac.	102	51	51
54.	CG/SPC	20	8/17	87	43.5	43.5	54.	CG/SPC	20	8/8ac.	153	77	76
55.	CG/SPC	20	6/15	65	32.5	32.5	55.	CG/SPC	20	6/6ac.	153	76	77
56.	CG/SPC	2.5	2.5/1	27	13.5	13.5	56.	CG/SPC	2.5	2.5/2.5ac.	26	13	13

	Existing County Condition						No Project Alternative Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
57.	3MRM	28	3/46sfd 17mfu 20dup	84	54.5	29.5	57.	3MRM	28	4/87sfd 17mfu 17dup	517	310	207
	CO	12	3/4	85	12.7	72.3		CO	12	7/7ac.	396	59	337
	Total	40	6/87	169	67.2	101.8		Total	40	11/121/7ac.	913	369	544
58.	CG/SPC	14	8/10	87	43.5	43.5	58.	CG/SPC	14	13/13ac.	194	97	97
59.	4MRM	14	.25/1sfd 33/145sfd	1 156	0.6 94	0.4 62	59.	4MRM	14	.5/Road	162	97	65
	CG/SPC	26	4/4	44	22.0	22.0		CG/SPC	26	8/8ac.			
	Total	40	4.25/5	201	116.6	84.4		Total	40	8.5/Rd/8ac.	162	97	65
60.	PQP	.5	.5/Flood				60.	PQP	.5	.5/Flood			
	CG/SPC	6.5	6.5/7					CG/SPC	6.5	6.5/6.5ac.	66	33	33
	4MRM	3	0					4MRM	3	0	33	20	13
	Total	10	7/7	71	35.5	35.5		Total	10	7/6.5ac./Fld	99	53	46
61.	4MRM	60	13/63sfd 84mfu				61.	4MRM	60	49/146sfd	281	168	113
	RS10M	105	34/149					RS10M	105	87/84mfu	174	104	70
	Total	165	47/296	299	194.3	104.7		Total	165	136/230	455	272	183
62.	CO	1	1/1	28	4.2	23.8	62.	CO	1	2/2ac.	57	8	49
	RS18M	180	76/183					RS18M	180	164/166sfd 7dup			
	RS10M	295	44/191							11mfu	224	134	90
	4MRM	24	6.75/21sfd 33mfu 20dup	452	294.1	157.9		RS10M	295	131/166sfd 11mfu	849	510	339
	Total	500	127.75/449	480	298.3	181.7		4MRM	24	6/167sfd 11mfu	400	240	160
								Total	500	303/549/2ac.	1530	892	638

Town of Yucca Valley General Plan
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	Existing County Condition						No Project Alternative Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
63.	PD	42	0				63.	PD	42	0	495	297	193
	RS1	180	45/45	359	233.0	126.0		RS1	180	20/6sfd	72	41	31
	RS18M	205	102/247					RS18M	205	106/203sfd	523	314	209
	CG/SPC	20	3/11	33	16.5	16.5		CG/SPC	20	1/1ac.			
	RS10M	505	14/63					RS10M	505	266/200sfd	1410	846	564
	Total	952	164/366	392	249.5	142.5		Total	952	393/409/1ac.	2500	1503	997
64.	RS10M	160	13/60	61	39.4	21.6	64.	RS10M	160	123/114sfd	612	367	245
65.	RS10M	190	13/58				65.	RS10M	190	80/25sfd	429	257	172
	RS18M	110	35/85					RS18M	110	70/159sfd	251	151	100
	RS8M	30	10/54					RS8M	30	15/84sfd	135	81	54
	Total	330	58	260	159.7	91.3		Total	330	165/268	815	489	326
66.	IN	55	0				66.	IN	55	0	257	51	206
	4MRM	3	1.5/18dup					4MRM	3	6/15dup	23	14	9
	Total	60	1.5/18	18	11.8	6.2		Total	58	6/15	280	65	215
67.	RS10M	20	0				67.	RS10M	20	0	40	24	16
	4MRM	40	11/125					4MRM	40	30/205sfd	207	124	83
	Total	58	1.5/18	126	82.0	44.0		Total	60	30/2051	247	148	99
68.	4MRM	50	14.5/144sfd 18dup				68.	4MRM	50	23/194sfd 15dup	511	307	204
	RS8M	20	3/19					RS8M	20	12/20sfd	61	37	24
	Total	70	17.5/181	183	118.8	64.2		Total	70	35/229	572	344	228
69.	RS8M	30	8.5/47	47	30.8	16.2	69.	RS8M	30	29/111sfd	117	70	47
70.	3MRM	38	8/70sfd 53mfu	124	80.7	43.3	70.	3MRM	38	10/55sfd 53mfu	256	154	102
71.	RS8M	35	13.5/75	76	49.2	26.8	71.	RS8M	35	33/145sfd	157	94	61

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
72.	IN	15	15/School	59	11.8	47.2	72.	IN	15	20/School	79	16	63
	4MRM	5	.5/6sfd					4MRM	5	14/25mfu	36	22	14
			25mfu					RS8M	25	42/181sfd	195	111	84
	RS8M	25	15/83	115	74.8	40.2		Total	45	76/206/Schl	310	149	161
	Total	45	30.5/190	174	86.6	87.4							
73.	3MRM	10	1/19sfd				73.	3MRM	10	4/19sfd			
			89mfu	109	70.9	38.1				89mfu	197	118	79
	CO	12	3/6	85	12.7	72.3		CO	12	7/7ac.	122	61	61
	Total	22	4/114	194	83.6	110.4		Total	22	11/108/7ac.	319	179	140
74.	CO	2	1/1				74.	CO	2	2/2ac.	57	9	48
	CG/SPC	3	0					CG/SPC	3	0	31	15	16
	4MRM	25	21.5/156sfd					4MRM	25	22/156sfd			
			82mfu	240	156.2	83.8				82mfu	274	164	110
	Total	30	22.5/239	349	227.1	121.9		Total	30	24/238/2ac.	362	188	174
75.	4MRM	3	0				75.	4MRM	3	0	33	20	13
	CG/SPC	6	6/1					CG/SPC	6	6/6ac.	61	30	31
	Total	9	6/1	65	32.5	32.5		Total	9	6/6ac.	94	50	44
76.	CO	7	0				76.	CO	7	0	283	42	241
	CG/SPC	6	2/3					CG/SPC	6	7/7ac.	82	41	41
	Total	13	2/3	22	11.0	11.0		Total	13	7/7ac.	365	83	282
77.	CG/SPC	7	3/5	33	16.5	16.5	77.	CG/SPC	7	8/8ac.	92	46	46
	4MRM	28	1/3sfd					4MRM	28	1/11mfu	344	210	134
			11mfu	14	9.2	4.8		Total	35	9/11/8ac.	436	256	180
	Total	35	4/19	47	25.7	21.3							
78.	4MRM	35	.5/7sfd				78.	4MRM	35	1/4mfu	326	196	130
			4mfu					RS1	10	8/6sfd	8	5	3
	RS1	10	6/6					RS10M	105	4/13sfd	280	168	112

Existing County Condition							No Project Alternative Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	RS10M	105	2/8					Total	120	19/29	614	369	245
	Total	150	8.5/25	25	16.4	8.6							
79.	IC	20	10/4	94	19.7	74.3	79.	IN	20	15/15ac.	99	20	79
80.	4MRM	20	2.75/19sfd				80.	4MRM	20	8/11mfu	33	20	13
			11mfu					RS8M	110	66/153sfd	217	130	87
	RS8M	110	10/55					RS10M	40	17/38sfd	50	30	20
	RS10M	40	8/35					Total	107	91/202	300	180	120
	Total	170	20.75/120	121	78.8	42.2							
81.	RL	740	115/46				81.	RL	740	125/93sfd	296	179	117
	RL10	230	20/2					RL10	230	29/2sfd	22	13	9
	RC	470	0					RC	470	0	12	7	5
	Total	1440	135/48	48	31.5	16.5		Total	1440	154/95	330	199	131
82.	RS10M	300	24/105				82.	RS10M	300	24/135sfd	1268	760	508
	RS1	60	10/10					RS1	60	26/10sfd	46	28	18
	RS18M	120	21/51					RS18M	120	21/50sfd	282	171	111
	RL	720	0					RL	720	0	1828	1097	731
	RC	240	0					RC	240	0	6	4	2
	Total	1440	55/166	168	109.9	59.0		Total	1440	71/195	3430	2060	1370
83.	RL5	620	95/19				83.	RL5	620	185/7sfd	94	57	37
	RL	250	10/4					RL	250	10/3sfd	100	60	40
	RS18M	290	138/334					RS18M	290	264/413sfd	476	286	190
	RS10M	120	18/76					RS10M	120	100/80sfd	162	97	65
	Total	1280	261/433	437	284.3	152.7		Total	1280	559/503	832	500	332
84.	RS10M	200	0				84.	RS10M	200	4/15sfd	807	484	323
	RS18M	530	59/143					RS18M	530	90/164sfd	1102	661	441
	RS1	220	64/64					RS1	220	90/93sfd	185	101	84
	RL	710	10/4					RL	710	10/1sfd	267	160	107
	RC	200	0					RC	200	120/3sfd	3	2	1
	14.5MRM	60	0					14.4MRM	60	0	702	302	400

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	Existing County Condition						No Project Alternative Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	4MRM	15	1/12sfd 11mfu					4MRM	15	90/11mfu	175	77	98
	Total	1935	134/234	245	159.5	85.5		Total	1935	404/287	3241	1787	1454
85.	RS10M	40	0	161	97	64	85.	RS10M	40	0	161	97	64
86.	RS1	200	78/78				86.	RS1	200	85/27sfd	151	90	61
	RL	257	92.5/37					RL	257	99/37sfd	406	244	162
	RL5	262	15/3					RL5	262	22/12sfd	62	37	25
	PQP	10	10/1BallFld					PQP	10	10/BP			
	RS10M	1230	43/189					RS10M	1230	45/142sfd	4971	2983	1988
	RS18M	45	19/47					R18M	45	19/100sfd	160	96	64
	Total	2004	257.5/355	357	232.4	124.6		Total	2004	280/318	5750	3450	2300
87.	CO	10	0				87.	CO	10	0	282	42	240
88.	RS18M	7.5	0				88.	RS18M	7.5	0	28	17	11
89.	IN	5	0				89.	IN	5	0	20	4	16

The No Project Alternative Summary
August 26, 1994

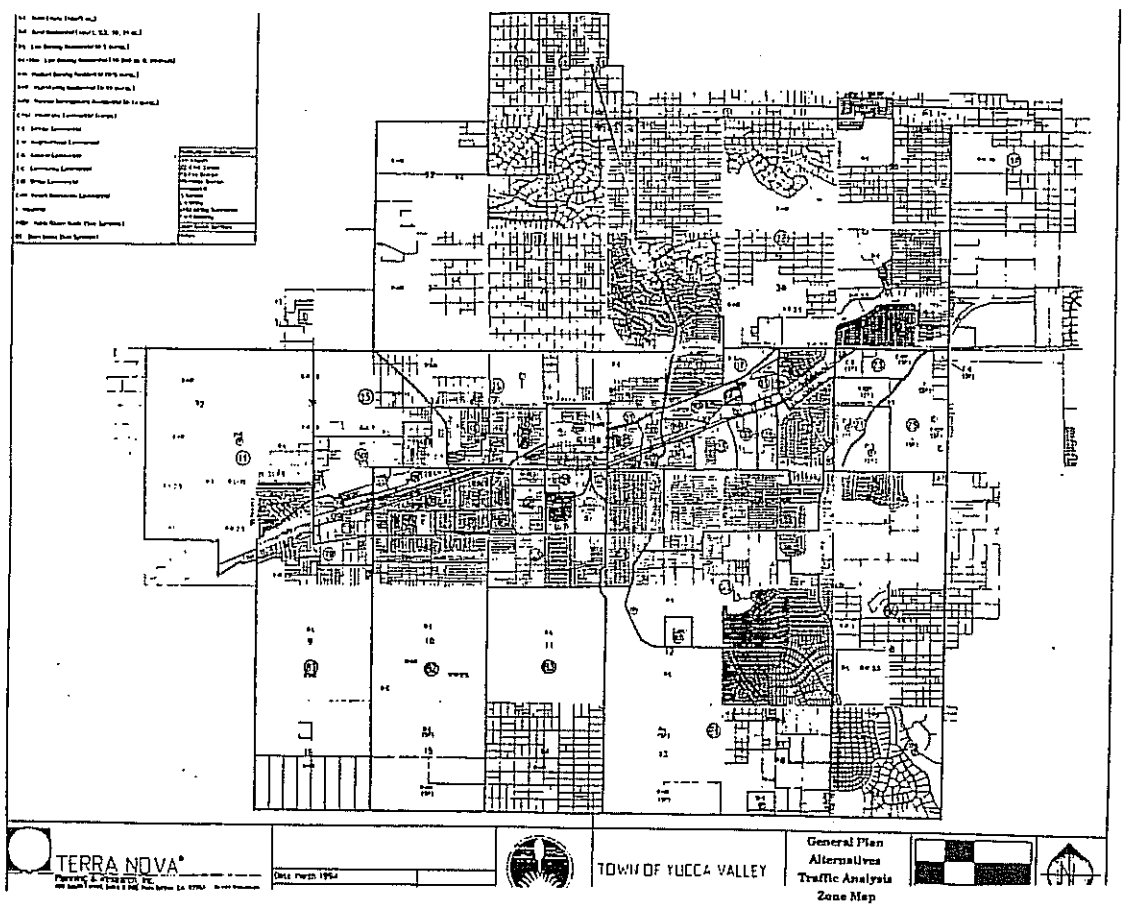

Fig. 4D

G. Mitigation Measures

EXISTING CONDITIONS

As shown in the chapter describing existing traffic conditions, no special traffic impact mitigation measures are required.

BUILD OUT CONDITIONS

Should the San Bernadino General Pla build-out occur at target year 2015, traffic congestion is forecasted. Several intersections are projected to exceed saturation capacity. The levels of service at the effected intersections exceed reasonable traffic volumes and would inevitably downgrade the quality of transportation in the Town.

Under the San Bernardino County General Plan Build-out, the land use scenario impacts the roadway network beyond acceptble or mitigatable Levels of Service. See Figures 4a,4b,4c. The unacceptable Levels of Service, if built out to the General Plan Level would cause future transportation conditions that would adversely impact mobility.

H. State Highways

In general terms, State Route 62 is projected to provide three through lanes in each east-west direction with separate left and right turn lanes. State Route 247 is projected to provide two through travel lanes in each north-south direction with separate left turn lanes at intersections.

The intersection of S. R. 62 and S. R. 247 is determined to become a "critical intersection". This location is most heavily impacted by traffic volumes generated by land uses planned in the Town of Yucca Valley as well as pass-by trips to/from destination outside of the General Plan area.

I. Conclusions

Following a thorough analysis of the San Bernardino County General Plan build-out, it becomes apparent that the existing highway and street system serving the Town of Yucca Valley may not be adequate. At target year 2015, should full build-out take place, a major highway bypassing the Town would be required. Without a second major parallel highway bypass to State Route 62, major non mitigatable traffic congestion is likely to occur.

TABLE 10
INTERSECTION CAPACITY CALCULATIONS
FOR KEY INTERSECTIONS
SAN BERNARDINO GENERAL PLAN

	PEAK HOUR			
	EXISTING		S.B.G.P.A. MITIGATED	
INTERSECTION	LOS	V/C	LOS	V/C
S. R. 62 and Camino del Cielo	A	0.25	D	0.82
S. R. 62 and Kickapoo Trail	A	0.31	F	1.02
S. R. 62 and Deer Trail	A	0.32	F	1.14
S. R. 62 and Acoma Trail	A	0.34	F	1.21
S. R. 62 and Palm Lane	A	0.29	F	1.22
S. R. 62 and Sage Avenue	A	0.42	F	1.26
S. R. 62 and S. R. 247	A	0.48	F	1.40
S. R. 62 and Warren Vista	A	0.28	F	1.11
S. R. 62 and Balsa Avenue	A	0.33	F	1.08
S. R. 62 and Avalon Drive	A	0.31	F	1.09
S. R. 62 and Yucca Mesa Dr.	A	0.33	F	1.23
Joshua Lane and Yucca Trail	A	0.27	F	1.12
Avalon Dr. and Yucca Trail	A	0.21	E	0.95
Joshua Lane and Onaga Trail	A	0.25	F	1.12
Joshua Lane and Joshua Dr.	A	0.12	F	1.05
S. R. 247 and Buena Vista	A	0.27	B	0.68
S. R. 247 and Paxton Rd.	A	0.34	E	1.00

The Levels of Service and Volume to Capacity Ratios were calculated as shown on TABLE 10 with mitigation measures in place by target year 2015. Unmitigated Levels of Service and Volume to Capacity Ratios calculations are included in the APPENDIX of this Report.

V. TOWN OF YUCCA VALLEY PREFERRED ALTERNATIVE

The Town of Yucca Valley, recognizing potential future problems with traffic congestion, is proposing an alternative in the format of a land use plan commensurate with the Town's future requirements. To this goal, a Preferred Land Use Alternative was developed. A Traffic Circulation and Impact Study was conducted to determine the consequences of this Plan.

A. Study Methodology

The methodology for determining future traffic impacts resulting from build-out of the proposed Preferred Alternative is identical to the methodology used to determine traffic impacts for the San Bernardino General Plan build-out.

Traffic Analysis Zones were assigned attractors and generators commensurate with the proposed land uses. P.M. peak hour traffic volumes were projected using the same distribution based on travel desire lines for the proposed land uses. TABLE 11 shows peak hour traffic for the Town of Yucca Valley Preferred Alternative.

Using Intersection Capacity Utilization Methodology, intersection conditions were forecasted. Work sheets of these calculations are included in the APPENDIX of this Report.

B. Traffic Volumes and Impacts Preferred Alternative

Traffic volume forecasts obtained from this study alternative are shown at key intersections. In order of consistency, the same intersections as in the "San Bernardino General Plan" were evaluated. Traffic volumes were projected for the build-out of this Preferred Alternative. Figures 8a, 8b, and 8c show the projected traffic volumes at the selected key intersections.

TABLE 11
FORECAST AVERAGE DAILY TRAFFIC VOLUMES
"Preferred Alternative"
TOWN OF YUCCA VALLEY, CALIFORNIA

STREET	LOCATION	EXISTING ADT	PREFERRED LAND USE YEAR 2015 ALTERNATIVE ADT
Buena Vista	E/O S. R. 247	2,530*	5,230
S. R. 247	S/O Buena Vista	9,330**	31,570
S. R. 247	N/O S. R. 62	14,250**	43,960
S. R. 62	W/O Kickapoo Tr.	19,940**	49,760
S. R. 62	E/O Acoma Tr.	18,950**	55,660
S. R. 62	W/O S. R. 247	22,300**	58,740
S. R. 62	W/O Yucca Mesa Rd.	14,490**	37,730
Yucca Tr.	E/O Joshua Ln.	7,390*	26,790
Yucca Tr.	W/O Avalon-Palomar	6,330*	16,700
Yucca Tr.	W/O La Contenta	4,530	13,880
Avalon-Palomar	N/O Yucca Tr.	2,200*	8,600
Avalon-Palomar	N/O Onaga Tr.	2,300*	11,840
Onaga Tr.	W/O Avalon-Palomar	3,660**	11,210
Onaga Tr.	W/O Joshua Ln.	3,550*	23,740
Onaga Tr.	E/O Acoma Tr.	4,630*	8,820
Onaga Tr.	E/O Deer Tr.	2,900*	10,320
Sage Ave.	N/O Onaga Tr.	3,650*	16,100
Joshua Ln.	N/O Joshua Dr.	3,700*	6,640
Joshua Ln.	S/O S. R. 62	4,440**	14,830
Palm Ave.	S/O S. R. 62	1,020*	9,310
Acoma Tr.	S/O Onaga Tr.	4,630**	13,760
Acoma Tr.	S/O S. R. 62	2,500*	11,850
Deer Tr.	N/O Onaga Tr.	2,040**	6,250
Kickapoo Tr.	S/O S. R. 62	2,310**	7,070
Paxton Rd.	W/O Avalon Dr.	590*	5,600
Pioneertown	N/O S. R. 62	820*	9,500

NOTE:

*Existing ADT's were obtained from traffic counts conducted by Counts Unlimited Inc.
**All other existing ADT's were obtained from peak hour turn movement counts performed by Traffic Counts Inc., and from land use traffic distribution calculations.

TABLE 12
INTERSECTION ANALYSIS
PREFERED ALTERNATIVE LAND USE FOR THE
TOWN OF YUCCA VALLEY
TRAFFIC IMPACT ASSESMENT

INTERSECTION	1993 EXISTING CONDITION . PEAK HOUR		YR. 2015 PREFERRED ALTERNATIVE NOT MITIGATED		YEAR 2015 PREFERRED ALTERNATIVE MITIGATED	
	LOS	V/C	LOS	V/C	LOS	V/C
S.R. 62 & Camino Del Cielo	A	0.25	D	0.85	A	0.60
S.R. 62 and Kickapoo Tr.	A	0.31	E	1.00	C	0.73
S.R. 62 amd Deer Tr.	A	0.32	F	1.06	C	0.80
S.R. 62 amd Acoma Tr.	A	0.34	F	1.12	D	0.85
S.R. 62 and Palm Ave.	A	0.29	E	0.97	D	0.86
S.R. 62 amd Sage Ave.	A	0.42	F	1.38	D	0.84
S.R. 62 and S.R. 247	A	0.48	F	1.96	E*	0.91
S.R. 62 amd Warren Vista	A	0.28	E	0.94	C	0.79
S.R. 62 Balsa Ave.	A	0.33	F	1.06	C	0.77
S.R. 62 and Avalon Dr.	A	0.31	F	1.03	C	0.77
S.R. 62 and Yucca Mesa Rd,	A	0.33	F	1.06	D	0.82
Joshua Ln. and Yucca Tr.	A	0.27	D	0.81	C	0.75
Avalon Dr. and Yucca Tr.	A	0.21	B	0.64	C	0.74
Joshua Ln. and Onaga Tr.	A	0.25	C	0.74	B	0.70
Joshua Ln. and Joshua Dr.	A	0.12	A	0.341	A	0.24
S.R. 247 and Skyline-Buena Vista	A	0.27	D	0.85	A	0.48
S.R. 247 and Paxton Rd.	A	0.34	F	1.29	C	0.80

* The intersection of State Route 62 and State Route 247-Joshua Lane will require most extensive mitigation measures. By definition this intersection is the only critical intersection projected in the Town of Yucca Valley.

C. Average Daily Traffic

The Land Use Scenario developed for the Town of Yucca Valley Preferred Alternative was expanded using the projected P.M. peak hour traffic volumes. The product is an estimate of target year 2015 average traffic volumes along selected roadway links. TABLE 14 shows the existing as well as the projected average daily traffic volumes.

D. Intersection Analysis

The key intersections were analyzed using existing right-of-ways, future reasonable lane configurations and practical traffic solutions. Traffic impacts at these locations, however, are manageable. The intersection of State Route 62 with State Route 247-Joshua Lane should be developed as a Critical Intersection using the Standard shown in Figure 6.

E. Intersection Capacity Analysis

Projected traffic volumes were calculated using the Land Use Preferred Alternative, applying traffic attractors and generators at P.M. peak hour. Using the Transportation Engineers "Traffic Generation" Manual 5th Edition, traffic was assigned to the Town roadway network and the key intersections as previously identified were analyzed. The result of this process is shown in Table 12. The projected traffic volumes as proposed by the Town of Yucca Valley Preferred Alternative Show manageable traffic impacts at the key intersections.

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
1.	295.75	R-L-5	295.75	77	218.75	19sfd+	46=	65	66	40	26
2.	131.75	Ind	131.75	93	38.75	25sfd/93A+	38.75A=	25/131.75A			
	77.25	R-L-5	77.25	28	49.25	1Dup+	0=				
						10sfd+	21	32	32	19	13
						35sfd+					
						1Dup+					
	209	Total	209	121	88	36/93A+	21/38.75A=	57/131.75A			
3.	8	CG	8	3	5	3A+	5A=	8A	82	41	41
4.	68	Ind	68	26	42	7sfd/26A+	42A=	7/68A	638	134	504
	55	R-L-5	55	10	45	3sfd+	10=	13	13	8	5
		Total	123	36	87	10sfd/26A+	10/42A=	20/68A			
5.	10	CG	10	0	10	0+	10A=	10A	102	51	51
6.	15	CN	15	1	14	1sfd/1A+	14A=	1/15A	154	77	77
7.	60	R-L-5	60	10	50	3sfd+	11=	14			
	80	R-L-2.5	80	37.5	42.5	17sfd+	17=	34	48	29	19
	10	CO	10	7.5	2.5	3sfd/7.5A+	2.5A=	3/10A	282	42	240

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	150	Total	150	55	95	23sfd/7.5A+	28/2.5A=	51/10A			
8.	6	R-L-5	6	5	1	8sfd+	1=	9	9	5	4
9.	30	R-L-5	30	0	30	0+	6=	6	6	4	2
	10	CN	10	0	10	0+	10A=	10A	102	51	51
	40	Total	40	0	40	0+	6/10A=	6/10A			
10.	520	RHR-20	520	80	440	10sfd+	51=	61			
	200	R-L-10	200	15	185	3sfd+	18=	21	83	50	33
	720	Total	720	95	625	13sfd+	69=	82			
11.	456	RHR-20	456	30	426	4sfd+	20=	24			
	1268	R-L-5	1268	209.5	1058.5	64sfd+	238=	302	329	198	131
	5	CG	5	1.5	3.5	1sfd/1.5A+	3.5A=	1/5A	51	25	26
	797	R-L-2.5	797	312	485	165sfd+	313=	478			
	12	R-L-1	12	0	12	0+	12=	12	496	297	198
	264	OS	264	8	256	1sfd/8A+	256A=	1/264A			
	2802	Total	2802	561	2241	235/9.5A+	583/259.5A=	818/269A			
12.	254	RHR-20	254	0	254	0+	12=	12			
	1157	R-L-5	1157	328.5	828.5	159sfd+					
						1 Church+	275=434/Church		1187	712	475

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	2385.5	R-L-2.5	2385.5	888.5	1497	450sfd+	805=	1255			
	24	R-M-10	24	16	8	3Dup+ 27sfd+					
						21Mfu+	85=	136			
	15	CG	15	4	11	3sfd/4A+	11A=	3/15A	154	77	77
	50	P/QP	50	50	0	50A/flood+	0=	50A			
	60	R-L-1	60	1	59	1sfd+ 640sfd+ 3Dup+ 21Mfu+	83=	84	85	51	34
	3945.5	Total	3945.5	1288	2657.5	664//54A	1260/11A=	1924/65A			
13.	66.5	R-L-1	66.5	21	45.5	20sfd+	44=	64			
	141	R-S-5	141	83	58	141sfd+ 74Dup+					
						29mfu+	136=	380	182	109	73
	7.5	CG	7.5	3	4.5	6sfd/3A+	4.5A=	6/7.5A	76	38	38
						167sfd+ 74Dup+ 29Mfu+					
	215	Total	215	107	108	276/3A+	180/4.5A=	450/7.5A			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
14.	587	RHR-20	587	0	587	0+	29=	29			
	80	OS	80	0	80	0+	80A=	80A			
	15	R-L-1	15	0	15	0+	15=	15			
	127	R-L-2.5	127	28	99	33sfd+	74=	107	819	491	328
	192	R-L-5	192	2	190	2sfd+	32=	34			
	410.5	R-S-2	410.5	75.5	335	181sfd+ 4Mfu+	391=	576			
	4	P/QP	4	4	0	4A/flood+	0=	4A			
	4	CRR	4	4	0	4A+	0=	4A	41	20	21
	4	R-S-5	4	4	0	1sfd+ 24Mfu+	25=	50			
	160	R-L-10	160	0	160	0+ 217sfd+ 28Mfu+	16=	16			
	1583.5	Total	1583.5	117.5	1466	245/8A+	557/80A=	802/88A			
15.	20	RHR-20	20	17	3	4sfd+	3=	3			
	279	R-L-10	279	31	248	5sfd+	41=	46			
	60	R-L-5	60	0	60	0+	12=	12			
	10	R-S-2	10	0	10	0+	20=	20	318	191	127
	36	R-M-10	36	10.5	25.5	73sfd+	157=	230			
	405	Total	405	58.5	346.5	82sfd+	233=	315			
16.	300	RHR-20	300	75	225	16sfd+ 1 Church+	23=	39			
	226.5	R-L-5	226.5	25	201.5	16sfd+	40=	56			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potentinl Units	Bldout	PM Peak Hour Trips Total	In	Out
	3	R-L-2.5	3	2	1	9sfd+	1=	10			
	17	R-L-10	17	7	10	1sfd+	1=	2	192	115	77
	140.5	R-L-1	140.5	46.5	94	32sfd+	51=	83			
						74sfd+					
						1 Church+					
	687	Total	687	155.5	531.5	74/Church+	116=	190			
17.	90	R-L-1	90	45	45	87sfd+	79=	166	168	100	68
	3	P/QP	3	3	0	3A/Flood+	0=	3A			
	93	Total	93	48	45	87/3A+	79=	166/3A			
18.	10	Ind	10	0	10	0+	10A=	10A	94	20	74
	42	R-L-1	42	0	42	0+	42=	42	42	25	17
	52	Total	52	0	52	0+	42/10A=	42/10A			
19.	11	CC	11	7.5	3.5	7.5A+	3.5A=	11A			
	20	P/QP	20	20	0	20A/Fld/AP+	0=	20A			
	15	Ind	15	0	15	0+	15A=	15A	141	30	111
	5	CG	5	0	5	0+	5A=	5A			
	6	CN	6	4	2	4A+	2A=	6A	226	113	113
								Airport/fld			
	57	Total	57	31.5	25.5	31.5A+	25.5A=	57A			
20.	38	R-S-2	38	13	25	32sfd+	60=	92	93	56	37
21.	29.5	CG	29.5	4	25.5	2Dup/4A+	25.5A=	2/29.5A	302	151	151

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
22.	7	CG	7	0	7	0+	7A=	7A	72	36	36
23.	73	CG	73	0	73	0+	73A=	73A			
	38	CRR	38	0	38	0+	38A=	38A	1137	568	569
	111	Total	111	0	111	0+	111A=	111A			
24.	185	IND	185	0	185	0+	185A=	185A	1737	365	137
	40	I-MW	40	0	40	0+	40A=	40A	132	68	64
	18	P/QP	18	18	0	18A/Flood+	0=	18A			
	243	Total	243	18	225	18A+	225AA	243A			
25.	211.5	Ind	211.5	40	171.5	40A+	171.5A=	211.5A	1986	417	1569
	43	P/QP	43	43	0	43/schl/fld+	0=	43A			
	8	CG	8	0	8	0+	8A	8A	82	41	41
	41										
	262.5	Total	262.5	83	179.5	83A+	179.5A=	262.5A			
26.	23	CG	23	5	18	5A+	18A	23A	236	118	118
27.	131.5	R-S-2	131.5	85	46.5	203sfd+	116=	319	322	193	129
28.	83	CMU	83	3	80	3A+	80A=	83A	972	418	554
29.	6	CC	6	6	0	6A+	0=	6A			
	8	CN	8	7	1	7A+	1A=	8A	143	71	72
	14	Total	14	13	1	13A+	1A=	14A			
30.	61.5	CMU	61.5	10	51.5	10A+	51.5A	61.5A	720	309	411

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
31.	5	CC	5	0	5	0+	5A=	5A	51	26	25
	11	CG	11	11	0	11A+	0=	11A	164	82	82
	16	Total	16	11	5	11A+	5A=	16A			
32.	1	CG	1	1	0	1A+	0=	1A	10	5	5
33.	39	P/QP	39	39	0	39A/flood+	0=	39A			
	6	CN	6	0	6	0+	6A=	6A	61	31	30
	19.5	R-S-5	19.5	10	9.5	39sfd+	44=	83	84	50	34
	5.5	IND	5.5	3.75	1.75	2sfd/3.75A+ 41sfd	1.75A	2/5.5A	52	11	41
	70	Total	70	52.75	17.25	41/42.75A	44/7.75A=	85/50.5A			
34.	9.5	P/QP	9.5	7	2.5	7A+	2.5A/PF=	9.5A			
	11.5	Ind.	11.5	5	6.5	5A+	6.5A=	11.5A	108	23	88
	12	CN	12	12	0	12A+	0=	12A			
	8	CG	8	4.5	3.5	4.5A+	3.5A	8A	204	102	102
	41	Total	41	28.5	12.5	28.5A+	12.5A	41A			
35.	28	R-M-10	28	10	18	1sfd+ 17Dup+ 47Mfu+	160=	225	227	136	91
	9	CG	9	0	9	0+	9A=	9A			
	7	CN(FS)	7	2.5	4.5	2.5A+	4.5A=	7A	164	82	82
	1.5	P/QP	1.5	.5	1	.5A/Flood+ 1sfd+ 17Dup+ 47Mfu+ Fire Station+	1A=	1.5A			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	45.5	Total	45.5	13	32.5	flood+ 65/3A+	160/14.5A=	225/17.5A			
36.	10.5	R-M-10	10.5	6.5	4	3sfd+ 58Mfu+	48=	109	110	66	44
	1.5	P/QP	1.5	1.5	0	1.5A/Flood+	0=	1.5A			
	10	CO	10	2.5	7.5	1sfd/2.5A+	7.5A=	1/10A	215	107	108
	11	CG	11	8.5	2.5	8.5A+ 4sfd+ 58Mfu+ Flood	2.5A=	11A			
	33	Total	33	19	14	62/12.5A	48/10A=	110/22.5A			
37.	.5	PQP	.5	.5	0	.5/PF+	0=.	.5A			
	12	CG	12	7	5	7A+	5A=	12A	123	61	62
	12.5	Total	12.5	7.5	5	7.5A+	5A=	12.5A			
38.	18.5	CG	18.5	8	10.5	8A+	10.5A=	18.5A			
	15	CN	15	13	2	13A+	2A=	15A	343	171	172
	5	P/QP	5	5	0	5A/BP+	0=	5A			
	38.5	Total	38.5	26	12.5	26A+	12.5A=	38.5A			
39.	17	R-L-1	17	1	16	1sfd+	16=	17			
40.	20	PQP	20	15	5	15A/BF+	5A=	20A			
	14.5	R-M-10	14.5	10.5	4	40sfd+ 10 Dup+ 28Mfu+	15=	93	94	56	38
	8	CG	8	5	3	5A+ 40sfd+	3A=	8A	82	41	41

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	42.5	Total	42.5	30.5	12	10Dup+ 28Mfu+ Ball/Field 78/20A+	15/8A=	93/28A			
41.	6	CN	6	4	2	4A+	2A=	6A			
	3	CO	3	3	0	3A+	0=	3A	92	46	46
	9	Total	9	7	2	7A+	2A=	9A			
42	16	CMU	16	8	8	9sfd + 18Mfu/8A+	8A=	27/16A	187	81	106
	2	P/QP	2	2	0	2A/flood+	0=	2A			
	18	Total	18	10	8	9sfd+ 18Mfu+ Flood 27/10A+	8A=	27/18A			
43.	15	P/QP	15	15	0	15A/Flood+	0=	15A			
	73	R-L-1	73	24	49	27sfd+	32=	59	214	128	86
	47	R-S-2	47	21.5	25.5	35sfd+	118=	153			
	8	OS	8	8	0	8A/Park+	0=	8A			
	143	Total	143	68.5	74.5	62Sfd+ Park+ Flood+ 2/23A+	150=	212/23A			
44.	18	CMU	18	5	13	10sfd/5A+	13A=	10/18A	211	90	121
45.	10.5	R-S-2	10.5	8	2.5	30sfd+	12=	42	42	25	17

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	4	CMU	4	2	2	2sfd/2A+	2A=	2/4A	47	20	27
	8	P/QP	8	8	0	8A/Flood+	0=	8A	31	15	16
	3	CG	3	3	0	3A+	0=	3A			
	25.5	Total	25.5	21	4.5	32Sfd+ Flood+ 32/13A+	12/2A	44/15A			
46.	82.5	R-S-5	82.5	51	31.5	151sfd+ 52Mfu+	147=	350	354	222	132
	82.5	Total	82.5	51	31.5	203+	147=	350			
47.	44.25	CS	44.25	22	22.25	11sfd/22A+ 25Mfu+	22.25A=	36/44.25A	453	226	227
	4	R-S-5	4	0	4	0+	20=	20	20	12	8
	48.25	Total	48.25	22	26.25	11sfd 25Mfu 36/22A+	20/22.25A=	56/44.25A			
48.	90.5	R-S-2	90.5	30.5	60	96sfd+	127=	223	225	135	90
49.	108	Ind	108	59	49	8sfd/59A+	49A=	8/108A	1014	213	801
	10	CS	10	0	10	0+	10A=	10A	102	51	51
	118	Total	118	59	59	8sfd+ 8/49A+	59A	8/118A			
50.	47	OS	47	47	0	47A+	0=	47A			
	50	R-S-2	50	5	45	5sfd+	83=	88	170	102	68
	9	R-M-10	9	0	9	0+	80=	80			

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	106	Total	106	52	54	5sfd+ 5/47A+	163=	168/47A			
51.	18	R-M-10	18	0	18	0+	160=	160	162	97	65
52.	31	Ind	31	28.5	2.5	1sfd/28.5A+	2.5A=	1/31A	291	61	230
	15	CG	15	11	4	35sfd/11A + 36sfd+	4A=	35/15A	154	77	77
	46	Total	46	39.5	6.5	36/39.5A+	6.5A=	36/46A			
53.	4	CG	4	1.25	2.75	1sfd/1.25A+	2.75A=	1/4A	41	20	21
54.	25	CG	25	16	9	16A+ 16sfd+ 3Dup+ 20Mfu+			256	128	128
	25	Total	25	16	9	39/16A+	9A=	39/25A			
55.	5.5	CG	5.5	4	1.5	6Mfu/4A+	1.5A	6/5.5A	56	28	28
56.	8	CG	8	4	4	4A+	4A=	8A	82	41	41
57.	28.5	R-S-5	28.5	18.5	10	57sfd+ 34Mfu+ 10Dup+	77=	178	180	108	72
	28.5	Total	28.5	18.5	10	101+	77=	178			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
58.	12.5	CO	12.5	1.5	11	3sfd/1.5A+	11A=	3/12.5A			
	13	CG	13	13	0	13A+ 3sfd+	0=	13A	261	130	131
	25.5	Total	25.5	14.5	11	3/14.5A	11A	3/25.5A			
59.	10	R-M-10	10	0	10	0+	150=	150	152	91	61
	39	CG	39	4	35	4A+	35A=	39A	399	200	199
	49	Total	49	4	45	4A+	150/35A=	150/39A			
60.	6	CN	6	6	0	6A+	0=	6A	61	30	31
	17.5	CMU	17.5	0	17.5	0+	17.5A=	17.5A	205	88	117
	23.5	Total	23.5	6	17.5	6A+	17.5A=	23.5A			
61.	1.5	CG	1.5	1.5	0	1.5A+	0=	1.5A	15	7	8
	7.25	CO	7.25	2.25	5.0	9Mfu+ 4sfd/2.25A+	5A=	13/7.25A	74	37	37
	8.75	R-M-10	8.75	8.25	.5	2sfd+ 40Mfu+ 4Dup+	6=	51			
	90.5	R-S-2	90.5	74	16.5	194sfd+ 44Mfu+ 93Mfu+ 4Dup+ 200sfd+	33=	271	325	195	130
	108	Total	108	86	22	297/3.75A+	38/5A=	335/8.75A			
62.	302	R-S-2	302	198	104	373sfd+	214=	587			

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	5	CO	5	4	1	4A+	1A=	5A	51	25	26
	13.5	R-M-10	13.5	4.5	9	3sfd+ 28Mfu+ 1Dup+	14=	46			
	1	P/QP	1	1	0	1A/Church+	0=	1A			
	150.5	R-L-1	150.5	106.5	44	138sfd+ 514sfd+ 1Dup+ 28Mfu+ Church+	55=	193	834	500	334
	472	Total	472	314	158	543/5A+	283/1A=	826/6A			
63.	35	P/QP	35	15	20	15A/school+	20A=	35A			
	37.5	CRR(SP)	37.5	3	34.5	3sfd/3A+	34.5A=	3/37.5A	384	192	192
	653.75	R-S-2	653.75	261	392.75	422sfd+	1384=	1806			
	68	R-L-1(SP)	68	0	68	0+	68=	68	1940	1164	776
	277.25	RHR-20	277.25	2.5	274.75	5sfd+ 430sfd+ Flood+	42=	47 Flood			
	1071.5	Total	1071.5	281.5	790	430/18A/1494/54.5A=		1924/72.5A			
64.	100	R-S-2	100	45	55	90sfd+	53	143	144	87	57
65.	241.5	R-S-2	241.5	118.5	123	230sfd+	249=	479	184	110	74
	23	R-S-5	23	14	9	45sfd+	45=	90	91	55	36
	264.5	Total	264.5	132.5	132	275sfd+	294=	569			
66.	50	P/QP	50	35	15	35A/School+	15A=	50A			

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
67.	18.5	R-M-10	18.5	0	18.5	0+	196=	196	198	118	80
	3	P/QP	3	3	0	3A/flood+	0=	3A			
	15	R-S-2	15	0	15	0+	30=	30	30	18	12
	36.5	Total	36.5	3	33.5	3A+	226=	226/3A			
68.	13.5	R-M-10	13.5	10.5	3	31sfd+ 1Dup+ 167Mfu+	250=	449	453	272	181
	13.5	Total	13.5	10.5	3	199+	250=	449			
69.	18	R-S-5	18	14.5	3.5	107sfd+	16=	123	124	74	50
70.	35.5	R-S-5	35.5	23.5	12	43sfd+ 90Mfu+ 6Dup+	34=	173	175	105	70
	9.5	CO	9.5	5	4.5	2sfd+ 1Dup+ 27Mfu/5A+ 45sfd+ 7Dup+ 117Mfu+	4.5A=	30/9.5A	97	48	49
	45	Total	45	28.5	16.5	169/5A+	34/4.5A=	203/9.5A			
71.	32	R-S-5	32	28.5	3.5	74sfd+	18=	92	92	55	37
72.	81	R-S-5	81	41	40	146sfd+ 6Mfu+ 1Dup+	39=	192	195	116	79

TAZ Acreage/Units Table
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Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	15	PQP	15	15	0	15A/school+	0=	15A			
	15	R-S-2	15	10	5	14Mfu+ 9sfd+ 155sfd+ 1Dup+ 20Mfu+ School+	9=	32	32	10	22
	111	Total	111	66	45	176/15A+	48=	224/15A			
73.	9	R-S-5	9	6	3	10sfd+ 22Mfu+	10=	42	42	25	17
	34	CMU	34	20.5	13.5	46Mfu+ 2Dup+ 33sfd/20.5A+ 43sfd+ 68Mfu+ 2Dup+	13.5A=	81/34A	398	171	227
	43	Total	43	26.5	16.5	113/20.5A+	10/13.5A=	123/34A			
74.	36	R-M-10	36	24	12	108sfd+ 52Mfu+ 1Dup+	160=	321	324	194	130
	36	Total	36	24	12	161+	160=	321			
75.	4	CG	4	2.5	1.5	43sfd/2.5A+	1.5A=	43/4A	41	20	21
76.	17.5	CG	17.5	12	5.5	12A+	5.5A=	17.5A	179	89	90

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
77.	58	R-S-2	58	7	51	6sfd+	95=	101	102	61	41
	3	CG	3	0	3	0+	3A=	3A	31	15	16
	61	Total	61	7	54	6Sfd+	95/3A=	101/3A			
78.	74	R-S-5	74	10	64	16sfd+	321=	337			
	11.5	R-M-10	11.5	.5	11	4Mfu+	110=	114			
	62	R-L-1	62	2.5	59.5	2sfd+ 18sfd+ 4Mfu+	58=	60			
	147.5	Total	147.5	13	134.5	22+	489=	511	516	310	206
79.	22	Ind	22	10	12	0+	22A=	22A	207	43	164
80.	59.5	R-S-5	59.5	48	11.5	9Mfu+ 197sfd+	53=	169			
	12.5	R-S-2	12.5	7	5.5	5Mfu+ 15sfd+	11=	31			
	60	R-L-1	60	46	14	83sfd+ 14Mfu+	16=	99	390	234	156

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	132	Total	132	101	31	205sfd+ 219+	80=	299			
81.	900	RHR-20	900	35	865	6sfd+	60=	66			
	528	R-L-2.5	528	131	397	45sfd+	187=	232			
	1428	Total	1428	166	1262	51sfd+	247=	298	301	181	120
82.	178	R-L-1	178	142.75	35.25	150sfd+	84=	234			
	220	R-L-2.5	220	0	220	0+	88=	88			
	400	RHR-20	400	0	400	0+	28=	28			
	320	R-L-5(SP)	320	0	320	0+	64=	64			
	120	R-S-2	120	30.5	89.5	66sfd+	347=	413			
	220	R-L-5	220	50	170	28sfd+	67=	95			
	1458	Total	1458	223.25	1234.75	244sfd+	678=	922	931	559	372
83.	405	RHR-20	405	0	405	0+	74=	74			
	406	R-L-5	406	0	406	0+	90=	90			
	60	R-L-2.5	60	0	60	0+	24=	24			
	409	R-S-2	409	216.5	192.5	491sfd+	744=	1235			
	1280	Total	1280	216.5	1063.5	491sfd+	932=	1423	1437	862	575
84.	250	RHR-20	250	90	160	8sfd+	8=	16			
	220	R-L-5(SP)	220	0	220	0+	44=	44			
	420	R-L-2.5(SP)	420	0	420	0+	168=	168			
	410	R-L-2.5	410	22	388	38sfd+	157=	195			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
	10	P/QP	10	0	10	0+	10A=	10A			
	307.5	R-L-1(SP)	307.5	63.5	245	61sfd+	168=	229			
	65	R-L-5	65	0	65	0+	12=	12	930	558	372
	40	OS	40	0	40	0+	40A=	40A			
	160	R-S-2	160	105	55	147sfd+ 254sfd+ Flood+ Park+	110=	257			
	1883.5	Total	1883.5	280.5	1603	254+	667/50A=	921/50A			
85.	40	R-L-1 (SP)	40	0	40	0+	40	40	40	24	16
86.	576.5	R-L-5	576.5	149	427.5	42sfd+	101=	143			
	313.5	R-S-2	313.5	114.5	199	249sfd+	431=	680			
	301	R-L-1	301	68.25	232.75	44sfd+	229=	273	1285	771	514
	6.5	OS	6.5	6.5	0	6.5A/Park+	0=	6.5A			
	200	R-L-2.5	200	101.25	98.75	20sfd+	77=	97			
	436	R-S-3.5(SP) Seniors Only	436	0	436	0+	1526=	1526	209	110	99
	28	P/QP	28	28	0	28A/Park+ 355sfd+ Park+	0=	28A			
	1861.5	Total	1861.5	467.5	1394	355/34.5A+	2364=	2719/34.5A			
87.	10	CN	10	0	10	0+	10A=	10A88.	102	51	51
	8	R-S-2	8	0	8	0+	16=	16	16	10	6
89.	6.5	P/QP	6.5	6.5	0	6.5A/flood+ 6169sfd+ 137Dup+ 929Mfu+	0=	6.5A			

TAZ Acreage/Units Table
Preferred Alternative 8/12/94
Amended 8/16/94

Taz#	Total Acres	Land Use	Acres	Acres Dev.	Acres Vac	Exist Units	Potential Units	Bldout	PM Peak Hour Trips Total	In	Out
Total	24,390		24,390	6225.25	18164.75	7,235+ 979.75A	13,228= 1649.5A	20,463 2629.25A			

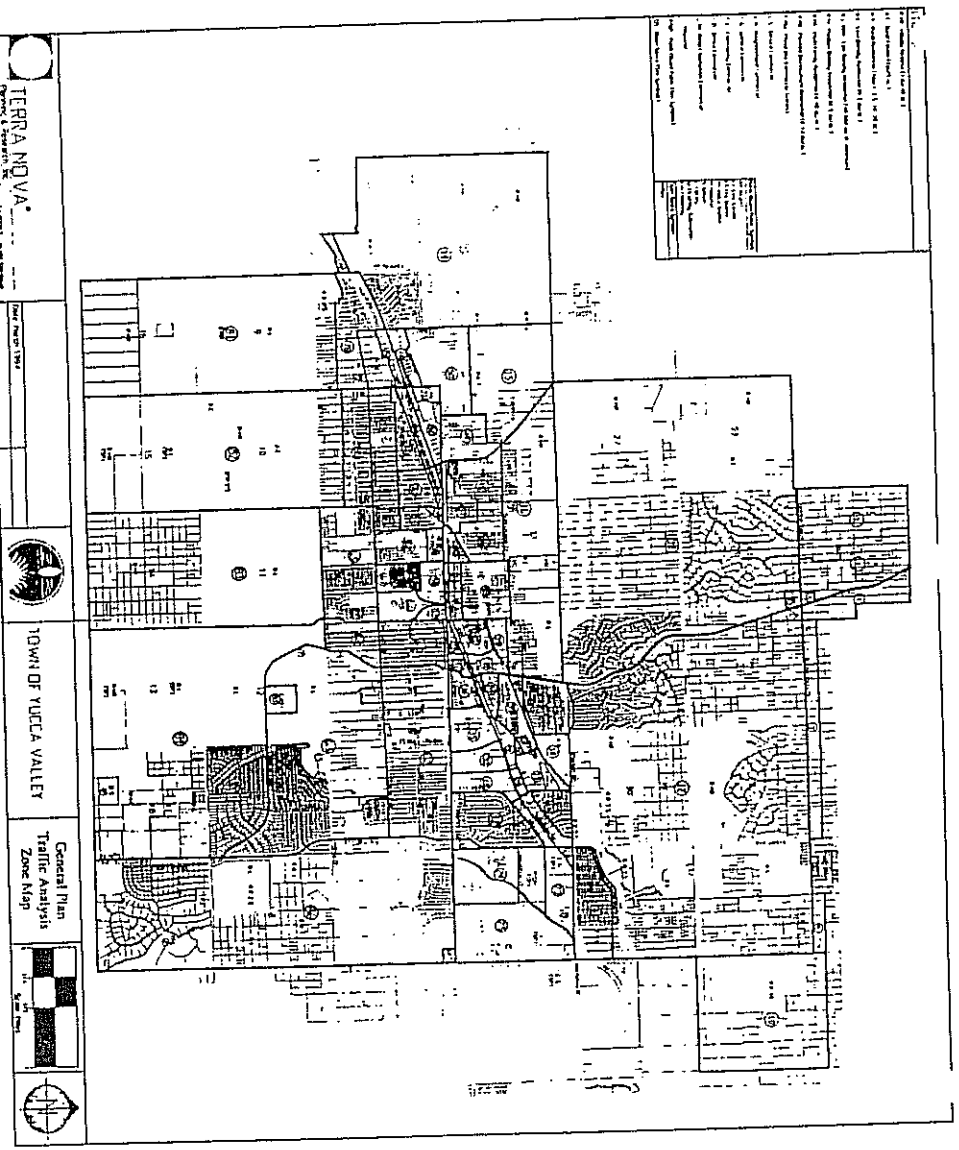
TAZ ACREAGE/UNITS TABLE-PREFERRED 8/16/94

Table 13a
TAZ LAND USE KEY
TOWN OF YUCCA VALLEY
GENERAL PLAN LAND USE DESIGNATIONS

R-HR-40	Hillside Reserve Residential (1 du/40 Ac.)
R-L-1	Rural Residential (1 du/ 1 Ac.)
R-L-2.5	Rural Residential (1 du/ 2.5 Ac.)
R-L-10	Rural Residential (1 du/ 10 Ac.)
R-L-20	Rural Residential (1 du/ 20 Ac.)
R-L-5	Rural Estate Residential (1 du/ 5 Ac.)
R-S-2	Low Density Residential (2 du/ 1 Ac.)
R-S-3.5	Low Density Residential (10,000 sq. ft. min.)
R-S-5	Medium Density Residential (0-5 du/ 1 Ac.)
R-M-10	Multi Family Residential (0-10 du/1 Ac.)
CMU	Commerical Mixed Use (variable)
CG	General Commercial
P/QP	Public/Quasi Public
P/OS	Public/Open Space
Ind	Industrial

Note: This key is to be utilized with Town of Yucca Valley Preferred Alternative Land Use Scenario and the Alternative 1 and 2 Land Use Scenarios.

Fig. 4E



VI. MITIGATION MEASURES

By year 2014, area build-out as well as ambient traffic growth will require roadway improvements. The General Plan for the Town of Yucca Valley identifies the arterial roadway system by classification. See TABLE 14. Based on the intersection analysis methodology previously described, future average traffic volumes were calculated. Based on these projected traffic volumes, demand for lane configurations along the arterial street system was established. The key intersection configurations as well as right-of-way requirements are shown on Figures 5a through 5i.

A. Highway Designation

There are two highway designations proposed for the Town of Yucca Valley. Highway 62 is a six-lane State Highway divided by a landscaped median island. Separate left turn and right turn lanes are provided at designated intersections. The Highway is intended to have limited access. Wherever possible, driveways serving frontage business should be severely limited and access shared by adjacent private properties. State Route 247 is the other designated highway with Town. State Route 247 may provide four to six through travel lanes with separate left turn and right turn lanes. The roadway is divided by landscaped median islands with openings at intersections only. Access to and from private properties should be limited as much as possible. The intersection of the two highways will be most severely impacted. The intersection therefore will be designated as a "critical intersection". See Standard Detail Figure 6 and Figure 7. These mitigation measures will bring the Level of Service to "D", acceptable intersection operation.

B. Arterial Streets

Arterial Streets are intended to serve the Town as major through roadways, providing alternate routes from the State Routes.These roadways also serve as major distribution arteries for traffic to significant traffic generators. The roadways provide for through travel with separate left turn lanes at intersections. The roadway is divided by landscaped median islands. Separate parking lanes, or if parking prohibition is found necessary, bicycle lanes could be marked.

These streets provide maximum exposure to adjacent commercial land development and provide the backbone to the local and regional transportation network.

Reasonable traffic mitigation measures at key intersections are shown on FIGURE 5a through FIGURE 5i. These mitigation measures are consistent with reasonable traffic management practices. Each of the study intersections was individually reviewed for capacity constraints. Travel lane additions as well as improved traffic control devices are recommended.

TABLE 14
TOWN OF YUCCA VALLEY
PREFERRED ALTERNATIVE ROADWAY ANALYSIS

Roadway	1993 ADT	General Plan Designation	Preferred Alternative Buildout (ADT)
Highway 62			
W of Kickapoo Trail	19,940	Highway	49,760*
E of Acoma Trail	18,950	Highway	55,660*
W of Highway 247	22,300	Highway	58,740*
W of Yucca Mesa Road	14,490	Highway	37,730
Highway 247			
S of Buena Vista	9,330	Highway	31,570
N of Highway 62	14,250	Highway	43,960*
Yucca Trail			
E of Joshua Lane	7,390	Arterial	26,790
W of Avalon/Palomar	6,330	Arterial	16,700
W of La Contenta Road	4,530	Collector	13,880
Onaga Trail			
W of Avalon/Palomar Ave.	680	Collector	11,210
W of Joshua Lane	3,550	Arterial	23,740
E of Acoma Trail	4,630	Arterial	8,820
E of Deer Trail	2,900	Arterial	10,320
Pioneertown Road			
N of Highway 62	820	Collector	9,500
Sunnyslope Drive			
E of Pioneertown Rd/ N of Highway 62	820	Collector	2,500
Sage Avenue			
N of Onaga Trail	3,650	Collector	16,100
N of Highway 62	1,500	Collector	7,350
Acoma Trail			
S of Onaga Trail	1,200	Collector	13,760
S of Highway 62	2,500	Collector	11,850
Joshua Drive			
W of Joshua Lane	1,990	Collector	6,070
E of Palomar Avenue	2,200	Collector	6,710
Joshua Lane			
N of Joshua Drive	3,700	Collector	6,640
S of Highway 62	4,440	Arterial	14,830
Avalon/Palomar Avenue			
N of Yucca Trail	2,200	Arterial	8,600
N of Onaga Trail	2,300	Collector	11,840
S of Onaga Trail	2,640	Collector	8,050
N of Highway 62	1,520	Collector	4,640
Yucca Mesa/La Contenta Rd			
N of Highway 62	3,300	Collector	5,570
S of Highway 62	1,500	Collector	10,980

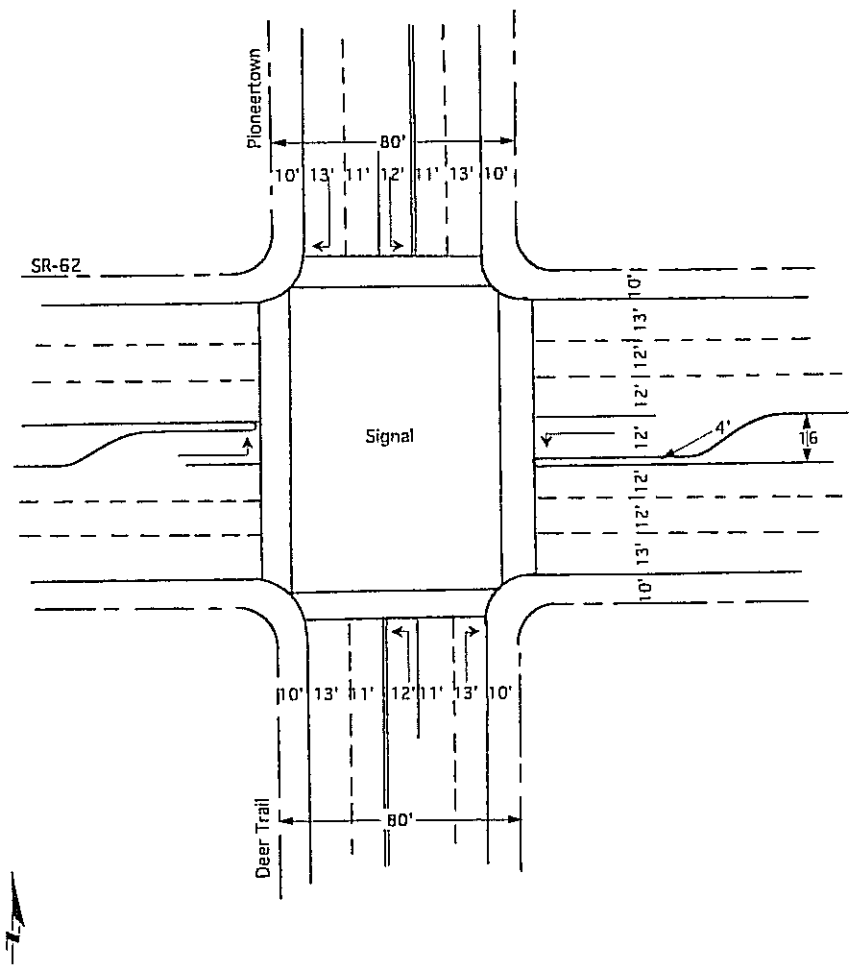
Continued on next page. . .

TABLE 14 (con't)
TOWN OF YUCCA VALLEY
PREFERRED ALTERNATIVE ROADWAY ANALYSIS

Roadway	1993 ADT	General Plan Designation	Preferred Alternative Buildout (ADT)
Skyline Ranch Road			
W of Highway 247	1,480	Collector	4,510
Buena Vista Drive			
E of Highway 247	1,710	Collector	5,230
Kickapoo Trail			
S of Highway 62	2,310	Arterial	7,070
Camino Del Cielo			
S of Highway 62	No Data	Collector	3,730
N of Highway 62	930	Collector	2,840
Santa Fe Trail			
E of Kickapoo Trail	1,430	Collector	4,360
Deer Trail			
S of Hwy 62/N of Onaga Tr	2,040	Collector	6,250
Palm Avenue			
S of Highway 62	1,020	Collector	9,310
Baron Drive			
W of Yucca Mesa Rd/E of Avalon Rd	1,880	Collector	5,730
Balsa Avenue			
S of Hwy 62/N of Yucca Tr	1,900	Collector	5,100
N of Hwy 62/S of Paxton Rd	2,580	Collector	7,870
Indio Avenue			
N of Hwy 62/S of Baron Rd	1,000**	Collector	3,050
Paxton Road			
W of Avalon Drive	590	Collector	5,600

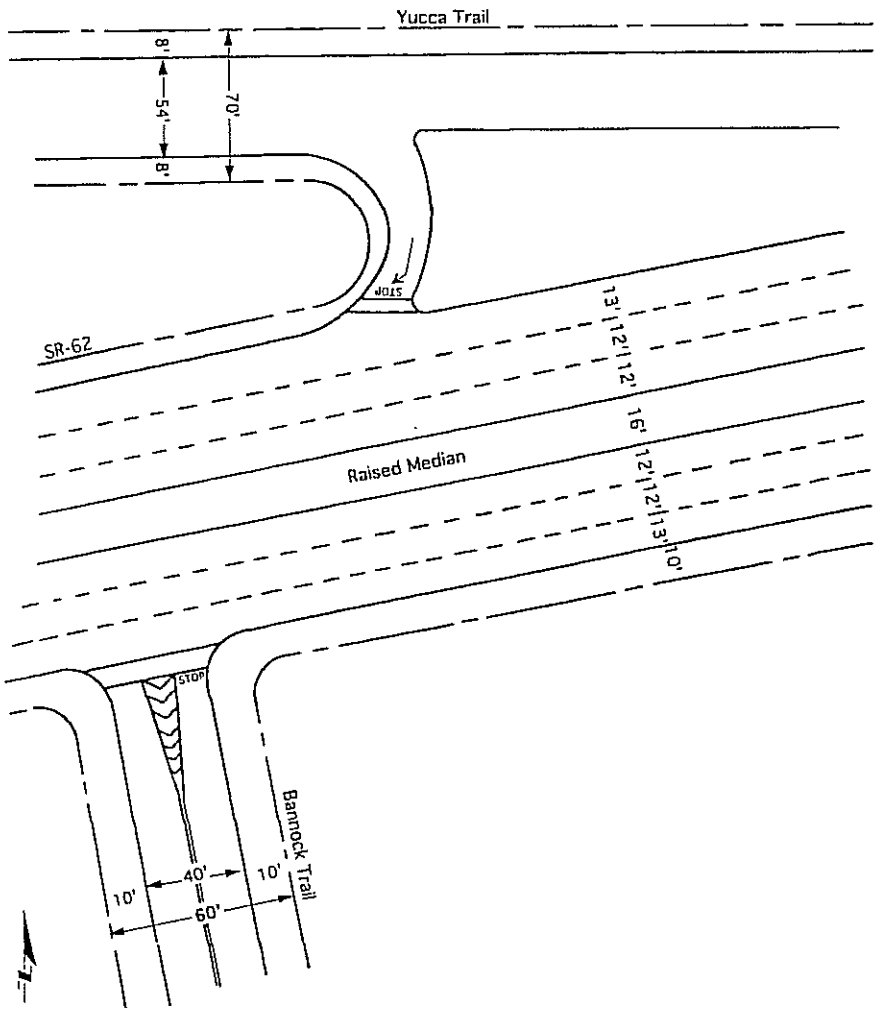
* Peak Hour traffic periods in Yucca Valley at these locations occur over several hours of the day, thereby more broadly distributing the average daily volumes and reducing peak hour impacts.
**Estimated Traffic Volume

State Route 62/Deer Trail/Pioneer Town Road



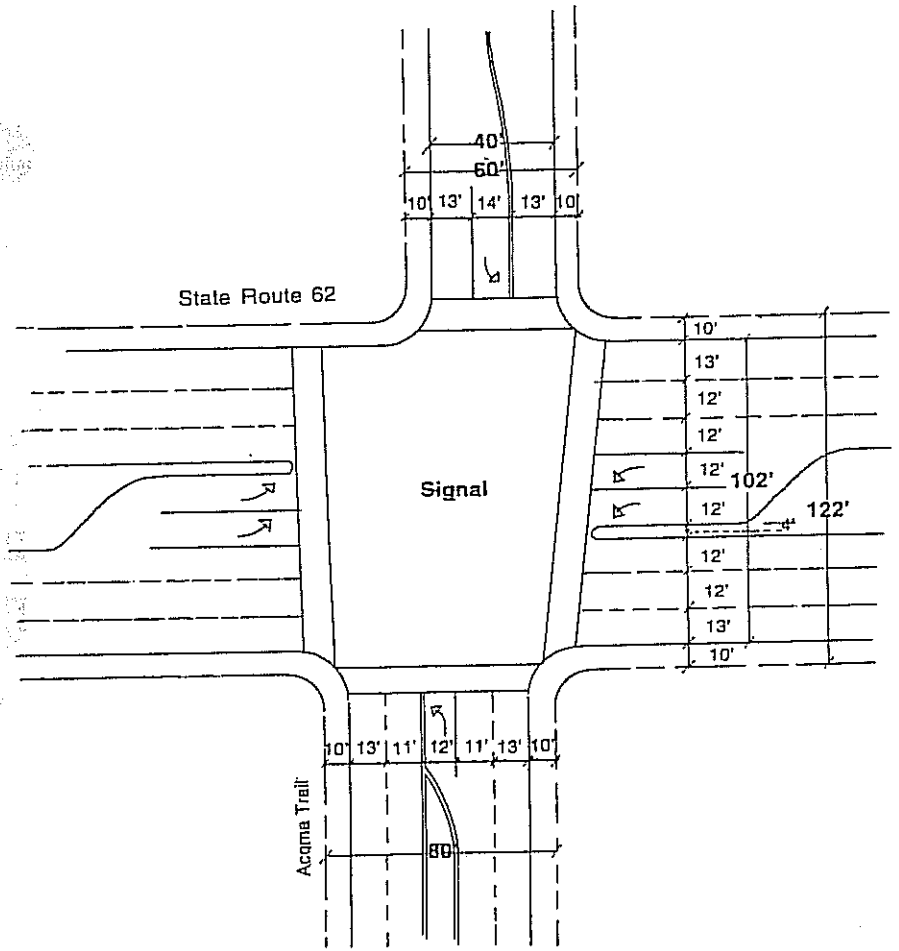
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.A

State Route 62/Bannock Trail



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.B

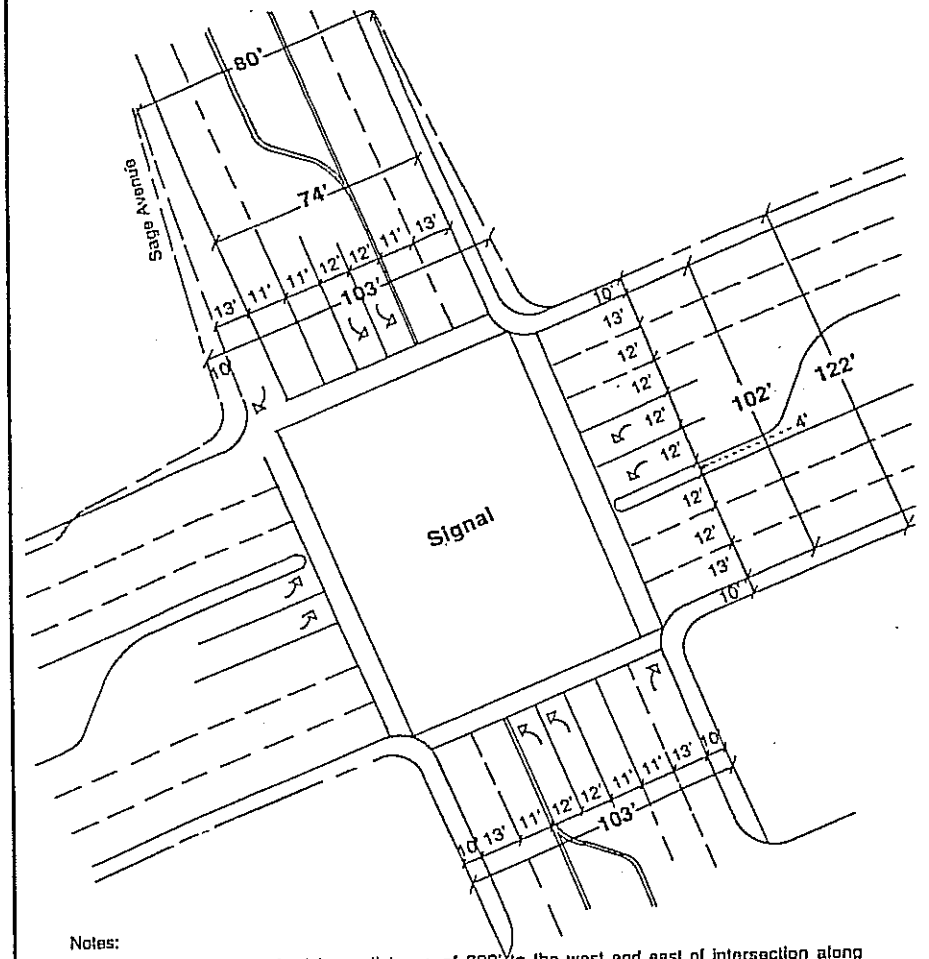
State Route 62/Acoma Trail



Note: 122' right-of-way required for a distance of 300' to the west and east of intersection along Highway 62.

Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.C

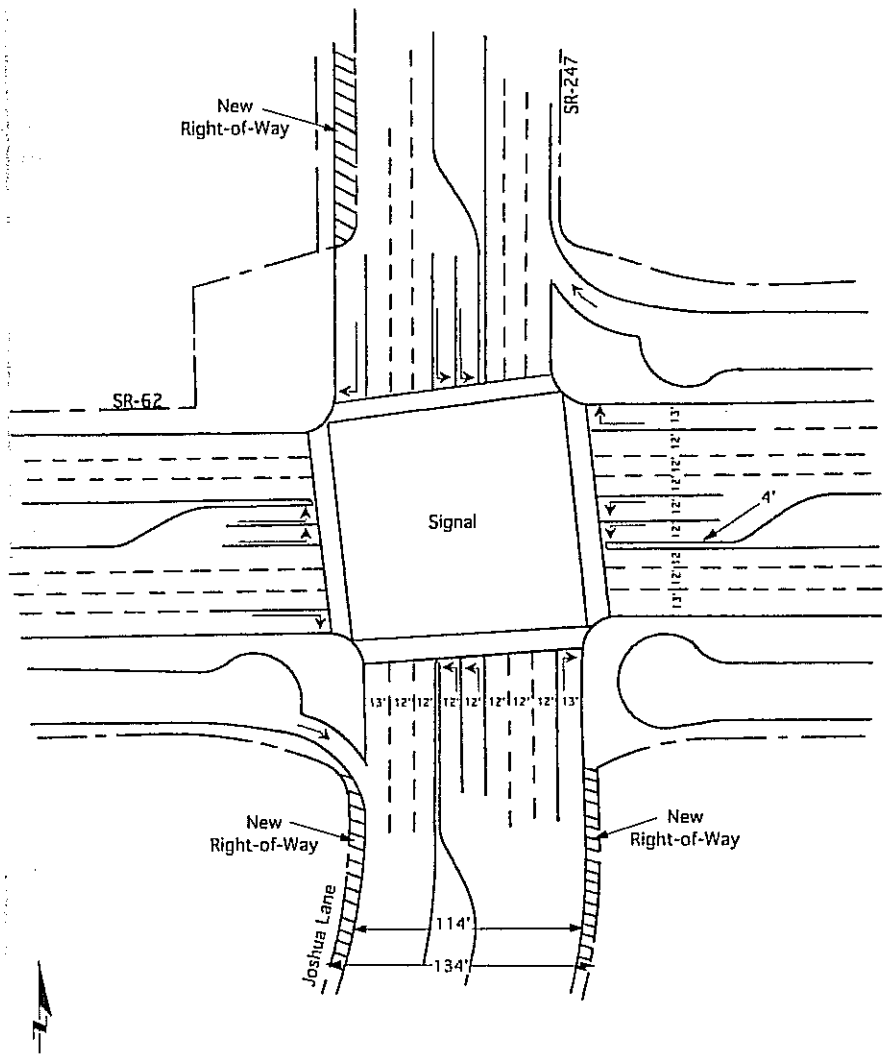
State Route 62/Sage Avenue



Notes:
1. 122' right-of-way required for a distance of 300' to the west and east of intersection along Highway 62.
2. 103' right-of-way required along south leg of Sage Avenue from Highway 62 to Yucca Trail Intersection.
3. 103' right-of-way required along north leg of Sage Avenue for a distance of 300'.

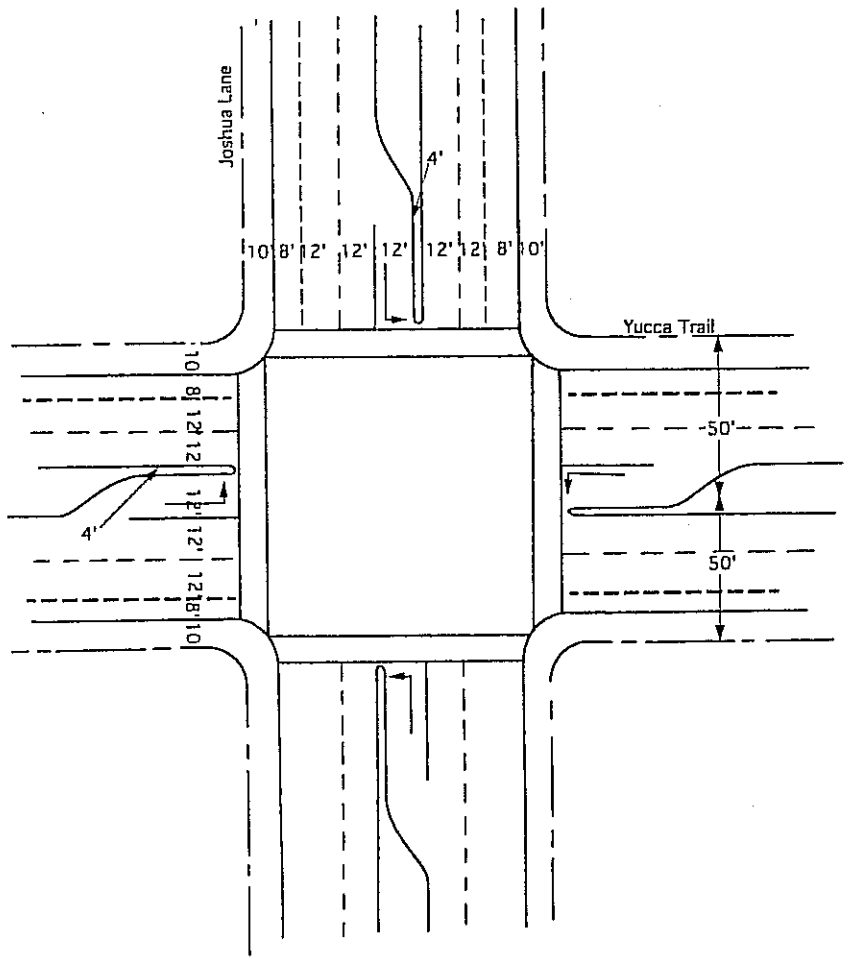
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.D

State Route 62/State Route 247/Joshua Lane



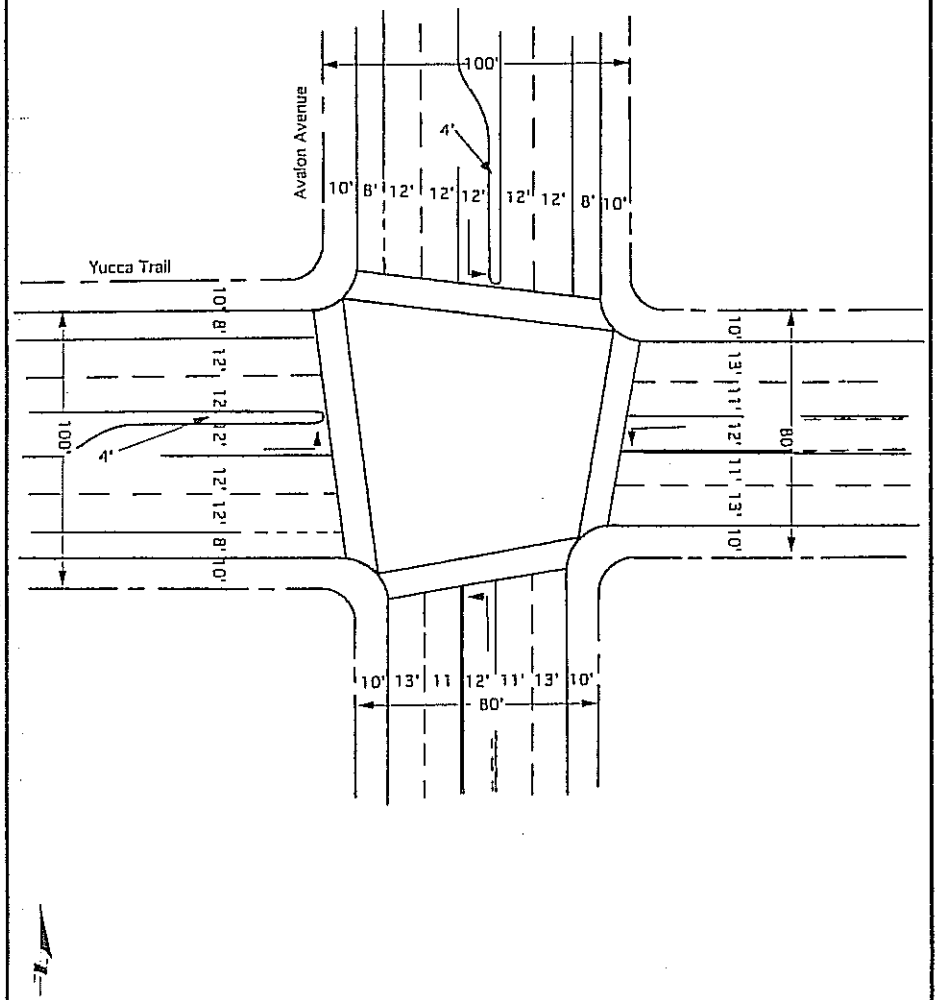
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.E

Yucca Trail/Joshua Lane



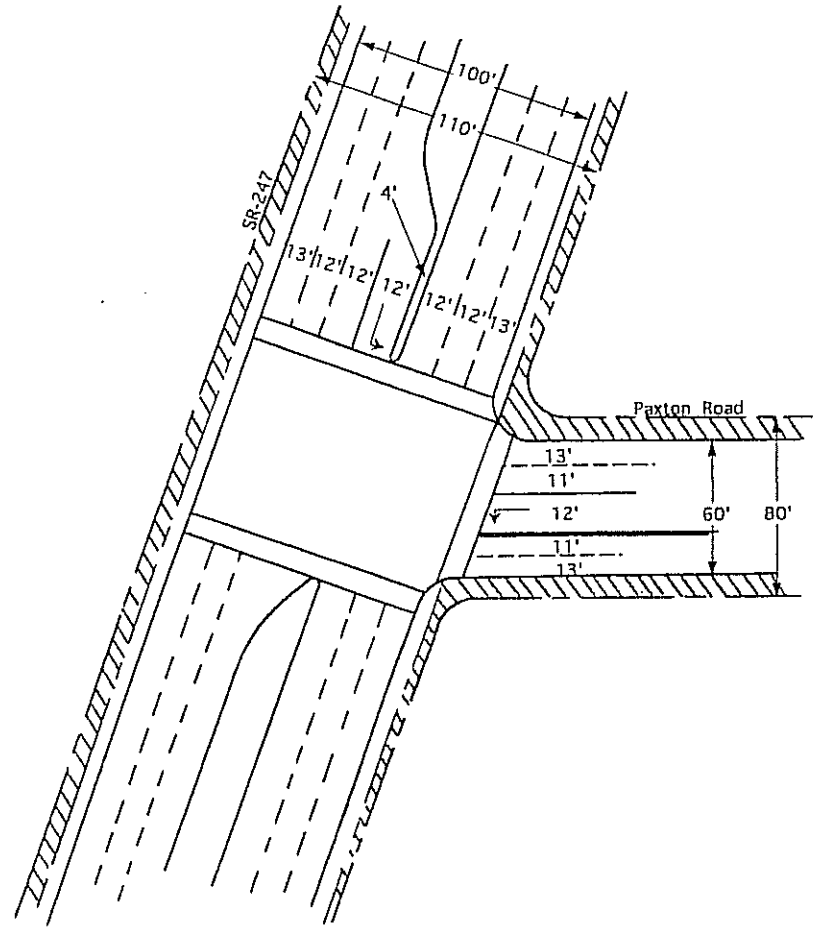
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.F

Yucca Trail/Avalon Avenue



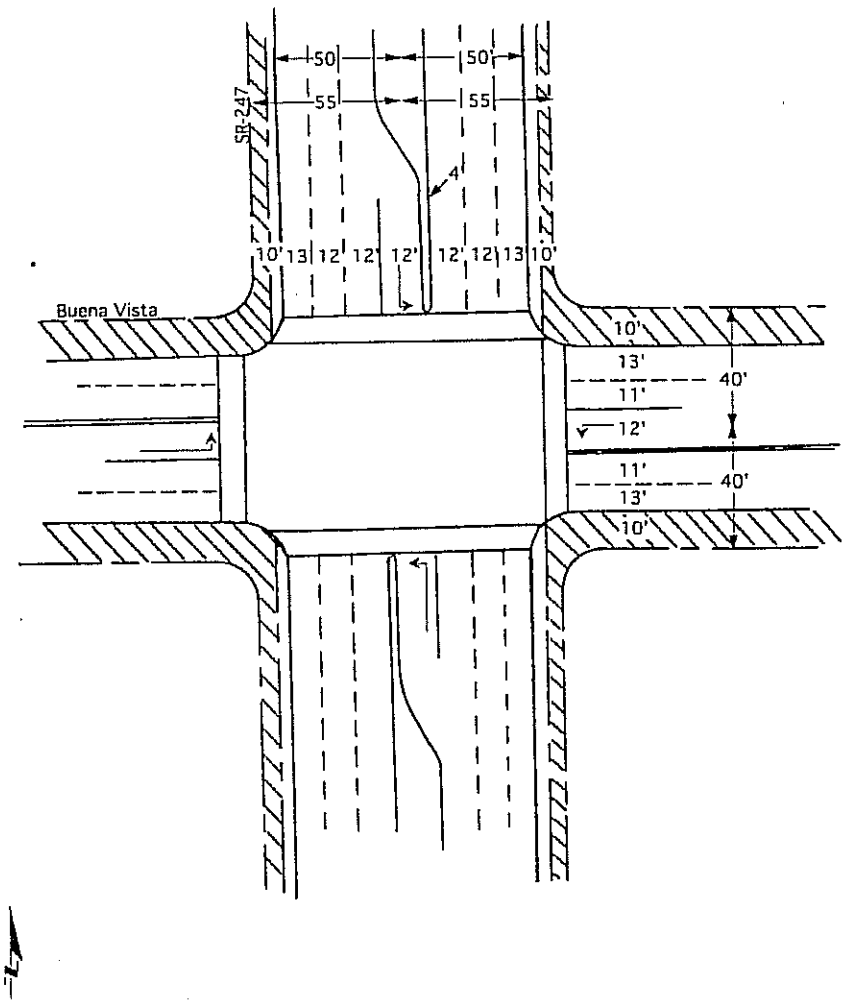
Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.G

State Route 247/Paxton Road



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.H

State Route 247/Buena Vista



Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Year 2015 Mitigated Intersection Geometric	Fig.5.1

C. Collector Streets

The roadways within this classification act as collectors for traffic from adjacent residential developments. These streets serve automobile as well as bicycle and pedestrian traffic. School buses use these streets for access to the local schools and connectors to the residential areas. Traffic safety for underage pedestrians is of high concern along these streets.

D. Industrial Streets

The roadways serving industrial facilities are intended to accomodate truck traffic. Adequate roadway widths as well as turn radius provisions must accomodate all legal size, interstate carriers. Special attention must be given to turck access safety. Street geometrics designs as well as loading dock placements should avoid truck backing within any portion of public right-of-way.

E. Local Streets

The Local streets should only be wide enough to accomodate two travel lanes, one in each direction with parking on both sides. For single loaded streets, those streets that have residences only on one side of the street, the paved portion could be reduced by ten feet as parking on the non-access side is not required. In no case should street width meander from wide through narrow sections based solely on driveway locations.

Pedestrian traffic safety along local streets requires reasonably slow speeds. In order to encourage traffic safety, geometric designs of subdivision plans should be reviewed by a qualified traffic engineer prior to plan approval.

F. Critical Intersection

The parameters defining critical intersections will consist of the following:

- o Crossing of two arterial streets
- o Crossing of arterial and secondary streets
- o The intersection is anticipated to exceed LOS E at build-out

The Critical Intersection Program has been developed as an alternative to arterial street widening. Traffic capacity constraints are most acutely felt at intersections. Midblock or street widening projects do not materially improve traffic capacities.

The Intersection of State Route 62 and State Route 247, due to required mitigation measures, is designated as a "critical intersection". Special standards have been developed to mitigate potential traffic impact at this major Town intersection. These engineering standards are shown on Figure 6 and Figure 7 of this Report.

A Critical Intersection should provide for three through travel lanes at all approaches, double left turn lanes, a separate right turn lane and a bus bay at each approach of an arterial street. Secondary street approach is to consist of double left turn lanes, two through travel lanes, separate right turn lane and bus bay.

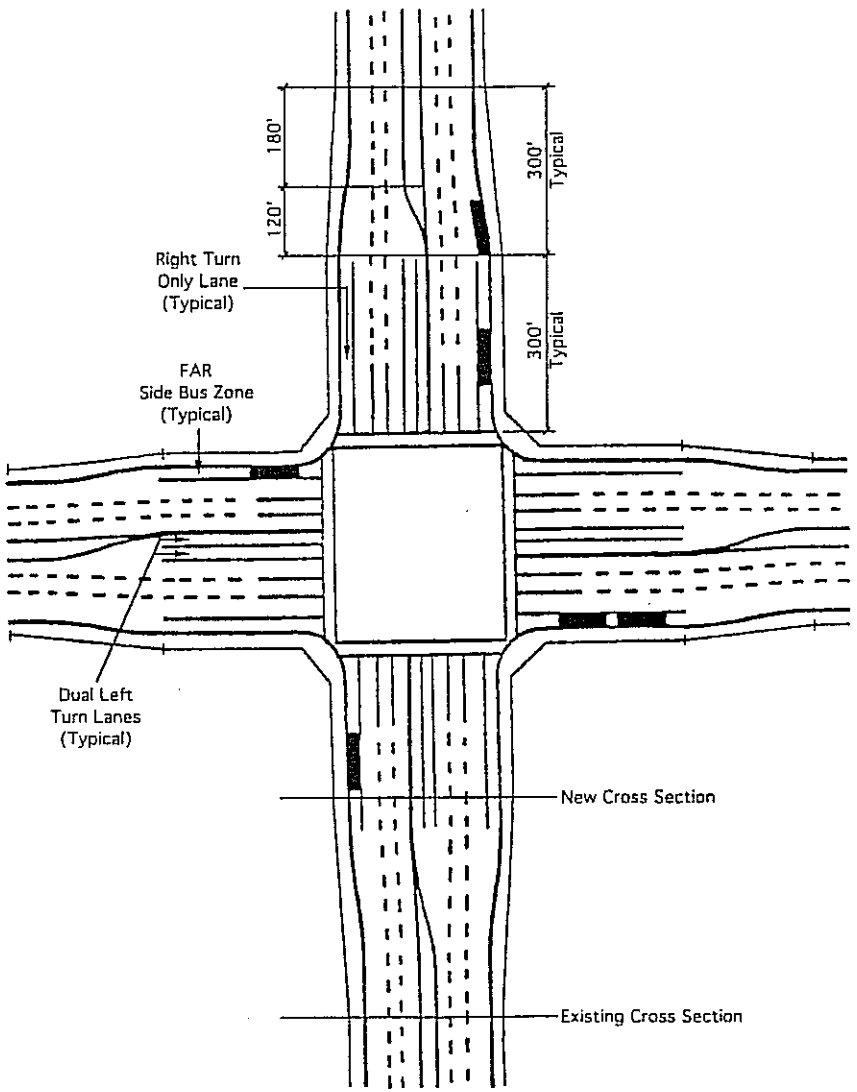
The Critical Intersection Detail Standard is shown on Figure 6. In order to accomodate the required lane configurations, additional right-of-way will be required. The target year 2015 to achieve build-out of the General Plan affords adequate time to gradually acquire the necessary right-or-way as new development occurs or adjacent properties redevelop. In the Town of Yucca Valley, only one location qualifies for the Critical Intersection treatment. This is the confluence of State Route 62, State Route 247 and Joshua Lane. Traffic impacts projected for this location indicate heaviest peak hour demands requiring extraordinary mitigation measures by build-out year 2015.

Roadway classification crossections are shown on Figure 9.

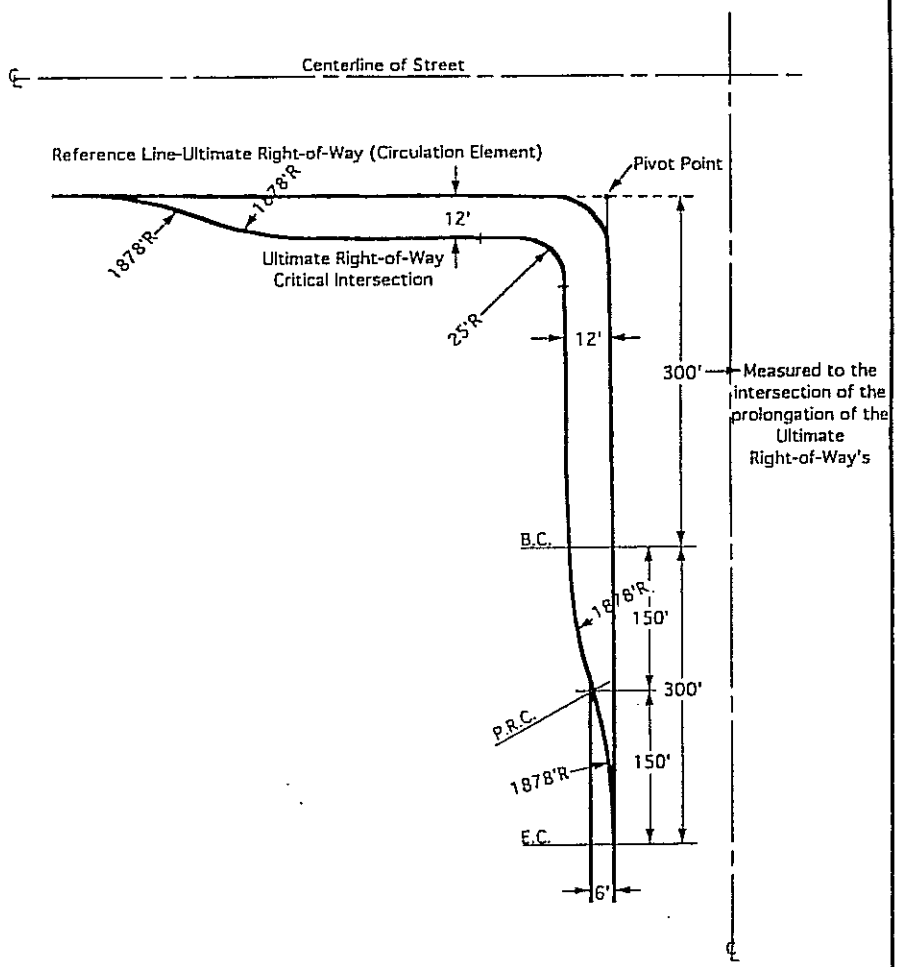
G. Conclusions

The proposed " Preferred Alternative " land use plan is projected to generate manageable traffic volumes. by the year 2015 if in fact the projected land use plan is fully built-out and all of the proposed mitigation measures are in place, any significant traffic congestion is projected to be minimized. The major improvements along State Route 62 and State Route 247 will result in free-flow throughout the State Routes. Local street improvements as well as the completion of the proposed "Critical Intersection" at the two State Highways will provide reasonable traffic flows even during the highest peak hours.

The intersection of State Route 62 and State Route 247 is designated as a "Critical Intersection", see Figure 5h. Traffic volumes routed along State Highway 62, the only east-west access roadway into and out of the Town of Yucca Valley,exceeds Level of Service "D" at build-out year 2015 under the Preferred Alternative Scenario. The California Congestion Management Strategy recognizes that due to unavoidable circumstances (topographic features) Level Of Service "E" is an acceptable traffic impact.

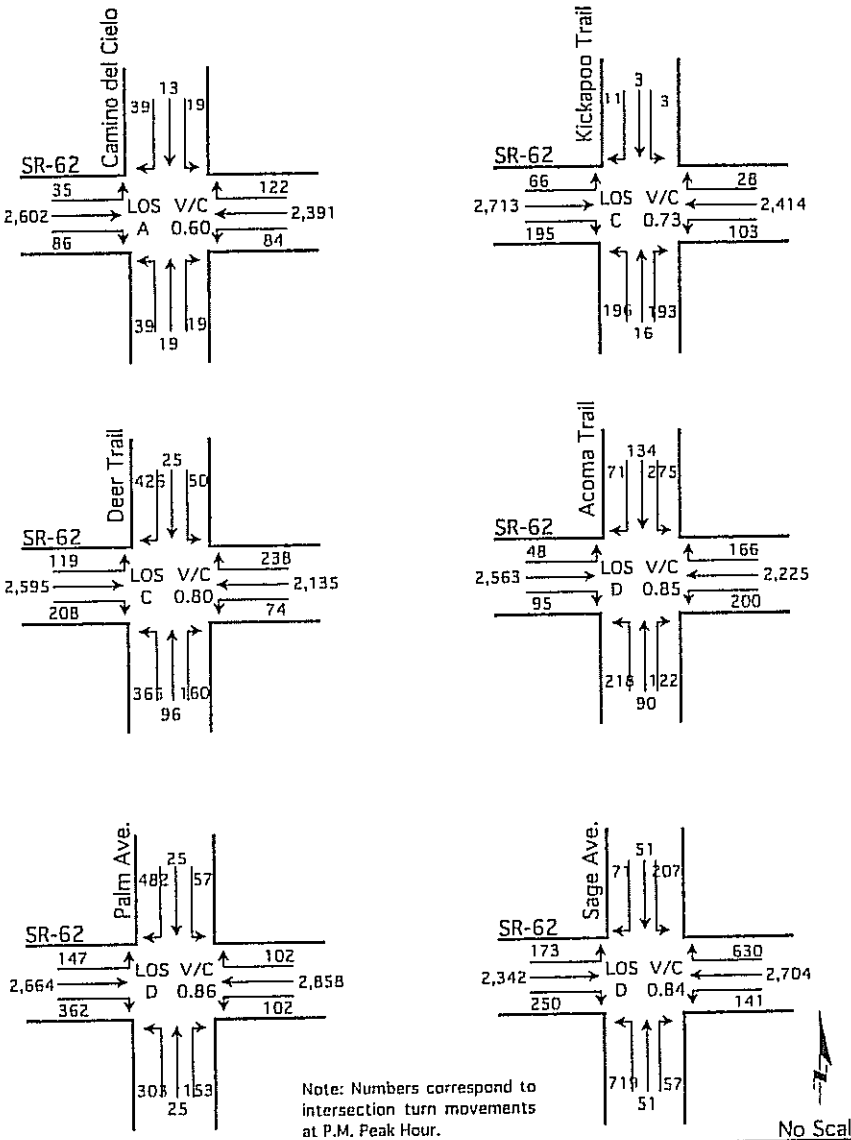


Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Critical Intersection Layout Plan	Fig.6



NOTE: Intersection dimensions are symmetrical. Exhibit not to scale.

Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	Critical Intersection Detail	Fig.7



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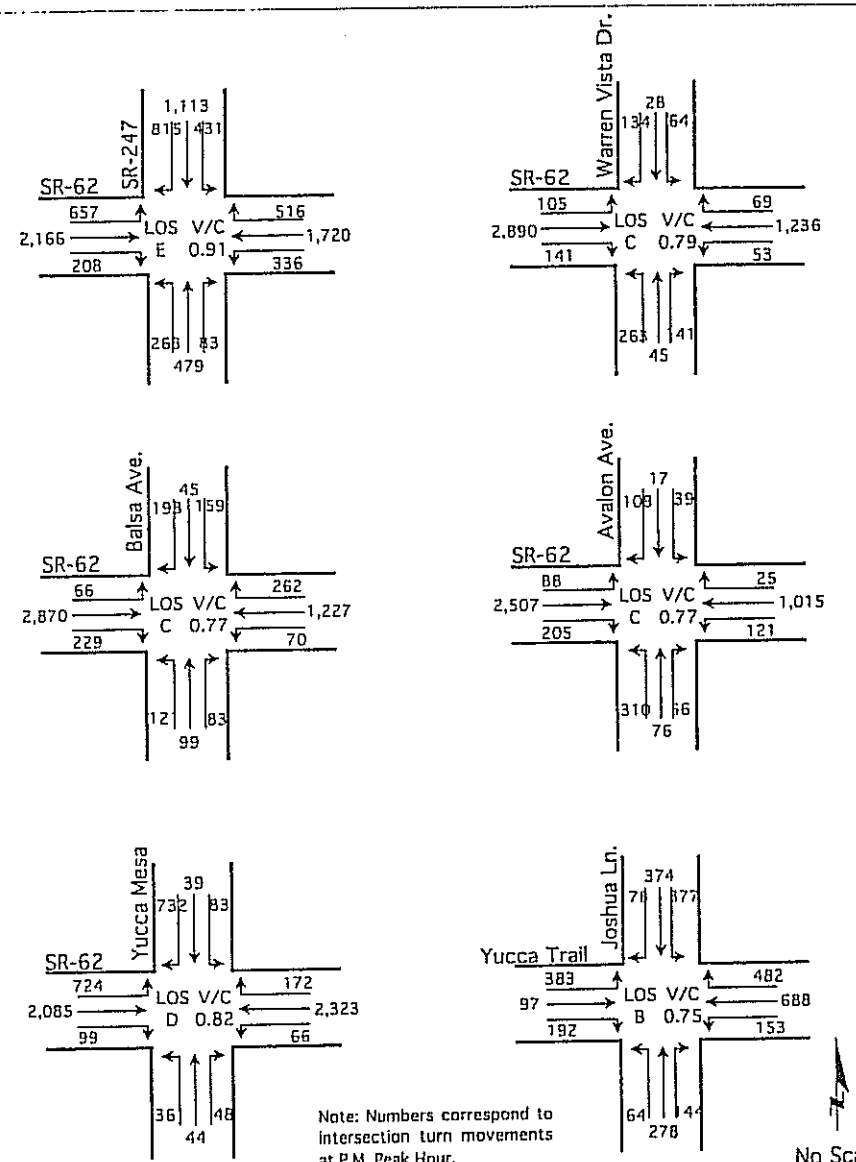
TRAFFIC VOLUMES
YEAR 2015
LEVEL OF SERVICE
MITIGATED
PREFERRED ALTERNATIVE

Fig.8.A



Paul Singer, P.E.
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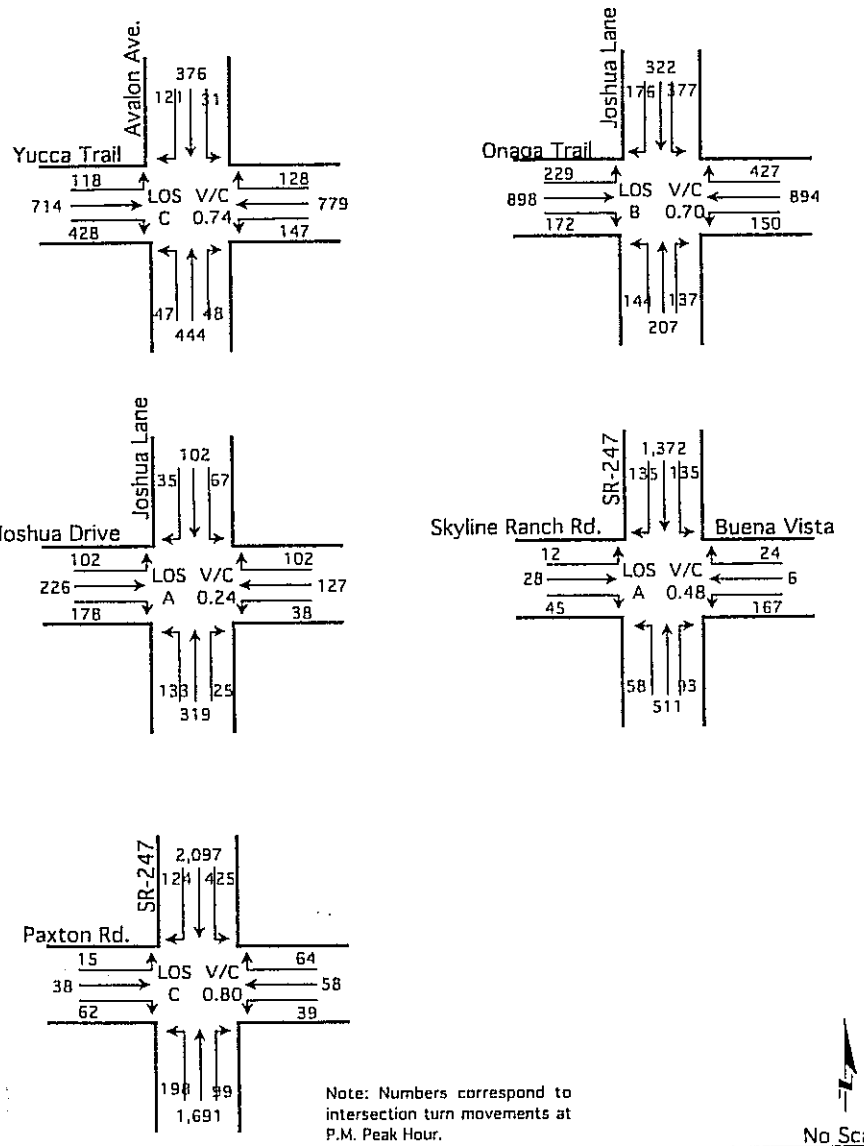
TRAFFIC VOLUMES
YEAR 2015
LEVEL OF SERVICE
MITIGATED
PREFERRED ALTERNATIVE

Fig.8.B



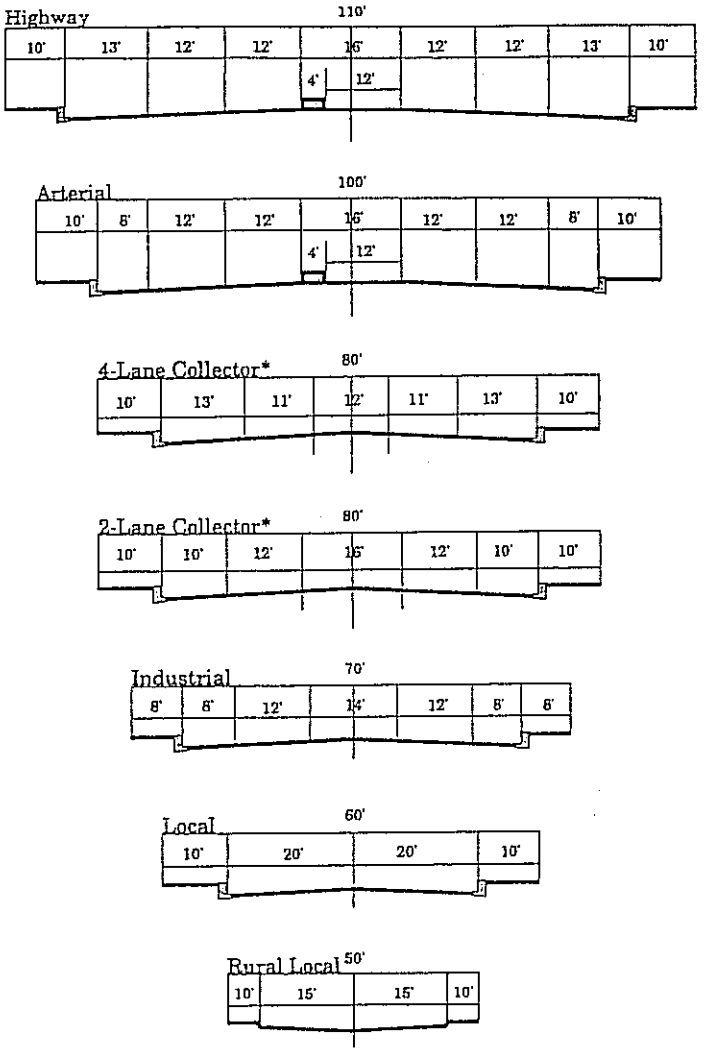
Note: Numbers correspond to intersection turn movements at P.M. Peak Hour.

No Scale

Paul Singer, P.E.
TRANSPORTATION ENGINEERING AND PLANNING

TRAFFIC VOLUMES
YEAR 2015
LEVEL OF SERVICE
MITIGATED
PREFERRED ALTERNATIVE

Fig.8.C

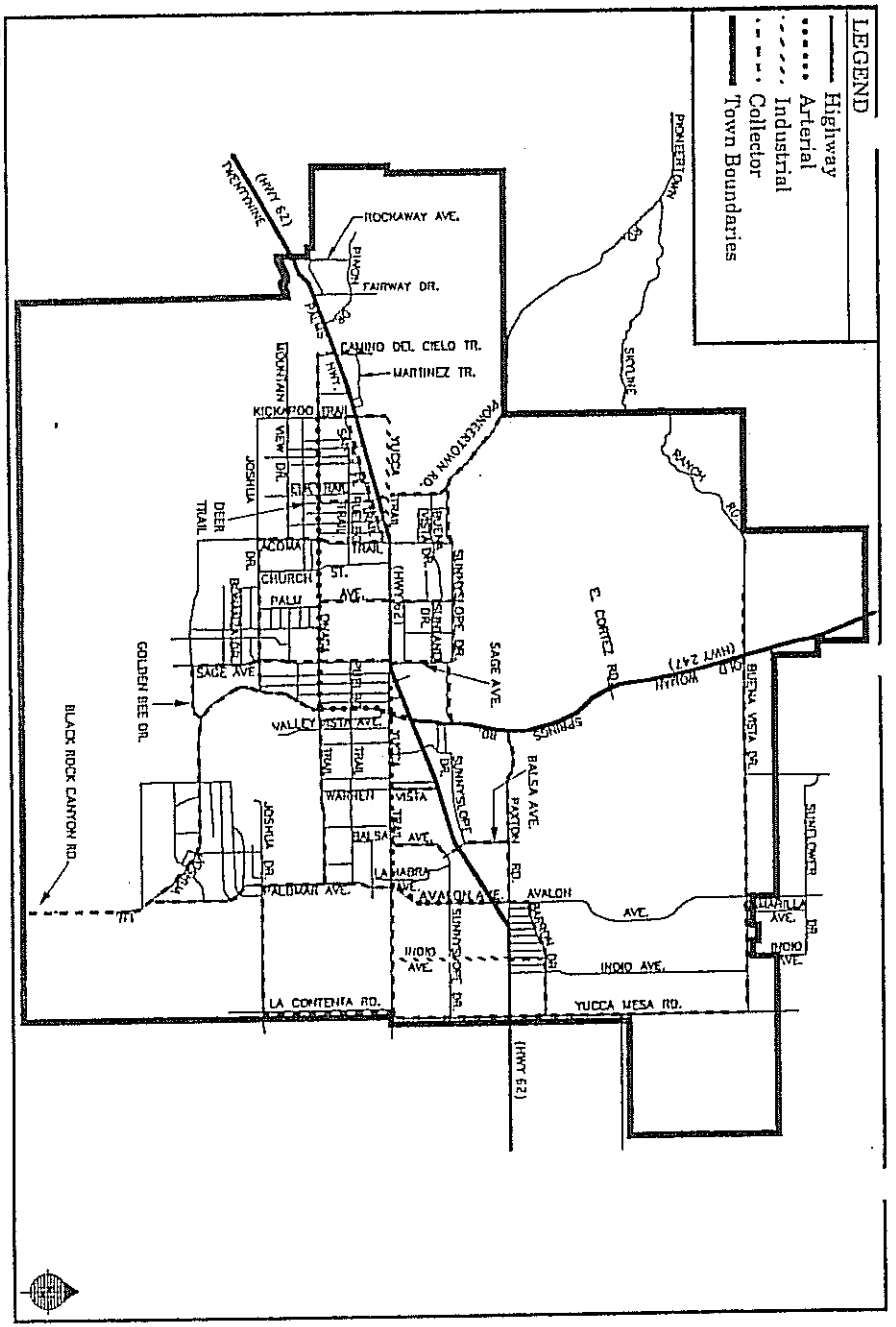


*Note: The Collector can accomodate both four (4) and two (2) lane facilities with center turn lane/median by restriping.

TERRA NOVA®
Planning & Research, Inc.

Town of Yucca Valley
General Plan Roadway
Cross Sections

Fig.9



VII. ADDITIONAL LAND USE OPTIONS

In order to assist the Town of Yucca Valley in the selection of land use alternatives, two additional land use options were developed and the corresponding traffic impacts evaluated. The two options enumerated as Alternative 1 and Alternative 2 indicate somewhat different land use densities. Both of these additional land use alternatives are vaiations of the Preferred Alternative described in the previous section of this report.

A. Alternative #1 and Alternative #2

Alternative #1 proposes a somewhat increased land use density of the planning area. TABLE 15 shows the specific land use schedule somewhat more land use intensive than the previously discussed Preferred Alternative Land Use Plan. Alternative #2 proposes a decreased land use density of the planning area. TABLE 16 indicates the specific land uses within each of TAZ areas.

B. Traffic Analysis

Using the same methodology previously described, traffic volumes for the p.m. peak hour were calculated, the results distributed to the roadway network of the Town and the resulting impacts to the study intersections. The Levels of Service for each of the study intersections are shown on TABLE 17 for Alternative #1 and Alternative #2.The traffic implications for each of the study intersections are graphically shown on Figures 10a through 10c for Alternative #1 and Figures 11a through 11c for Alternative #2.

C. Average Daily Traffic

Average daily traffic volumes were calculated for both Alternative #1 and Alternative #2. THese traffic volume calculations are presented for comparisons with the projected traffic anticipated. Land use decisions at each opportunity should be weighted and compared to the long range traffic impacts at the selected roadway segments.

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition				PM Peak Hour Trips			Alternative #1 Buildout				PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
1.	RR2.5	360	60/24	24	15.7	8.3	1.	R-L-2.5	360	65/24sfd	145	87	58
2.	IC	172	20/30	84	33.8	50.2	2.	IN	84	25/25ac	836	175	661
								R-L-2.5	88	0	35	21	14
								Total	172		891	196	675
3.	IC	17	1/1	9	2	7	3.	CG	17	6/6ac	225	112	113
4.	IC	92	46/17	522	90.7	431.3	4.	CG	8	0	102	51	51
								IN	41	41/41ac	385	81	304
								R-L-2.5	43	0	18	11	7
								Total	92		505	143	362
5.	YV/RL	20	0				5.	CG	20	0	205	102	103
6.	CG/SPC	15	0				6.	CG	15	0	154	77	77
7.	RL	155	97.5/39	39	25.6	13.4	7.	CG	11	0	127	64	63
								R-L-2.5	144	80.5/25	51	20	21
								Total	155		178	84	84
8.	RL5	25	25/5	5	3.3	1.7	8.	R-L-2.5	25	25/5sfd	5	3	2
9.	RL5	58	0				9.	R-L-2.5	58	2/2ac.	18	11	7
10.	RL20	25	0				10.	R-L-2.5	390	20/3sfd	154	92	62
	RL5	625	15/3					R-L-5	260	0	53	31	22
	Total	650	15/3	3	1.9	1.1		Total	650		207	123	84
11.	RL5	1074	175/35				11.	R-HR-40	716	128/3sfd	18	11	7
	RC	480	120/3					R-L-5	550	122/67sfd	157	94	63
	RL	988	440/176					R-L-2.5	1669	636/267sfd			
	RS1	385.5	109/109					Total	2935		175	105	70
	FW	5	5/Flood	327	212.7	114.3							
	CG/SPC	2.5	1/1	11	5.5	5.5							
	Total	2935	850/324	338	218.2	119.8							

Alternative #1 Summary
August 22, 1994

The average daily traffic volumes are shown on TABLE 1. This table compares the traffic magnitudes for each of the land use scenarios. This includes the County of San Bernardino General Plan, The Town of Yucca Valley Preferred Alternative as well as the more development intensive Alternative #1 and the less intensive Alternative #2.

D. Conclusions

As may be seen in TABLE 1, Average Daily Traffic Comparison, the Town of Yucca Valley Preferred Alternative indicates acceptable Levels of Service and reasonable traffic circulation along the available roadways of the Town. The intersection of State Route 62 and State Route 247, if constructed as a critical intersection with separate turn lanes in each direction, will operate at LOS "E" at peak hours. At any other time of day all intersections and roadway segments will operate at comfortable Levels of Service. The Town of Yucca Valley Preferred Alternative optimizes land use density opportunities without unduly causing traffic congestion.

The County of San Bernardino General Plan if followed, could cause serious traffic delays due to extensive demands along the available roadway network.

Alternative #1 proposes increased development densities that, if enacted, would place undue burden on the Town's roadway network.Several intersections would be impacted past capacity at peak hours.

Alternative #2 proposed reduced land use development. From a transportation point of view, this Alternative is the least traffic intensive, however, provides for significant underdevelopment of the Town. Under this Plan, land use development would be underutilized and future opportunities limited.

The Town of Yucca Valley Alternative optimizes land use opportunities and balances them against a manageable transportation roadway network.

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
12.	RL	1820	495/198				12.	R-HR-40	280	40/3sfd	9	5	4
	RL5	612	265/53					R-L-5	1360	393.6/400sfd	599	359	240
	RS1	655	170/170					R-L-2.5	1297	329/188sfd	581	348	233
	PQP	10	10/Flood					R-M-10	20	15/18dup			
	RS18M	235	39/94							39sfd	108	65	43
	RS10M	20	1/6					R-S-2	80	0	162	97	65
	3MRM	50	3/18dup					R-L-1	343	0	346	208	138
			29sfd					CG	12	6/6	82	41	41
	Total	3402	983/568	574	372.9	201.1		P/QP	10	10/Flood			
								Total	3402		1887	1123	764
13.	RS1	40	23/23				13.	P/QP	2	2/Flood			
	3MRM	115	24/188sfd					R-S-2	40	23/33sfd	68	41	27
			124dup					R-M-10	133	106/239sfd			
			40mfu							124dup			
	CO	20	0							40mfu	680	408	272
	Total	175	47/375	379	246.2	132		Total	175		748	449	299
14.	RC	760	0				14.	R-HR-40	545	0	13	8	5
	RL	120	0					P/QP	80	0			
	RS10M	120	8/35					R-L-2.5	202	148/150sfd	174	104	70
	RS18M	215	22/53					R-L-5	210	0	42	25	17
	RL5	80	20/4					R-S-3.5	50	0	202	121	81
	4MRM	28	2/5sfd					R-S-2	100	0	202	121	81
			18dup					R-S-5	20	20/25sfd			
	PQP	5	5/Flood	118	76.8	41.2				15sfd	40	24	16
	CN	2	2/2	22	11.0	11		R-L-1	123	0	124	76	48
	Total	1330	59/117	140	87.8	52.2		Total	1330		797	479	318
15.	RC	180	40/1					R-HR-40	64	0	1	1	0
	RL5	130	25/5					R-L-5	170	5/5sfd	23	14	9
	RL	80	0					R-S-2	90	0	182	109	71
	RS10M	45	0					R-M-10	30	15/78sfd	230	138	92
	RS18M	20	.5/1					R-L-1	101	16/5	91	54	37
	Total	455	79.5/59	6	3.9	2.1		Total	455		527	316	209

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
16.	RC	180	40/1				16.	R-HR-40	351	51/7sfd	14	8	6
	RL5	188	20/4					R-L-1	204	26/16sfd	196	118	76
	RS10M	45	3/14					R-L-2.5	70	19/35sfd	55	33	22
	RS18M	275	16.5/40										
	Total	690	79.5/59	59	38.7	20							
17.	RS18M	80	18.5/45				17.	R-L-1	134.5	28.5/78sfd	293	176	117
	RS10M	52	7.5/33					P/QP	2.5	2.5/Flood			
	Total	132	26/78	79	51.2	27.8							
18.	IC	77	0				18.	IN	5	0/0ac.	47	10	37
								R-S-2	72	0	145	87	58
								Total	77		192	97	95
19.	IC	69.5	15/3	141	29.6	111.4	19.	CG	43.5	13.5/13.5ac.	445	223	222
	PQP	2.5	2.5					P/QP	22	18/Fld			
	Total	73.5	17.5/3	141	29.6	111.4		IN	8	0	75	16	59
								Total	73.5		520	252	268
20.	RS10M	62	6.5/29	29	19.4	9.6	20.	R-S-5	72	42/42sfd	275	165	110
	CG/SPC	10	3/2	33	16.5	16.5							
	Total	72	9.5/31	62	35.9	26.1							
21.	CG/SPC	35	10/2	109	54.5	54.5	21.	CG	35	10/10ac.	307	153	154
22.	CG/SPC	10	0				22.	CG	10	3/3ac.Rd.	174	87	87
23.	IC	70	0				23.	CG	115	0	1229	614	615
	CN	45	0										
	Total	115	0										
24.	IC	255	0				24.	P/QP	255	0			
25.	IC	265	150/5	633	253.2	379	25.	R-S-5	92	0	213	27	186
								IN	133	69/69	1296	272	1024
								P/QP	40	40/40			
								Total	265		1761	299	1210

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
26.	CG/SPC	30	5/4	54	27.0	27.0	26.	CG	30	10/10ac.	256	128	128
27.	RS18M	197	81/196	198	128.7	69.3	27.	R-S-3.5	200	196/254sfd	337	202	135
	CG/SPC	3	1/3	11	5.5	5.5							
	Total	200	82/199	209	134.2	74.8							
28.	CG/SPC	70	1/1	11	5.5	5.5	28.	CG	70	13/2sfd	681	440	441
29.	CG/SPC	20	10/1	110	55.0	55	29.	CG	20	10/10ac.	154	77	77
30.	CG/SPC	60	10/1	110	55.0	55	30.	CG	85	20/20ac.	453	226	227
	4MRM	25	0										
	Total	85	10/1	110	55	55							
31.	CG/SPC	20	7/11	76	38.0	38	31.	CG	20	7/7ac.	154	77	77
32.	IC	10	1/1	9	2.0	7	32.	IN	10	6/6ac.	141	29	112
33.	RS10M	40	9/39	39	25.6	13.4	33.	P/QP	15	10/Flood			
	IN	15	10/7	110	55.0	55.0		IN	15	1.5/1.5ac.	94	20	74
	CO	5	0					R-M-10	30	25/45sfd	96	58	38
	Total	60	19/46	149	80.6	68.4		Total	60		190	78	112
34.	CG/SPC	17	7/13	76	38.0	38	34.	P/QP	5	5/Pub.Fac.			
	CO	15	5/14	141	21.2	119.8		IN	20	8/8ac.	216	45	171
	CS	13	8/5	87	43.5	43.5		CG	20	12/12ac.	225	112	113
	Total	45	20/32	304	102.7	201.3		Total	45		441	157	284
35.	4MRM	50	4/16sfd				35.	R-M-10	23	19.5/3sfd	59	25	34
			28dup	44	28.9	15.1				28dup	236	143	95
	CG/SPC	10	2/2	22	11.0	11.0		CG	37	2/2ac.	379	189	190
	Total	60	6/46	66	39.9	26.1		Total	60		676	357	319
36.	4MRM	30	5/26sfd	26	17.1	8.9	36.	R-M-10	30	20/16sfd			
			32mfu	32	21.0	11.0				42mfu	159	96	63
	CG/SPC	15	5/8	55	27.5	27.5		CG	15	7/7ac.	82	41	41
	Total	45	10/66	113	65.6	47.4		Total	45		241	137	104

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
37.	CG/SPC	25	7/5	76	38.0	38.0	37.	P/QP	2	2/P.F.			
								CG	23	9/9ac.	236	118	118
								Total	25		236	118	118
38.	OS	20	10/28				38.	CG	30	22/22ac.	358	179	179
	CG/SPC	20	12/4					P/QP	10	10/B.P.			
	Total	40	22/32	131	65.5	65.5		Total	40		358	179	179
39.	RS18M	45	1/3				39.	R-S-2	50	11/3sfd	92	55	37
	PQP	5	5/Flood										
	Total	50	6/3	3	1.9	1.1							
40.	IN	27	22/1BallFld	87	17.4	69.6	40.	P/QP	12	12/Ball Fld.			
			7Bldg					R-M-10	28	25/57sfd			
	3MRM	18	6/47sfd							8dup			
			8dup	94	61.0	33.0				38mfu	134	81	53
			38mfu					CG	10	8/8ac.	102	51	51
	CG/SPC	5	4/8	44	22.0	22.0		Total	50		236	132	104
	Total	50	32/108	225	100.4	124.6							
41.	4MRM	30	1.5/6sfd				41.	CG	30	1.5/1.5ac.	256	128	128
			11mfu	17	11.2	5.8							
42.	CG/SPC	30	30/9	327	163.5	163.5	42.	R-S-5	30	30/19sfd			
										11mfu	30	18	12
43.	RS10M	140	14/63				43.	P/QP	20	15/fldBP			
			1 ball fld					R-S-2	110	10/43sfd	205	123	82
	4MRM	25	2.75/12sfd					R-M-10	45	23/76sfd			
			18dup							15dup	313	187	126
	PQP	10	10/Flood					Total	175		518	310	208
	Total	175	26.75/93	94	61.1	32.9							
44.	CG/SPC	30	15/15	164	122.0	122.0	44.	CG	30	15/15ac.	256	128	128
45.	CG/SPC	23	12/7	131	65.5	65.5	45.	CG	20	5	51	25	26

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	RS10M	47	7/32	32	21.0	11.0		R-M-10	26	16/50sfd	50	30	20
	Total	70	19/39	163	86.5	76.5		R-M-10	24	13/7sfd	17	10	7
								Total	70		118	65	53
46.	RS10M	119	84/219sfd 148mfu				46.	R-M-10	125	72/282sfd 148mfu	616	370	246
	PQP	6	6/Flood										
	Total	125	90/367	375	243.6	131.4							
47.	PQP	2	2/Flood				47.	CG	55	25/25ac.	410	205	205
	CG/SPC	33	20/9	218	109.0	109.0							
	CO	18	10/6	263	42.4	240.6							
	RS10M	2	.5/4	4	2.6	1.4							
	Total	55	32.5/19	505	154	351							
48.	RS10M	90	25.5/84sfd 28mfu	113	73.5	39.5	48.	R-S-5	70	35/75sfd 28mfu	281	168	113
								CG	20	0	204	102	102
								Total	90		485	270	215
49.	IC	70	15/14	141	29.6	111.4	49.	R-S-5	30	0	152	91	61
	CN	5	1.5/2	16	8.0	8.0		IN	54	29.5/29.5ac.	507	106	401
	Total	75	16.5/16	157	37.6	119.4		CG	7	3/3ac.	72	36	36
								Total	75		731	233	498
50.	RS18M	68	5.5/14				50.	P/QP	60	0			
	RS10M	22	0					R-S-2	25	12.5/20sfd	45	27	18
	Total	90	5.5/14	14	9.2	4.8		R-M-10	10	0	101	61	40
								Total	90		146	88	58
51.	4MRM	20	0				51.	R-M-10	20	0	152	91	61
52.	IC	36	20/10	218	109.0	109.0	52.	CG	33	18.5/15dup	338	169	169
	CG/SPC	2	2/9	22	11.0	11.0		CG	12	10/3sfd	123	61	62
	4MRM	2	1.5/3sfd 18dup	21	13.8	7.2		Total	40		461	230	231
	Total	40	23.5/40	261	133.8	127.2							
53.	CG/SPC	5	5/5	54	27.0	27.0	53.	CG	5	5/10ac.	102	51	51

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
54.	CG/SPC	20	8/17	87	43.5	43.5	54.	CG	20	8/8ac.	154	77	77
55.	CG/SPC	20	6/15	65	32.5	32.5	55.	CG	20	6/6ac.	154	77	77
56.	CG/SPC	2.5	2.5/1	27	13.5	13.5	56.	CG	2.5	2.5/2.5ac.	27	13.5	13.5
57.	3MRM	26	3/46sfd 17mfu 20dup	84	54.5	29.5	57.	R-S-5	40	11/87sfd 17mfu 17dup	294	176	118
	CO	12	3/4	85	12.7	72.3							
	Total	40	6/87	169	67.2	101.8							
58.	CG/SPC	14	8/10	87	43.5	43.5	58.	CO	4	3.5/3.5ac.	198	30	168
								CG	10	9.5/9ac.	123	61	62
								Total	14		321	91	230
59.	4MRM	14	.25/1sfd 33/145sfd	1 156	0.6 94	0.4 62	59.	CG	8	4.25/4.25ac.	113	56	57
	CG/SPC	26	4/4	44	22.0	22.0		CO	32	4/4ac.	905	135	770
	Total	40	4.25/5	201	116.6	84.4		Total	40		1018	191	827
60.	PQP	.5	.5/Flood				60.	CG	7	7/7ac.	72	36	36
	CG/SPC	6.5	6.5/7					R-S-5	3	0	35	15	20
	4MRM	3	0					Total	10		107	51	56
	Total	10	7/7	71	35.5	35.5							
61.	4MRM	60	13/63sfd 84mfu				61.	R-S-3.5	165	136/146sfd 84mfu	370	222	148
	RS10M	105	34/149										
	Total	165	47/296	299	194.3	104.7							
62.	CO	1	1/1	28	4.2	23.8	62.	R-S-3.5	500	303/499sfd 33mfu 17dup	1371	822	549
	RS18M	180	76/183										
	RS10M	295	44/191										
	4MRM	24	6.75/21sfd 33mfu	452	294.1	157.9							

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	Total	500	20dup 127.75/449	480	298.3	181.7							
63.	PD	42	0				63.	P/QP	17	17/fld.			
	RS1	180	45/45	359	233.0	126.0		R-S-3.5	935	376/409sfd	2932	1759	1173
	RS18M	205	102/247										
	CG/SPC	20	3/11	33	16.5	16.5							
	RS10M	505	14/63										
	Total	952	164/366	392	249.5	142.5							
64.	RS10M	160	13/60	61	39.4	21.6	64.	R-S-3.5	165	123/114sfd	285	171	114
65.	RS10M	190	13/58				65.	R-S-3.5	295	147.5/184sfd	782	469	313
	RS18M	110	35/85					R-S-5	35	18/84sfd	186	112	74
	RS8M	30	10/54					Total	330		968	581	387
	Total	330		260	159.7	91.3							
66.	IN	55	0				66.	P/QP	40	0			
	4MRM	3	1.5/18dup					CG	18	6.5/15dup			
	Total	58	1.5/18	18	11.8	6.2		Total	58		118	59	59
67.	RS10M	20	0				67.	R-M-10	37.5	37.5/205sfd			
	4MRM	40	11/125					P/QP	22.5	2.5/fld			
	Total	60	11/125	126	82	44		Total	60		207	124	83
68.	4MRM	50	14.5/144sfd 18dup				68.	R-M-10	35	35/214sfd 15dup	231	139	92
	RS8M	20	3/9					CO	35	0	990	148	842
	Total	70	17.5/181	183	118.8	64.2		Total	70		1221	287	934
69.	RS8M	30	8.5/47	47	30.8	16.2	69.	R-S-5	30	29/111sfd	117	70	47
70.	3MRM	38	8/70sfd 53mfu	124	80.7	43.3	70.	R-S-5	38	12/70sfd 53mfu	230	138	92
71.	RS8M	35	13.5/75	76	49.2	26.8	71.	R-S-5	35	33/145sfd	157	94	63

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
72.	RM	71	15/181sfd	59	11.8	47.2	72.	R-S-5	30	30/181sfd 25mfu			
	4MRM	5	.5/6sfd 25mfu					P/QP	15	15/schl			
	RS8M	25	15/83	115	74.8	40.2		Total	45		284	170	114
	Total	45	30.5/190	174	86.6	87.4							
73.	3MRM	10	1/19sfd 89mfu	109	70.9	38.1	73.	R-S-5	12	6/19sfd 89mfu	139	84	55
	CO	12	3/6	85	12.7	72.3		CG	10	5ac.	283	42	241
	Total	22	4/114	194	83.6	110.4		Total	22		422	126	296
74.	CO	2	1/1	109	70.9	38.1	74.	R-M-10	30	24/156sfd 82mfu	301	181	120
	CG/SPC	3	0										
	4MRM	25	21.5/156sfd 82mfu	240	156.2	83.8							
	Total	30	22.5/239	349	227.1	121.9							
75.	4MRM	3	0				75.	CG	9	6/6ac.	92	46	46
	CG/SPC	6	6/1										
	Total	9	6/1	65	32.5	32.5							
76.	CO	7	0				76.	CG	13	7/7ac.	184	92	92
	CG/SPC	6	2/3										
	Total	13	2/3	22	11.0	11.0							
77.	CG/SPC	7	3/5	33	16.5	16.5	77.	CG	35	9/11mfu	409	204	205
	4MRM	28	1/3sfd 11mfu	14	9.2	4.8							
	Total	35	4/19	47	25.7	21.3							
78.	4MRM	35	.5/7sfd 4mfu				78.	R-M-10	120	16/19sfd 4mfu	771	462	309
	RS1	10	6/6					R-S-2	30	3/6sfd	61	36	25
	RS10M	105	2/8										
	Total	150	8.5/25	25	16.4	8.6		Total	150		832	498	334

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips			
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
79.	IC	20	10/4	94	19.7	74.3	79.	IN	20	15/15ac.	235	49	186
80.	4MRM	20	2.75/19sfd 11mfu				80.	R-S-5	137.5	76/11mfu 153sfd	216	130	86
	RS8M	110	10/55					R-S-2	32.5	15/38sfd	54	32	22
	RS10M	40	8/35					Total	170		270	162	108
	Total	170	20.75/120	121	78.8	42.2							
81.	RL	740	115/46				81.	R-HR-40	947	49.5/2sfd	24	14	10
	RL10	230	20/2					R-L-2.5	341	66.5/25sfd	136	82	54
	RC	470	0					R-L-2.5	71	23.5/38sfd	58	35	23
	Total	1440	135/48	48	31.5	16.5		R-S-2	81	15/30sfd	164	98	66
								Total	1440		382	229	153
82.	RS10M	300	24/105				82.	R-HR-40	391	0	10	6	4
	RS1	60	10/10					R-L-5	320	41/97sfd	154	93	61
	RS18M	120	21/51					R-L-2.5	568	0	236	141	95
	RL	720	0					R-S-2	161	30/98sfd	364	218	146
	RC	240	0					Total	1440		764	458	306
	Total	1440	55/166	168	109.9	59.0							
83.	RL5	620	95/19				83.	R-HR-40	638	174/7sfd	19	11	8
	RL	250	10/4					R-S-3.5	642	385/496sfd	1539	924	615
	RS18M	290	138/334					Total	1280		1558	935	623
	RS10M	120	18/76										
	Total	1280	261/433	437	284.3	152.7							
84.	RS10M	200	0				84.	R-HR-40	596	47/4sfd	18	10	8
	RS18M	530	59/143					P/QP	42	2/Pfld			
	RS1	220	64/64					RL	995	196.5/11mfu 223sfd	2776	1665	1111
	RL	710	10/4					RR1	161	20/27sfd	170	102	68
	RC	200	0					RR1	141	15/22sfd	149	90	59
	14.5MRM	60	0					Total	1935		3113	1867	1246
	4MRM	15	1/12sfd 11mfu										
	Total	1935	134/234	245	159.5	85.5							

Table 15
Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #1 Summary

Existing County Condition							Alternative #1 Buildout						
				PM Peak Hour Trips						PM Peak Hour Trips			
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz #	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
85.	RS10M	50	0				85.	R-S-5	50	0	202	121	81
86.	RS1	200	78/78				86.	R-L-5	314	107/49sfd	91	55	36
	RL	257	92.5/37					R-L-1	260	28/72sfd	307	184	123
	RL5	262	15/3					R-L-1	262	79/149sfd	335	201	134
	PQP	10	10/1BallFld					R-L-1	640	25/25sfd	646	388	258
	RS10M	1230	43/189					R-S-5	480	10/11sfd	2455	1473	982
	RS18M	45	19/47	357	232.4	124.6		P/QP	25	25/BPfld			
	Total	2004	257.5/355					R-L-1	23	6/29sfd	47	28	19
								Total	2004		3834	2301	1533
87.	CO	10	0				87.	CG	10	0	154	77	77
88.	RS18M	7.5	0				88.	R-S-3.5	7.5	0	51	30	21
89.	IN	5	0				89.	IN	5	0	94	20	74

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
1.	RL	360	60/24	24	15.7	8.3
2.	IC	172	20/30	84	33.8	50.2
3.	IC	17	1/1	9	2	7
4.	IC	92	46/17	432	90.7	431.3
5.	RL	20	0			
6.	CG/SPC	15	0			
7.	RL	150	97.5/39	39	25.6	13.4
8.	RL5	25	25/5	5	3.3	1.7
9.	RL5	58	0			
10.	RL20	25	0			
	RL5	625	15/3			
	Total	650	15/3	3	1.9	1.1
11.	RL5	1074	175/35			
	RC	480	120/3			
	RL	988	440/176			
	RS1	385.5	109/109			
	FW	5	5/Flood	327	212.7	114.3
	CG/SPC	2.5	1/1	11	5.5	5.5
	Total	2935	850/324	338	218.2	119.8

Alternative #2 Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
1.	R-L-10	360	65/24sfd	55	33	22
2.	R-L-10	122	0	12	7	5
	IN	50	25/25ac.	470	99	371
	Total	172		482	106	376
3.	CG	17	6/6	225	113	112
4.	R-L-10	43	17/17(I)	2	1	1
	IN	34	34/34ac.	143	57	86
	CG	15	0	184	92	92
	Total	92		329	150	179
5.	CG	20	2/2	205	102	103
6.	CG	15	0	154	77	77
7.	CG	11	0	112	56	56
	R-L-5	144	91.5/25sfd	35	21	14
	Total	155		147	77	70
8.	R-L-1	25	10/5sfd	5	3	2
9.	R-L-10	58	0	5	3	2
10.	R-L-10	650	20/3sfd	68	40	28
11.	R-HR-40	719	128/3sfd	18	11	7
	R-L-10	131	0	14	8	6
	R-L-2.5	1454	636/267sfd	603	362	241
	R-L-5	631	300/67sfd	136	82	54
	Total	2935		771	463	308

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #2 Summary/Table 16

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
12.	RL	1820	495/198			
	RL5	612	265/53			
	RS1	655	170/170			
	PQP	10	10/Flood			
	RS18M	235	39/94			
	RS10M	20	1/6			
	3MRM	50	3/18dup			
			29sfd			
	Total	3402	983/568	574	372.9	201.1
13.	RS1	40	23/23			
	3MRM	115	24/188sfd			
			124dup			
			40mfu			
	CO	20	0			
	Total	175	47/375	379	246.2	132
14.	RC	760	0			
	RL	120	0			
	RS10M	120	8/35			
	RS18M	215	22/53			
	RL5	80	20/4			
	4MRM	28	2/5sfd			
			18dup			
	PQP	5	5/Flood	118	76.8	41.2
	CN	2	2/2	22	11.0	11
	Total	1330	59/117	140	87.8	52.2
15.	RC	180	40/1			
	RL5	130	25/5			
	RL	80	0			
	RS10M	45	0			
	RS18M	20	.5/1			
	Total	455	79.5/59	6	3.9	2.1

Alternative #2 Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
12.	R-L-5	1665	1665/400sfd	404	242	162
	R-HR-40	280	40/3sfd	9	5	4
	R-L-10	1363	200/88sfd	206	124	82
	R-L-2.5	60	60/100sfd	101	61	40
	R-L-10	15	15/18dup			
			39sfd	57	34	23
	R-L-1	15	0	15	9	6
	Total	3402		792	475	317
13.	P/QP	2	2/Flood			
	R-L-1	40	23/33sfd	50	30	20
	R-S-3.5	133	106/239sfd			
			124dup			
			40mfu	525	315	210
	Total	175		575	345	230
14.	P/OS	86	0	14	8	6
	R-HR-40	566	0			
	R-L-10	46	0	5	3	2
	R-L-5	251	0	49	29	20
	R-L-1	36	0	30	18	12
	R-S-2	321	325/150sfd	152	91	61
	R-S-5	20	20/25sfd			
			15dup	40	24	16
	Total	1330		290	173	117
15.	R-L-10	348	0	33	20	13
	R-L-5	92	20/10sfd	22	13	9
	R-S-5	15	15/78sfd	78	47	31
	Total	455		133	80	53

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
16.	RC	180	40/1			
	RL5	188	20/4			
	RS10M	45	3/14			
	RS18M	275	16.5/40			
	Total	690	79.5/59	59	38.7	20
17.	RS18M	80	18.5/45			
	RS10M	52	7.5/33			
	Total	132	26/78	79	51.2	27.8
18.	IC	77	0			
19.	IC	69.5	15/3	141	29.6	111
	PQP	2.5	2.5			
	Total	73.5	17.5/3	141	29.6	111
20.	RS10M	62	6.5/29	29	19.4	9.6
	CG/SPC	10	3/2	33	16.5	16.5
	Total	72	9.5/31	62	35.9	26.1
21.	CG/SPC	35	10/2	109	54.5	54.5
22.	CG/SPC	10	0			
23.	IC	70	0			
	CN	45	0			
	Total	115	0			
24.	IC	255	0			
25.	IC	265	150/5	633	253.2	379

Alternative #2 Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
16.	R-HR-40	300	280/7sfd	7	4	3
	R-L-10	20	0	2	1	1
	R-L-1	40	0	40	24	16
	R-L-5	80	80/16sfd	16	10	6
	R-L-2.5	250	50/70sfd	154	92	62
	Total	690		219	131	88
17.	R-L-1	129.5	28.5/78sfd	107	64	43
	P/QP	2.5	2.5/Flood			
	Total	132		107	64	43
18.	R-L-1	77	0/0ac.	77	46	31
19.	P/QP	30	30/Flood			
	CG	20	0	205	103	102
	CG	8.5	1.5	87	44	43
	IN	15	0	141	30	111
	Total	73.5		433	177	256
20.	R-L-1	72	42/42sfd	72	44	28
21.	CG	35	10/10ac.	307	153	154
22.	CG	10	3/3ac.Rd.	174	87	87
23.	CG	75	0	519	410	109
	R-S-2	40	0	80	48	32
	Total	115		599	458	141
24.	P/QP	105	0			
	P/OS	155	0			
25.	P/QP	40	40/40ac.	465	279	186

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #2 Summary/Table 16

Existing County Condition

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
26.	CG/SPC	30	5/4	54	27.0	27
27.	RS18M	197	81/196	198	128.7	69.3
	CG/SPC	3	1/3	11	5.5	5.5
	Total	200	82/199	209	134.2	74.8
28.	CG/SPC	70	1/1	11	5.5	5.5
29.	CG/SPC	20	10/1	110	55	55
30.	CG/SPC	60	10/1	110	55	55
	4MRM	25	0			
	Total	85	10/1	110	55	55
31.	CG/SPC	20	7/11	76	38.0	38
32.	IC	10	1/1	9	2.0	7
33.	RS10M	40	9/39	39	25.6	13.4
	IN	15	10/7	110	55.0	55.0
	CO	5	0			
	Total	60	19/46	149	80.6	68.4
34.	CG/SPC	17	7/13	76	38.0	38
	CO	15	5/14	141	21.2	119.8
	CS	13	8/5	87	43.5	43.5
	Total	45	20/32	304	102.7	201.3
35.	4MRM	50	4/16sfd			
			28dup	44	28.9	15.1
	CG/SPC	10	2/2	22	11.0	11.0
	Total	60	6/46	66	39.9	26.1

Alternative #2 Buildout

Taz#	Land Use	Total Acres	Total Dev. Acres/Units	PM Peak Hour Trips Total	In	Out
	R-L-1	70	35/35(I)	28	17	11
	IN	155	80/80ac.	1502	315	1187
	Total	265		1995	611	1384
26.	CG	30	10/10ac.	256	128	128
27.	R-S-2	216	196/253sfd	296	178	118
28.	R-S-3.5	70	13/2sfd	9	5	4
29.	CG	20	10/10ac.	153	76	77
30.	R-S-3.5	85	20/1sfd	145	87	58
31.	CG	20	7/7ac.	154	77	77
32.	IN	10	6/6ac.	141	30	111
33.	R-S-5	30	25/45sfd	70	42	28
	IN	15	1.5/1.5ac.	42	9	33
	P/QP	15	10/Flood			
	Total	60		112	51	71
34.	P/QP	5	5/Pub.Fac.			
	IN	40	20/20ac.			
	Total	45		423	89	334
35.	R-S-5	35	18/28dup	1114	68	46
	CG	5	0	51	25	26
	R-S-3.5	20	6/3sfd	5	3	2
	Total	60		170	96	74

Existing County Condition							Alternative #2 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
36.	4MRM	30	5/26sfd	26	17.1	8.9	36.	CG	15	7/7	82	41	41
			32mfu	32	21.0	11.0		R-S-5	30	20/16sfd			
	CG/SPC	15	5/8	55	27.5	27.5				42mfu	109	65	44
	Total	45	10/66	113	65.5	47.4		Total	45		191	106	85
37.	CG/SPC	20	7/5	76	38.0	38.0	37.	CG	18	9/9ac.	235	118	117
								P/QP	2	2/P.F.			
								Total	20		235	118	117
38.	OS	20	10/28				38.	P/QP	10	10/BP			
	CG/SPC	20	12/4					CG	10	8/8ac.	102	51	51
	Total	50	6/3	131	65.5	65.5		CG	20	12/12ac.	256	128	128
								Total	40		358	179	179
39.	RS18M	45	1/3				39.	R-L-2.5	50	11/3sfd	21	13	8
	PQP	5	5/Flood										
	Total	50	6/3	3	1.9	1.1							
40.	IN	27	22/1BallFld	87	17.4	69.6	40.	P/QP	12	12/BallFld.			
			7Bldg					CG	10	8/8ac.	102	51	51
	3MRM	18	6/47sfd					R-M-10	28	25/57sfd			
			8dup	94	61.0	33.0				8dup	134	81	53
			38mfu					Total	50		236	132	104
	CG/SPC	5	4/8	44	22.0	22.0							
	Total	50	32/108	225	100.4	124.6							
41.	4MRM	30	1.5/6sfd				41.	CG	30	1.5/1.5ac.	256	128	128
			11mfu	17	11.2	5.8							
42.	CG/SPC	30	30/9	327	163.5	163.5	42.	CMU	30	35/19sfd			
										11mfu	409	176	233
43.	RS10M	140	14/63				43.	P/OS	35	15/0dBP			
			1 ball fld					R-L-2.5	140	33/119sfd			
	4MRM	25	2.75/12sfd							15dup			
			18dup					Total	175		279	167	112

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #2 Summary/Table 16

Existing County Condition							Alternative #2 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	PQP	10	10/Flood										
	Total	175	26.75/93	94	61.1	32.9							
44.	CG/SPC	30	15/15	164	122.0	122.0	44.	CMU	30	15/15(C)	293	126	167
45.	CG/SPC	23	12/7	131	65.6	65.5	45.	CMU	35	16/7sfd	82	35	47
	RS10M	47	7/32	32	21.0	11.0		R-M-10	35	18/50sfd	122	73	49
	Total	70	19/39	163	86.5	76.5		Total	70		204	108	96
46.	RS10M	119	84/219sfd				46.	R-M-10	125	72/282sfd			
			148mfu							148mfu	616	370	246
	PQP	6	6/Flood										
	Total	125	90/367	375	243.6	131.4							
47.	PQP	2	2/Flood				47.	CG	55	25/25ac.	410	205	205
	CG/SPC	33	20/9	218	109.0	109.0							
	CO	18	10/6	283	42.4	240.6							
	RS10M	2	.5/4	4	2.6	1.4							
	Total	55	32.5/19	505	154	351							
48.	RS10M	90	25.5/84sfd				48.	R-L-1	90	45/75sfd			
			28mfu	113	73.5	39.5				28mfu	195	117	78
49.	IC	70	15/14	141	29.6	111.4	49.	R-L-1	75	32.5/32.5(C)	58	35	23
	CN	5	1.5/2	16	8.0	8.0							
	Total	75	16.5/16	157	37.6	119.4							
50.	RS18M	68	5.5/14				50.	P/OS	55	0			
	RS10M	22	0					R-S-5	5	0	5	3	2
	Total	90	5.5/14	14	9.2	4.8		R-L-1	25	12.5/20sfd	32	20	12
								R-S-2	5	0	47	29	18
								Total	90		47	29	18
51.	4MRM	20	0				51.	R-S-5	20	0	75	45	30

Existing County Condition							Alternative #2 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
52.	IC	36	20/10	218	109.0	109.0	52.	IN	30	16.5/15dup	310	65	245
	CG/SPC	2	2/9	22	11.0	11.0		CG	10	10/3sfd	123	61	62
	4MRM	2	1.5/3sfd					Total	40		433	126	307
			18dup	21	13.8	7.2							
	Total	40	23.5/40	261	133.8	127.2							
53.	CG/SPC	5	5/5	54	27.0	27.0	53.	CG	5	10/10ac.	51	25.5	25.5
54.	CG/SPC	20	8/17	87	43.5	43.5	54.	CG	20	8/8ac.	205	102.5	102.5
55.	CG/SPC	20	6/15	65	32.5	32.5	55.	CG	20	6/6ac.	205	102.5	102.5
56.	CG/SPC	2.5	2.5/1	27	13.5	13.5	56.	CG	2.5	2.5/2.5ac.	26	13	13
57.	3MRM	28	3/46sfd				57.	R-S-3.5	40	11/87sfd			
			17mfu							17mfu			
			20dup	84	54.5	29.5				17dup	111	67	44
	CO	12	3/4	85	12.7	72.3							
	Total	40	6/87	169	67.2	101.8							
58.	CG/SPC	14	8/10	87	43.5	43.5	58.	CG	7	9.5/9.5ac.			
								R-S-3.5	7	3.5/3.5(1)			
								Total	14		123	61	62
59.	4MRM	14	.25/1sfd	1	0.6	0.4	59.	CG	13	1/1ac.	396	60	336
			33/145sfd	156	94	62		CG	13	1.25/1.25ac.	143	71	72
	CG/SPC	26	4/4	44	22.0	22.0		R-S-5	14	6/6(c)	45	27	18
	Total	40	4.25/5	201	116.6	84.4		Total	40		584	158	426
60.	PQP	.5	.5/Flood				60.	CG	7	7/7ac.	72	36	36
	CG/SPC	6.5	6.5/7					R-S-5	3	0	15	9	6
	4MRM	3	0					Total	10		87	45	42
	Total	10	7/7	71	35.5	35.5							

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #2 Summary/Table 16

Existing County Condition							Alternative #2 Buildout					
				PM Peak Hour Trips						PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
61.	4MRM	60	13/63sfd				61.	R-S-3.5	165	136/146sfd			
			84mfu							84mfu	301	181	120
	RS10M	105	34/149										
	Total	165	47/296	299	194.3	104.7							
62.	CO	1	1/1	28	4.2	23.8	62.	R-S-2	500	303/499sfd			
	RS18M	180	76/183							33mfu			
	RS10M	295	44/191							17dup	963	578	385
	4MRM	24	6.75/21sfd										
			33mfu	452	294.1	157.9							
			20dup										
	Total	500	127.75/449	480	298.3	181.7							
63.	PD	42	0				63.	P/QP	12	12/fld.			
	RS1	180	45/45	359	233.0	126.0		R-L-1	940	376/409sfd	983	590	393
	RS18M	205	102/247					Total	952		983	590	393
	CG/SPC	20	3/11	33	16.5	16.5							
	RS10M	505	14/63										
	Total	952	164/366	392	249.5	142.5							
64.	RS10M	160	13/60	61	39.4	21.6	64.	R-L-1	160	123/114sfd	158	95	63
65.	RS10M	190	13/58				65.	R-L-1	302	147.5/184sfd	334	201	133
	RS18M	110	35/85					R-S-3.5	28	18/84sfd	85	51	34
	RS8M	30	10/54					Total	330	165.5/268	419	251	168
	Total	330	58	260	159.7	91.3							
66.	IN	55	0				66.	P/QP	73	6.5/School			
	4MRM	3	1.5/18dup										
	Total	58	1.5/18	18	11.8	6.2							
67.	RS10M	20	0				67.	P/QP	22.5	22.5/Flood			
	4MRM	40	11/125	126	82.0	44		R-S-5	22.5	205sfd	207	124	83
	Total	58	1.5/18	126	82.0	44		R-S-3.5	13	13/dup	15	9	6
								Total	58		222	133	89

Existing County Condition							Alternative #2 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
68.	4MRM	50	14.5/144sfd 18dup				68.	R-S-3.5	70	35/215sfd 15dup	234	141	93
	Total	**70**	**17.5/181**	**183**	**118.6**	**64.2**							
69.	RS8M	30	8.5/47	47	30.8	16.2	69.	R-S-3.5	30	29/111sfd	112	67	45
70.	3MRM	38	8/70sfd 53mfu	124	80.7	43.3	70.	CG R-S-3.5	13 30	10/10sfd 12/70sfd 53mfu	133	66	67
								Total	**43**		258	141	117
71.	RS8M	35	13.5/75	76	49.2	26.8	71.	R-S-3.5	35	33145sfd	154	93	61
72.	IN 4MRM	15 5	15/School .5/6sfd 25mfu	59	11.8	47.2	72.	P/QP R-S-3.5	15 30	15/School 30/181sfd 25mfu	209	125	84
	RS8M	25	15/83	115	74.8	40.2		**Total**			209	125	84
	Total	**45**	**30.5/190**	**174**	**86.6**	**87.4**							
73.	3MRM	10	1/19sfd 89mfu	109	70.9	38.1	73.	CG R-S-3.5	15 7	4/19sfd 7/89mfu	311 90	47 54	264 36
	CO	12	3/6	85	12.7	72.3		**Total**	**22**		401	101	300
	Total	**22**	**4/114**	**194**	**83.6**	**110.4**							
74.	CO CG/SPC 4MRM	2 3 25	1/1 0 21.5/156sfd 82mfu	109 240	70.9 156.2	38.1 83.8	74.	R-S-5	30	24/156sfd 82mfu	301	181	120
	Total	**30**	**22.5/239**	**349**	**227.1**	**121.9**							
75.	4MRM CG/SPC	3 6	0 6/1				75.	CG	9	6/6ac.	92	46	46
	Total	**9**	**6/1**	**65**	**32.5**	**32.5**							

Town of Yucca Valley General Plan
Land Use Buildout/Traffic Generation
Alternative #2 Summary/Table 16

Existing County Condition							Alternative #2 Buildout						
				PM Peak Hour Trips							PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
76.	CO CG/SPC	7 6	0 2/3	22	11.0	11.0	76.	CG	13	7/7ac.	133	66.5	66.5
	Total	**13**	**2/3**	**22**	**11**	**11**							
77.	CG/SPC 4MRM	7 28	3/5 1/3sfd 11mfu	33 14	16.5 9.2	16.5 4.8	77.	R-L-1	35	9/11mfu	37	22	15
	Total	**35**	**4/19**	**47**	**25.7**	**21.3**							
78.	4MRM	35	.5/7sfd 4mfu				78.	R-L-1 R-S-5	50 100	3/6sfd 16/19sfd 4mfu	55	33	22
	RS1	10	6/6					**Total**	**150**		441	264	177
	RS10M	105	2/8										
	Total	**150**	**8.5/25**	**25**	**16.4**	**8.6**							
79.	IC	20	10/4	94	19.7	74.3	79.	IN	20	15/15ac.	188	75	113
80.	4MRM	20	2.75/19sfd 11mfu				80.	R-S-3.5	70	61/11mfu 153sfd 15/38sfd			
	RS8M	110	10/55	121	78.8	42.2		R-L-1	100		409	244	165
	RS10M	40	8/35					**Total**	**170**				
	Total	**170**	**20.75/120**	**121**	**78.8**	**42.2**							
81.	RL	740	115/46				81.	R-L-5	71	23.5/25sfd	34	21	13
	RL10	230	20/2					R-L-1	81	15/30sfd	97	58	39
	RC	470	0					R-L-10	341	66.5/28sfd	65	39	26
	Total	**1440**	**135/48**	**48**	**31.5**	**16.5**		R-HR-40	947	49.5/2sfd	24	14	10
								Total	**1440**		220	132	88
82.	RS10M	300	24/105				82.	R-S-3.5	80	15/48sfd	334	201	133
	RS1	60	10/10					R-L-1	107	15/98sfd	192	114	78
	RS18M	120	21/51					R-L-5	320	41/49sfd	105	63	42
	RL	720	0					R-HR-40	382	0	9	5	4
	RC	240	0					R-L-10	551	0	56	34	22

Existing County Condition				PM Peak Hour Trips			Alternative #2 Buildout				PM Peak Hour Trips		
Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out	Taz#	Land Use	Total Acres	Total Dev. Acres/Units	Total	In	Out
	Total	1440	55/166	168	109.9	59.0		Total	1440		696	417	279
83.	RL5	620	95/19				83.	R-L-1	640	385/496sfd	759	455	304
	RL .	250	10/4					R-HR-40	640	174/7sfd	18	10	8
	RS18M	290	138/334					Total	1280		777	465	312
	RS10M	120	18/76										
	Total	1280	261/433	437	284.3	152.7							
84.	RS10M	200	0				84.	P/QP	30	2/2ac.			
	RS18M	530	59/143					P/OS	25	0			
	RS1	220	64/64					R-L-1	700	100/11mfu	617	370	247
	RL	710	10/4					R-L-5	1080	131.5/272sfd	466	280	186
	RC	200	0					R-HR-40	100	47/4sfd	5	3	2
	14.5MRM	60	0					Total	1935		1088	653	435
	4MRM	15	1/12sfd 1mfu										
	Total	1935	134/234	245	159.5	85.5							
85.	RS10M	50	0				85.	CMU	50	0	252	151	101
86.	RS1	200	78/78				86.	P/OS	8	8/BP			
	RL	257	92.5/37					P/QP	30	30/Flood			
	RL5	262	15/3					R-L-5	1020	122/200sfd	401	240	161
	PQP	10	10/1BallFld					R-L-1	370	60/50sfd	364	218	146
	RS10M	1230	43/189					SP	516	0	1071	642	429
	RS18M	45	19/47					R-S-2	60	60/85sfd	86	52	34
	Total	2004	257.5/355	357	232.4	124.6		Total	2004		1922	1152	770
87.	CO	10	0				87.	CG	10	0	103	51.5	51.5
88.	RS18M	7.5	0				88.	R-S-2	7.5	0	15	10	5
89.	IN	5	0				89.	IN	5	0	51	25.5	25.5

TABLE 17
LEVEL OF SERVICE COMPARISONS
ALTERNATIVE LAND USE SCENARIOS
TRAFFIC IMPACTS AT STUDY INTERSECTIONS

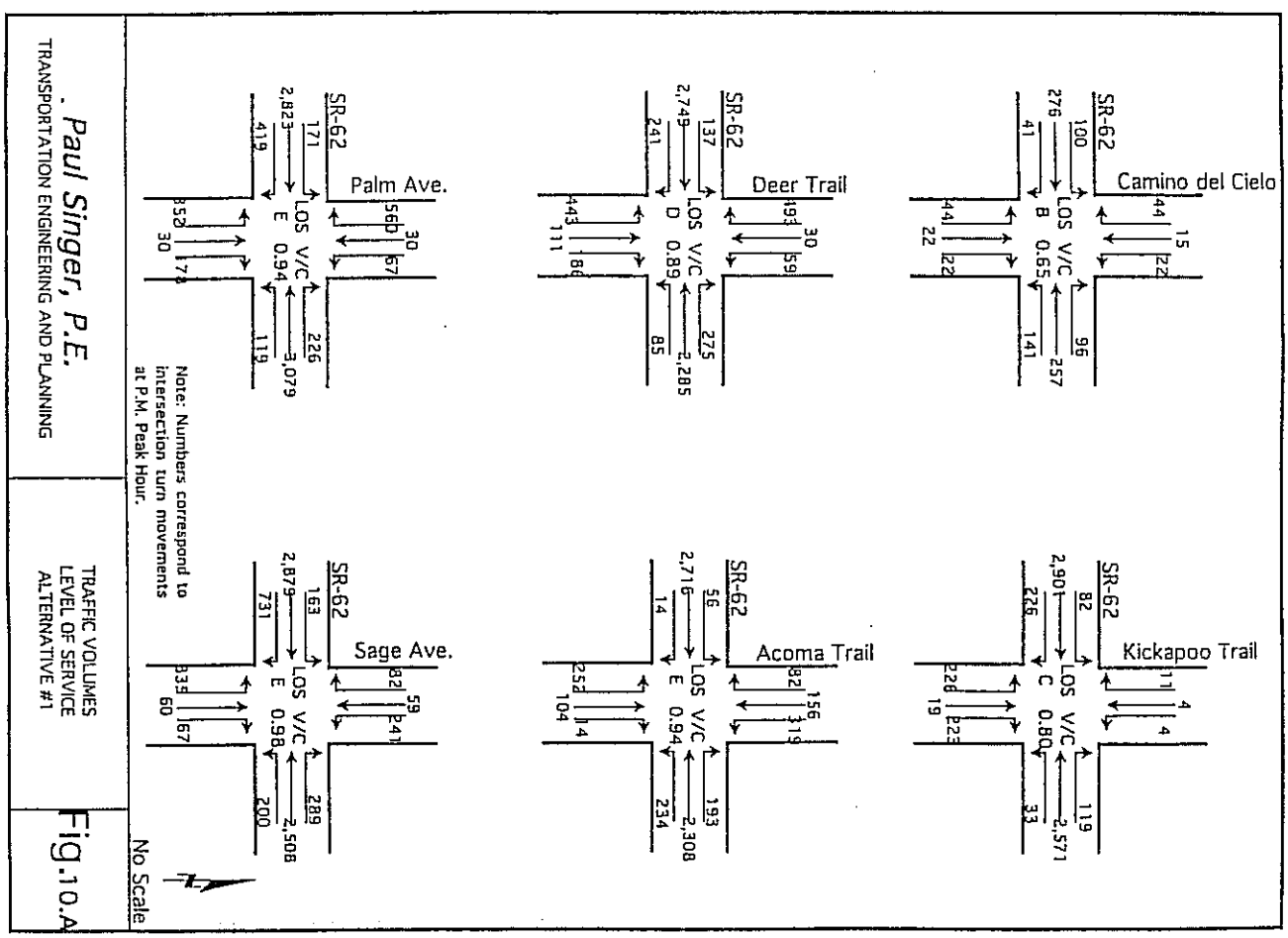
	PEAK HOUR							
	EXISTING		PREFERRED ALTERNATIVE		ALT #1		ALT #2	
INTERSECTION	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
S.R. 62 and Camino del Cielo	A	0.25	A	0.60	B	0.65	A	0.41
S.R. 62 and Kickapoo Trail	A	0.31	C	0.73	C	0.80	A	0.49
S.R. 62 and Deer Trail	A	0.32	C	0.80	D	0.89	A	0.54
S.R. 62 and Acoma Trail	A	0.34	D	0.85	E	0.94	A	0.58
S.R. 62 and Palm Ave.	A	0.29	D	0.86	E	0.94	A	0.59
S.R. 62 and Sage Ave.	A	0.42	D	0.84	E	0.98	B	0.61
S.R. 62 and St. Rt. 247	A	0.48	E	0.91	F	1.08	B	0.67
S.R. 62 and Warren Vista	A	0.28	C	0.79	D	0.85	A	0.53
S.R. 62 and Balsa Ave.	A	0.33	C	0.77	D	0.84	A	0.53
S.R. 62 and Avalon Drive	A	0.31	C	0.77	D	0.85	A	0.53
S.R. 62 and Yucca Mesa Dr.	A	0.33	D	0.82	E	0.96	A	0.60
Joshua Ln. and Yucca Trail	A	0.27	C	0.75	D	0.87	A	0.54
Avalon Dr. and Yucca Trail	A	0.21	C	0.74	C	0.74	A	0.47
Joshua Ln. and Onaga Trail	A	0.25	B	0.70	D	0.81	A	0.50
Joshua Ln. and Joshua Dr.	A	0.12	A	0.24	A	0.28	A	0.18
S.R. 247 and Buena Vista	A	0.27	A	0.48	A	0.53	A	0.33
S.R. 247 and Paxton Rd.	A	0.34	C	0.80	C	0.78	A	0.49

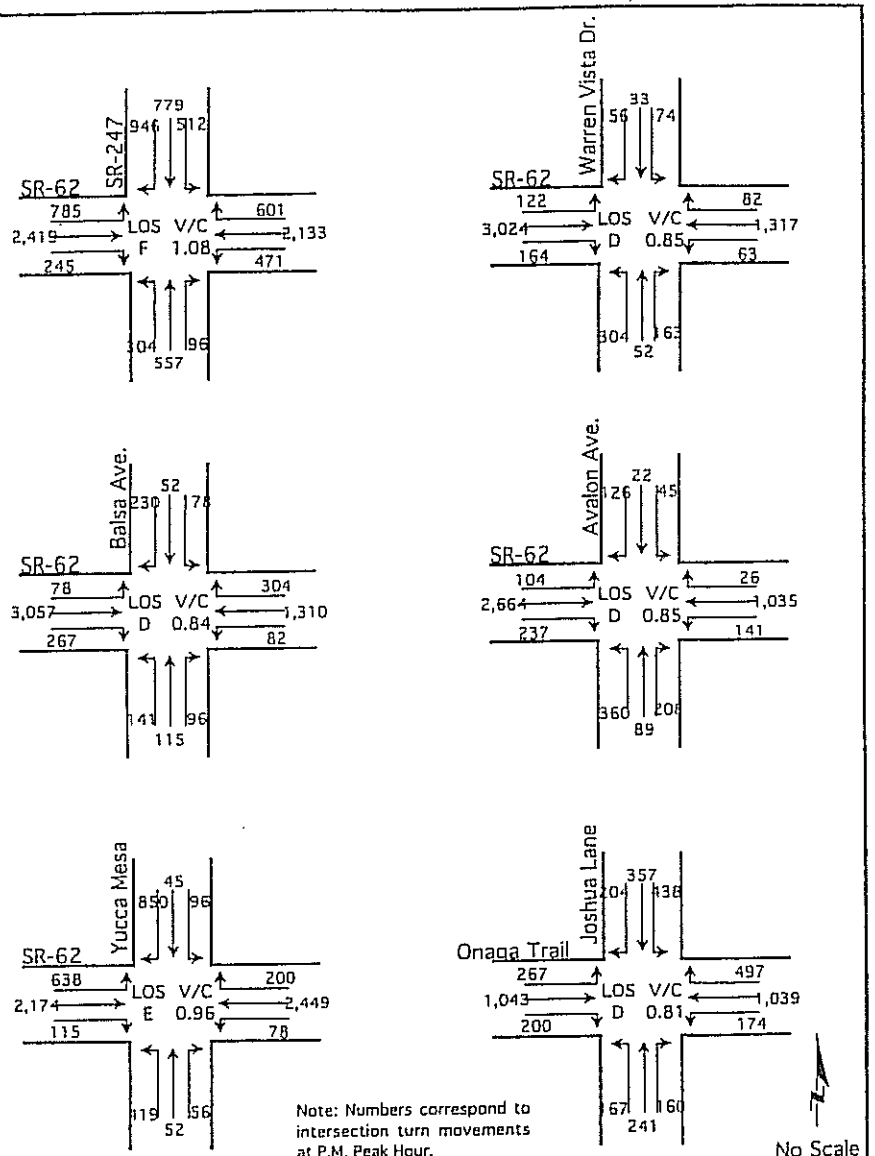
TABLE 18
AVERAGE DAILY TRAFFIC COMPARISONS
ALTERNATIVE LAND USE SCENARIOS
AT STUDY INTERSECTIONS

STREET	LOCATION	AVERAGE DAILY TRAFFIC EXISTING	PREFERRED ALT.	ALT #1	ALT #2
Buena Vista	E/O S.R. 247	2,530*	5,230	6,340	3,880
S.R. 247	S/O Buena Vista	9,330**	31,570	34,610	21,180
S.R. 247	N/O S.R. 62	14,250**	43,960	52,870	32,450
S.R. 62	W/O Kickapoo	19,940**	49,760	73,980	45,260
S.R. 62	E/O Acoma Trail	18,950**	55,660	70,300	43,020
S.R. 62	W/O S.R. 247	22,300**	58,740	82,730	50,620
S.R. 62	W/O Yucca Mesa	14,490**	37,730	53,760	32,890
Yucca Trail	E/O Joshua Lane	7,390*	26,790	32,680	20,000
Yucca Trail	W/O Avalon-Palomar	6,330*	16,700	20,220	12,370
Yucca Trail	W/O La Contenta	4,530	13,880	16,800	10,280
Avalon-Palomar	N/O Yucca Trail	2,200*	11,840	10,420	6,380
Avalon-Palomar	N/O Onaga Trail	2,300*	11,210	14,360	8,780
Onaga Trail	W/O Avalon Palomar	3,660**	23,740	13,580	8,310
Onaga Trail	W/O Joshua Lane	3,550*	8,820	28,750	17,590
Onaga Trail	E/O Acoma Trail	4,630*	10,320	10,680	6,540
Onaga Trail	E/O Deer Trail	2,900*	16,100	12,500	7,650
Sage Ave.	N/O Onaga Trail	3,650*	6,640	19,510	11,940
Joshua Lane	N/O Joshua Drive	3,700*	14,830	8,050	4,930
Joshua Lane	S/O S.R. 62	4,440**	9,310	16,470	10,080
Palm Ave.	S/O S.R. 62	1,020*	13,760	11,200	6,900
Acoma Trail	S/O Onaga Trail	4,630**	11,850	17,180	10,510
Acoma Trail	S/O S.R. 62	2,500*	6,250	14,360	8,780
Deer Trail	N/O Onaga Trail	2,040**	7,070	7,570	4,620
Kickapoo Trail	S/O S.R 62	2,310**	5,600	8,570	5,240
Paxton Road	N/O Avalon Drive	590*	9,500	6,790	4,150
Pioneertown	N/O S.R.62	820*		11,500	7,040

NOTE:

*Existing ADT's were obtained from traffic counts conducted by Counts Unlimited Inc.
**All other existing ADT's were obtained from peak hour turn movement counts performed by Traffic Counts Inc., and from land use traffic distribution calculations.





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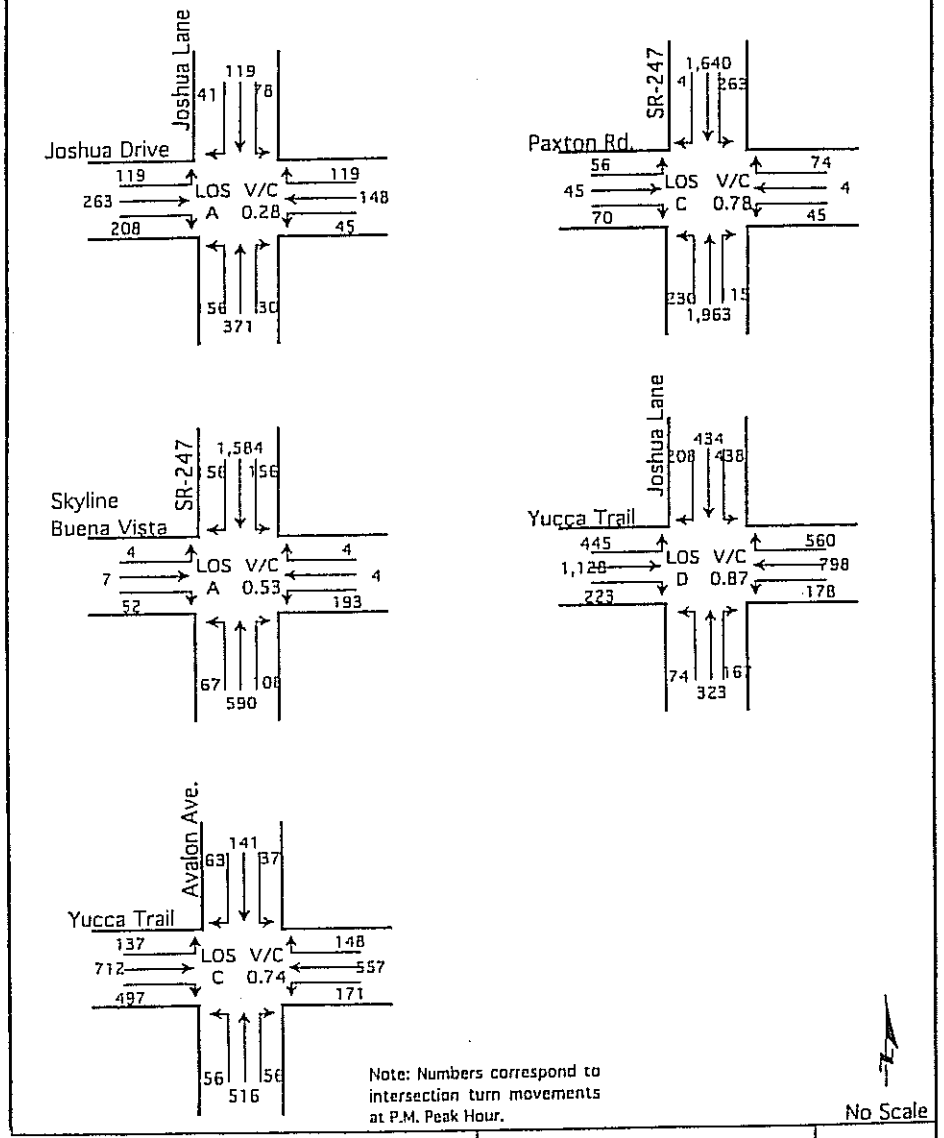
TRANSPORTATION ENGINEERING AND PLANNING

TRAFFIC VOLUMES
LEVEL OF SERVICE
ALTERNATIVE #1

Fig.10.B



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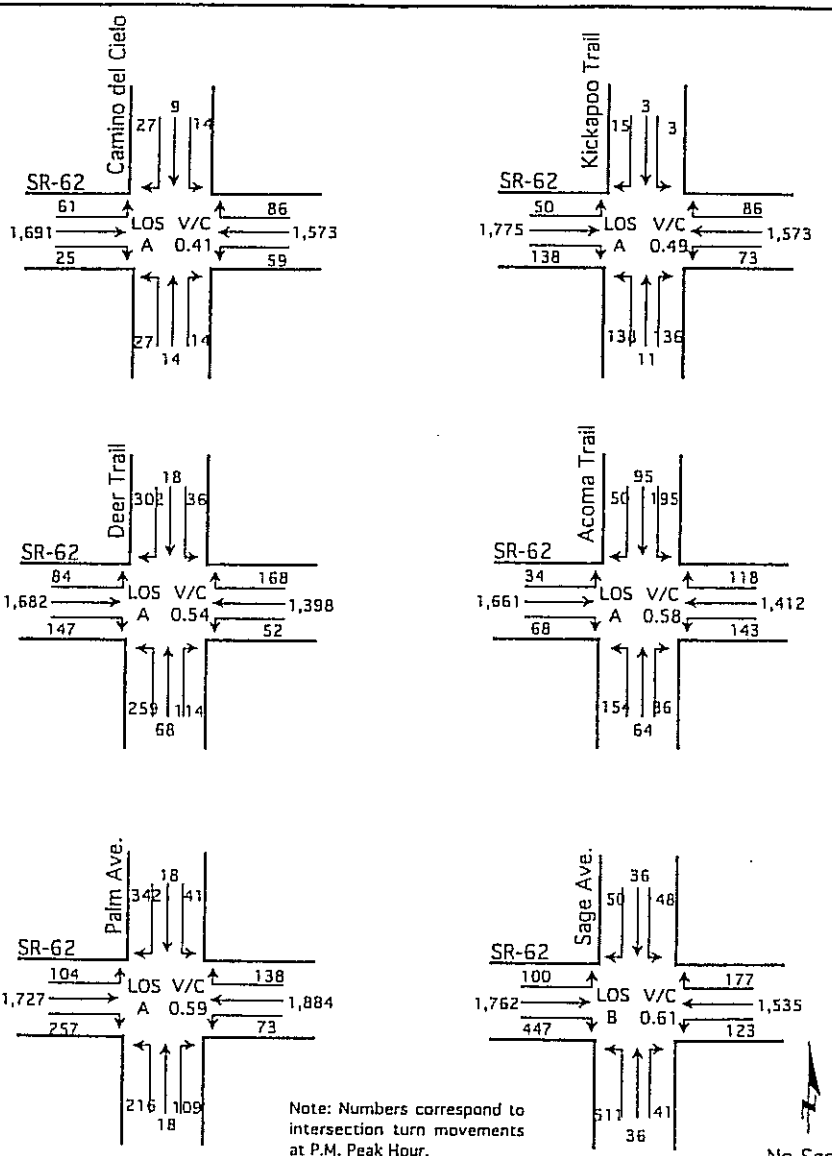
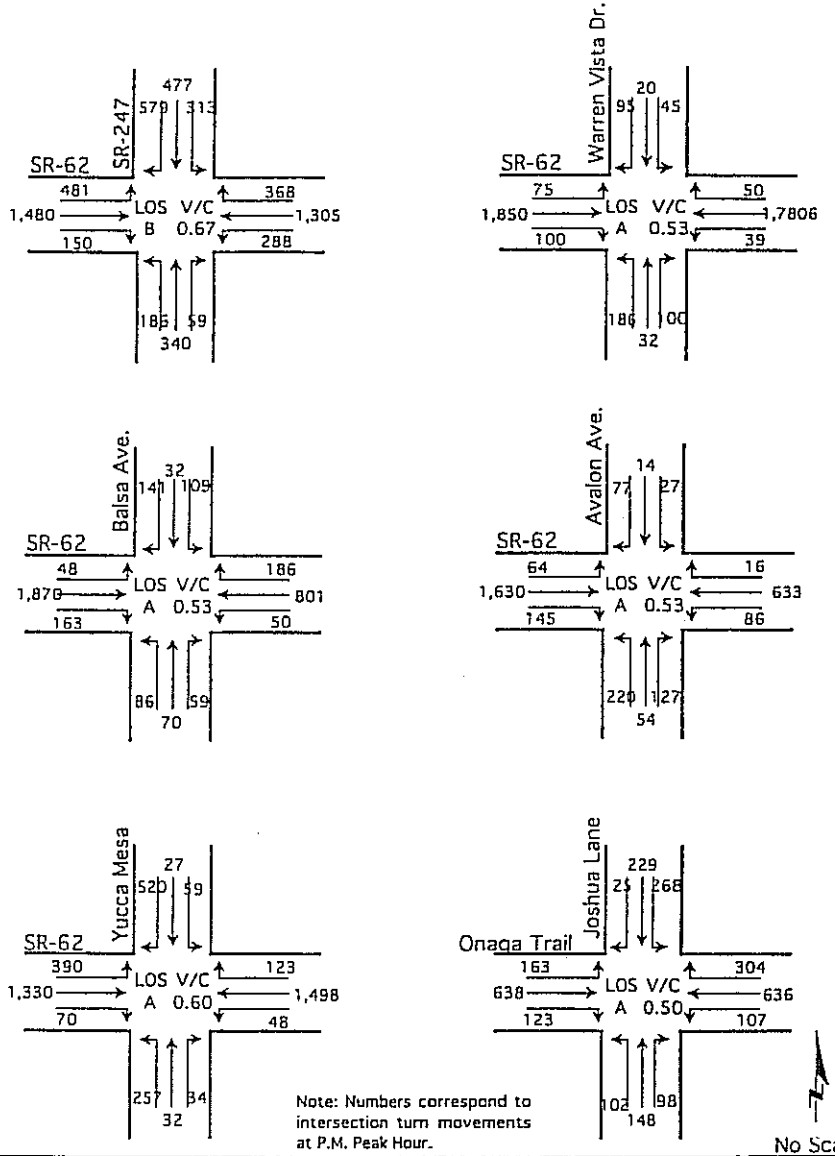
TRAFFIC VOLUMES
LEVEL OF SERVICE
ALTERNATIVE #1

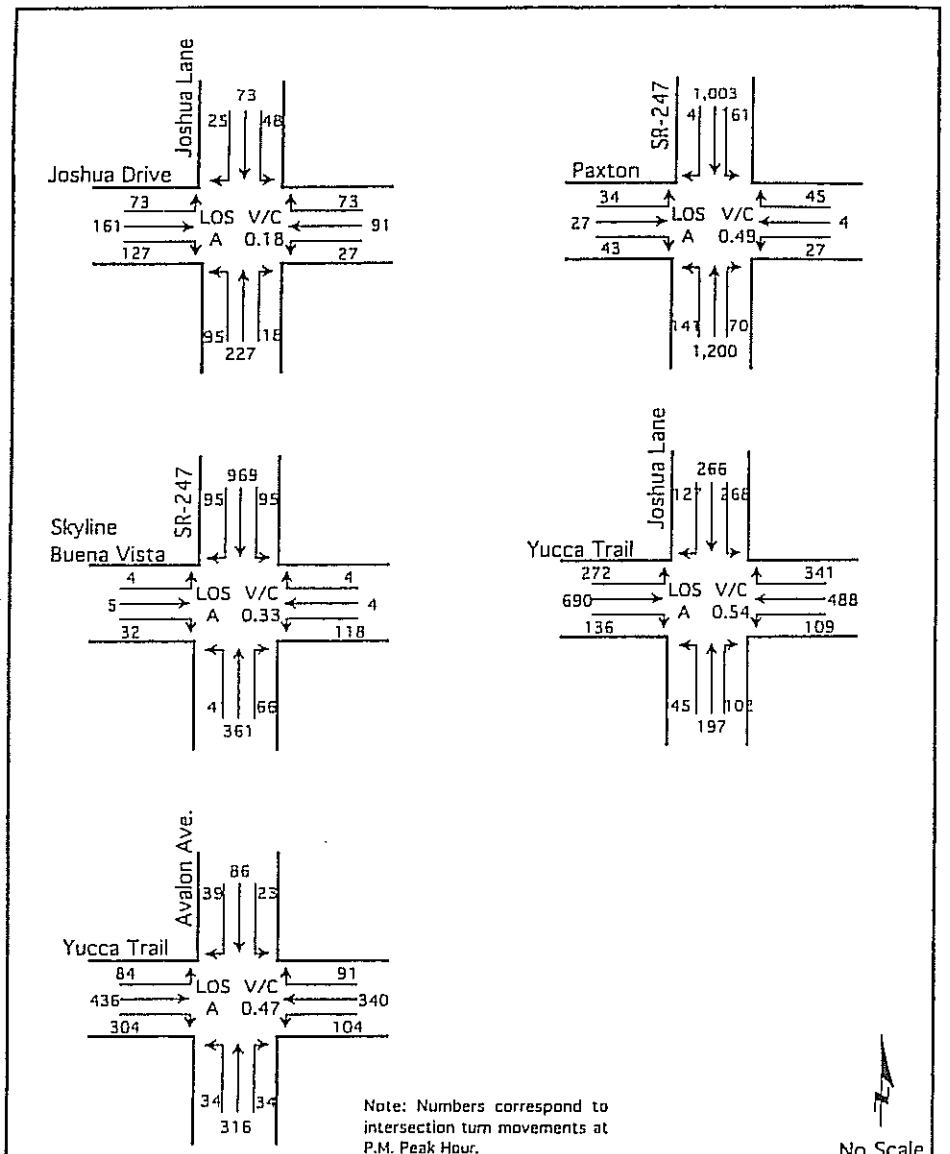
Fig.10.C



. Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES LEVEL OF SERVICE ALTERNATIVE #2	Fig.11.A



. Paul Singer, P.E. TRANSPORTATION ENGINEERING AND PLANNING	TRAFFIC VOLUMES LEVEL OF SERVICE ALTERNATIVE #2	Fig.11.B



VIII TRANSPORTATION DEMAND MANAGEMENT

A comprehensive Transportation Demand Management Strategy (T.D.M.) is one that combines a balance between land uses, jobs/housing balance, transportation facilites improvements and community development phasing.

The Circulation Improvement Plan must be phased in an incremental strategy commensurate with the growth of the Town's land use build-out. In order to achieve orderly traffic growth and reduce potential traffic impacts, the following goals shall be included in the Growth Management Strategy for the Town of Yucca Valley.

A. Jobs/Balance Housing Goal: To locate jobs and housing near each other to produce shorter work commutes.

Objective 1.0: Provide an average distance for home/work commutes of less than the 10.00 mile region-wide average, and increase working at home and telecommunications to involve 20% of the area's workforce.

Policy 1.1: The City shall encourage mixed use development where employment and residential opportunities are made available.

Policy 1.2: The City shall adopt a home occupation ordinance to permit people to work at home.

Policy 1.3: The City shall encourage major employers to evaluate telecommuting, either home-based or at local centers, for at least part-time options for employees.

B. Transportation Demand Management Goal: To promote the use of non single-occupant modes of transportation, and to shift trips out of current peak periods.

Objective 2.0: Provide an information netowrk among employers and provide tehcnical assistance to develop rideshare programs compatible with requirements of Regulation XV of the Air Quality Management District.

Policy 2.1: The City shall prepare a rideshare plan for its employees to serve as an example for area employers. This plan shall include preferential parking for high-occupancy vehicles and meaningful incentives for employees to walk, bike or rideshare to complete their work commutes.

Policy 2.2: The City shall organize a Transportation Management Organization among employers to provide an on-going information network and to determine opportunities for transit/shuttle operations.

Objective 3.0: The City shall encourage employers to provide alternative work weeks and flextime sufficient to reduce peak period trips by 10 percent.

Policy 3.1: The City shall encourage employers to provide 4 day-40 hour/9 day-80 hour work weeks, and/or provide start/end times outside of 6-8 a.m. and 4-5 p.m. peak periods of traffic.

Objective 4.0: The City shall encourage and develop continuous and convenient bicycle routes to places of employment, shopping centers, schools, and other high activity areas with potential for increased bicycle use.

Policy 4.1: The City shall prepare and adopt a Master Plan of Bikeways and develop secure bicycle storage facilities and other support facilities which increase bicycle use.

Objective 5.0: The City shall coordinate airport and ground transportation by encouraging a plan which ensures compatible development with public transportation as the preferred principal means of ground transportation access (e.g., inter-city bus access to airport.)

C. Transportation System Management Goal: To increase capacity and improve performance of the existing roadway system with relatively inexpensive projects.

Objective 6.0: The City shall coordinate with Caltrans to install freeway onramp meters, including high occupancy vehicle bypass lanes at all freeway interchanges.

Objective 7.0: The City shall develop an incident management program to communicate to motorists that traffic incidents can be reported toll-free from cellular car phones and to have emergency tow-truck contractors throughout the area.

Objective 8.0: The City shall have all future signals designed for inter-connected, traffic-actuated operation.

D. Facilities Development Goal: Expand and enhance the existing roadway system to provide acceptable LOS "D" peak period operation.

Objective 9.0: Design and construct roadway improvement projects outlined below to the typical cross-section standards shown in the enclosed exhibits. These improvements will be phased with land development to maintain acceptable service levels (not worse than LOS "D" during peak periods) and presume signalization as warrants are met. Also presumed is that where raised medians are provided, median openings will be limited to a minimum 400-foot separation and that driveway curb cuts along arterials will have a minimum 200-foot separation wherever possible. Development will participate equitably to conform with AB 1600.

APPENDIX I.

I.C.U. ANALYSIS

Paul Singer, P.E.
TRANSPORTATION ENGINEERING & PLANNING

S: 2P

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = CAMINO DEL CIELO

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	0	0	0	0	12	58	58	0.00	0.00	0.00
NT	1	1	1	1700	1700	1700	6	29	29	0.00	0.02	0.02
NR	0	0	0	0	0	0	6	29	29	0.00	0.00	0.00
SL	0	0	1	0	0	1700	6	29	29	0.00	0.00	0.02
ST	1	1	1	1700	1700	1700	4	19	19	0.00	0.01	0.01
SR	0	0	0	0	0	0	12	58	58	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	27	130	130	0.02	0.08	0.08
ET	2	2	3	3400	3400	5100	745	3576	3576	0.22	1.05	0.70
ER	0	0	0	0	0	0	11	53	53	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	26	125	125	0.02	0.07	0.07
WT	2	2	3	3400	3400	5100	693	3326	3326	0.20	0.98	0.65
WR	0	0	0	0	0	0	38	184	184	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.02	0.03
							EAST/WEST CRITICAL SUMS			0.23	1.13	0.77
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	1.17	0.82
							LOS			A	F *	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

3GP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = KICKAPOO TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	61	292	292	0.04	0.17	0.17
NT	1	1	1	1700	1700	1700	5	24	24	0.00	0.01	0.01
NR	0	0	0	0	0	0	60	288	288	0.00	0.00	0.00
SL	1	1	0	1700	1700	0	1	5	5	0.00	0.00	0.00
ST	1	1	1	1700	1700	1700	1	5	5	0.00	0.00	0.00
SR	0	0	0	0	0	0	3	14	14	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	22	106	106	0.01	0.06	0.06
ET	2	2	3	3400	3400	5100	782	3754	3754	0.23	1.10	0.74
ER	0	0	0	0	0	0	61	293	293	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	154	154	0.02	0.09	0.09
WT	2	2	3	3400	3400	5100	693	3326	3326	0.20	0.98	0.65
WR	0	0	0	0	0	0	9	43	43	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.04	0.17	0.17
							EAST/WEST CRITICAL SUMS			0.25	1.19	0.83
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.38	1.02
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = DEER TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	114	572	572	0.07	0.34	0.34
NT	1	1	1	1700	1700	1700	30	144	144	0.02	0.08	0.08
NR	1	1	1	1700	1700	1700	50	240	240	0.03	0.14	0.14
SL	0	0	1	0	0	1700	16	77	77	0.00	0.00	0.05
ST	1	1	1	1700	1700	1700	8	38	38	0.00	0.02	0.02
SR	0	0	0	0	0	0	133	638	638	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	37	178	178	0.02	0.10	0.10
ET	2	2	3	3400	3400	5100	741	3556	3556	0.22	1.05	0.70
ER	0	0	0	0	0	0	65	312	312	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	23	110	110	0.01	0.06	0.06
WT	2	2	3	3400	3400	5100	616	2957	2957	0.18	0.87	0.58
WR	0	0	0	0	0	0	74	355	355	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.36	0.36
							EAST/WEST CRITICAL SUMS			0.23	1.11	0.76
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.32	1.49	1.14
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = ACOMA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	68	326	326	0.00	0.00	0.19
NT	1	1	1	1700	1700	1700	26	134	134	0.02	0.08	0.08
NR	0	0	0	0	0	0	38	182	182	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	86	413	413	0.05	0.24	0.24
ST	1	1	1	1700	1700	1700	42	202	202	0.02	0.12	0.12
SR	0	0	0	0	0	0	22	106	106	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	15	72	72	0.01	0.04	0.04
ET	2	2	3	3400	3400	5100	732	3514	3514	0.22	1.03	0.69
ER	0	0	0	0	0	0	30	144	144	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	63	302	302	0.04	0.18	0.18
WT	2	2	3	3400	3400	5100	622	2986	2986	0.18	0.88	0.59
WR	0	0	0	0	0	0	52	250	250	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.32	0.32
							EAST/WEST CRITICAL SUMS			0.25	1.21	0.87
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.34	1.55	1.21
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = PALM AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	95	456	456	0.00	0.00	0.27
NT	1	1	1	1700	1700	1700	8	38	38	0.00	0.02	0.02
NR	0	0	0	0	0	0	48	230	230	0.00	0.00	0.00
SL	0	0	1	0	0	1700	18	86	86	0.00	0.00	0.05
ST	1	1	1	1700	1700	1700	8	38	38	0.00	0.02	0.02
SR	0	0	0	0	0	0	151	724	724	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	46	221	221	0.03	0.13	0.13
ET	2	2	3	3400	3400	5100	761	3653	3653	0.22	1.07	0.72
ER	0	0	0	0	0	0	113	542	542	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	154	154	0.02	0.09	0.09
WT	2	2	3	3400	3400	5100	830	3984	3984	0.24	1.17	0.78
WR	0	0	0	0	0	0	61	293	293	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.02	0.29
							EAST/WEST CRITICAL SUMS			0.27	1.30	0.91
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.29	1.34	1.22
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

SBC7

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SAGE AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	2	1700	1700	3400	225	1080	1080	0.13	0.64	0.32
NT	1	1	1	1700	1700	1700	16	77	77	0.01	0.05	0.05
NR	0	0	0	0	0	0	18	86	86	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	65	312	312	0.04	0.18	0.18
ST	1	1	1	1700	1700	1700	16	77	77	0.01	0.05	0.05
SR	1	1	1	1700	1700	1700	22	106	106	0.01	0.06	0.06
EL	1	1	1	1700	1700	1700	44	211	211	0.03	0.12	0.12
ET	2	2	3	3400	3400	5100	776	3725	3725	0.23	1.10	0.73
ER	0	0	0	0	0	0	197	946	946	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	54	259	259	0.03	0.15	0.15
WT	2	2	3	3400	3400	5100	676	3245	3245	0.20	0.95	0.64
WR	0	0	0	0	0	0	78	374	374	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.14	0.68	0.36
							EAST/WEST CRITICAL SUMS			0.26	1.25	0.88
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.42	1.95	1.26
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SR-247 – JOSHUA LN.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	2	1700	1700	3400	82	394	394	0.05	0.23	0.12
NT	1	1	3	1700	1700	5100	150	720	720	0.09	0.42	0.14
NR	0	0	1	0	0	1700	26	125	125	0.00	0.00	0.07
SL	1	1	2	1700	1700	3400	138	662	662	0.08	0.39	0.19
ST	1	1	3	1700	1700	5100	210	1008	1008	0.12	0.59	0.20
SR	0	0	1	0	0	1700	255	1224	1224	0.00	0.00	0.72
EL	1	1	2	1700	1700	3400	212	1018	1018	0.12	0.60	0.30
ET	2	2	3	3400	3400	5100	652	3130	3130	0.19	0.92	0.61
ER	0	0	1	0	0	1700	66	317	317	0.00	0.00	0.19
WL	1	1	2	1700	1700	3400	127	610	610	0.07	0.36	0.18
WT	2	2	3	3400	3400	5100	575	2760	2760	0.17	0.81	0.54
WR	0	0	1	0	0	1700	162	778	778	0.00	0.00	0.46
							NORTH/SOUTH CRITICAL SUMS			0.17	0.82	0.54
							EAST/WEST CRITICAL SUMS			0.29	1.41	0.84
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.48	2.25	1.40
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

SBG?

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = WARREN VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	82	394	394	0.00	0.00	0.23
NT	1	1	1	1700	1700	1700	14	67	67	0.01	0.04	0.04
NR	0	0	0	0	0	0	44	211	211	0.00	0.00	0.00
SL	0	0	1	0	0	1700	20	96	96	0.00	0.00	0.06
ST	1	1	1	1700	1700	1700	9	43	43	0.01	0.03	0.03
SR	0	0	0	0	0	0	42	202	202	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	33	158	158	0.02	0.09	0.09
ET	2	2	3	3400	3400	5100	815	3912	3912	0.24	1.15	0.77
ER	0	0	0	0	0	0	44	211	211	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	17	106	106	0.01	0.06	0.06
WT	2	2	3	3400	3400	5100	355	1704	1704	0.10	0.50	0.33
WR	0	0	0	0	0	0	22	82	82	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.04	0.26
							EAST/WEST CRITICAL SUMS			0.25	1.21	0.83
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.28	1.27	1.11
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = BALSA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	38	182	182	0.02	0.11	0.11
NT	1	1	1	1700	1700	1700	31	149	149	0.02	0.09	0.09
NR	0	0	0	0	0	0	26	125	125	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	48	230	230	0.03	0.14	0.14
ST	1	1	1	1700	1700	1700	14	67	67	0.01	0.04	0.04
SR	0	0	0	0	0	0	62	298	298	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	21	101	101	0.01	0.06	0.06
ET	2	2	3	3400	3400	5100	824	3955	3955	0.24	1.16	0.78
ER	0	0	0	0	0	0	72	346	346	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	22	106	106	0.01	0.06	0.06
WT	2	2	3	3400	3400	5100	353	1694	1694	0.10	0.50	0.33
WR	0	0	0	0	0	0	82	394	394	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.05	0.22	0.22
							EAST/WEST CRITICAL SUMS			0.26	1.23	0.84
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.47	1.08
							LOS			A	F	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

SBGP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = AVALON DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	97	466	466	0.06	0.27	0.27
NT	1	1	1	1700	1700	1700	24	115	115	0.01	0.07	0.07
NR	0	0	0	0	0	0	56	269	269	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	12	57	57	0.01	0.03	0.03
ST	1	1	1	1700	1700	1700	6	29	29	0.00	0.02	0.02
SR	0	0	0	0	0	0	34	163	163	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	28	134	134	0.02	0.08	0.08
ET	2	2	3	3400	3400	5100	718	3446	3446	0.21	1.01	0.68
ER	0	0	0	0	0	0	64	307	307	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	38	182	182	0.02	0.11	0.11
WT	2	2	3	3400	3400	5100	279	1339	1339	0.08	0.39	0.26
WR	0	0	0	0	0	0	7	34	34	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.29	0.29
							EAST/WEST CRITICAL SUMS			0.23	1.12	0.78
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.43	1.09
							LOS			A	F	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = YUCCA MESA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	113	542	542	0.00	0.00	0.32
NT	1	1	1	1700	1700	1700	14	67	67	0.01	0.04	0.04
NR	0	0	0	0	0	0	15	72	72	0.00	0.00	0.00
SL	0	0	1	0	0	1700	26	125	125	0.00	0.00	0.07
ST	1	1	1	1700	1700	1700	12	58	58	0.01	0.03	0.03
SR	0	0	0	0	0	0	229	1099	1099	0.00	0.00	0.00
EL	1	1	2	1700	1700	3400	172	826	826	0.10	0.49	0.24
ET	2	2	3	3400	3400	5100	586	2813	2813	0.17	0.83	0.55
ER	0	0	0	0	0	0	31	149	149	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	21	101	101	0.01	0.06	0.06
WT	2	2	3	3400	3400	5100	660	3168	3168	0.19	0.93	0.62
WR	0	0	0	0	0	0	54	259	259	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.04	0.35
							EAST/WEST CRITICAL SUMS			0.30	1.42	0.86
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.46	1.23
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = ONAGA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	45	96	96	0.00	0.00	0.06
NT	1	1	2	1700	1700	3400	65	418	418	0.04	0.25	0.12
NR	0	0	0	0	0	0	43	216	216	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	566	566	0.00	0.00	0.33
ST	1	1	2	1700	1700	3400	101	552	552	0.06	0.33	0.17
SR	0	0	0	0	0	0	55	269	269	0.00	0.00	0.00
EL	0	0	1	0	0	1700	72	576	576	0.00	0.00	0.34
ET	1	1	2	1700	1700	3400	281	1459	1459	0.17	0.86	0.43
ER	0	0	0	0	0	0	54	268	268	0.00	0.00	0.00
WL	0	0	1	0	0	1700	47	230	230	0.00	0.00	0.14
WT	1	1	2	1700	1700	3400	280	1032	1032	0.16	0.61	0.30
WR	0	0	0	0	0	0	134	725	725	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.33	0.46
							EAST/WEST CRITICAL SUMS			0.17	0.86	0.64
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	1.21	1.12
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

BGP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = JOSHUA DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	0	0	0	0	42	96	96	0.00	0.00	0.00
NT	1	1	2	1700	1700	3400	100	418	418	0.06	0.25	0.12
NR	0	0	0	0	0	0	8	216	216	0.00	0.00	0.00
SL	0	0	0	0	0	0	21	566	566	0.00	0.00	0.00
ST	1	1	2	1700	1700	3400	32	562	562	0.02	0.33	0.17
SR	0	0	0	0	0	0	11	269	269	0.00	0.00	0.00
EL	0	0	0	0	0	0	32	576	576	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	71	1459	1459	0.04	0.86	0.86
ER	0	0	0	0	0	0	56	288	288	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	230	230	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	40	1032	1032	0.02	0.61	0.61
WR	0	0	0	0	0	0	32	725	725	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.33	0.17
							EAST/WEST CRITICAL SUMS			0.04	0.86	0.86
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.12	1.21	1.05
							LOS			A	F	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

BGP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = SKYLINE DR. - BUENA VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	18	86	86	0.00	0.00	0.05
NT	1	1	2	1700	1700	3400	159	63	63	0.09	0.04	0.02
NR	0	0	0	0	0	0	29	139	139	0.00	0.00	0.00
SL	0	0	1	0	0	1700	42	202	202	0.00	0.00	0.12
ST	1	1	2	1700	1700	3400	427	2050	2050	0.25	1.21	0.60
SR	0	0	0	0	0	0	42	202	202	0.00	0.00	0.00
EL	0	0	0	0	0	0	0	5	5	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	2	10	10	0.00	0.01	0.01
ER	0	0	0	0	0	0	14	67	67	0.00	0.00	0.00
WL	0	0	0	0	0	0	52	250	250	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	5	5	0.00	0.00	0.00
WR	0	0	0	0	0	0	0	5	5	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.25	1.21	0.65
							EAST/WEST CRITICAL SUMS			0.00	0.01	0.01
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.27	1.24	0.68
							LOS			A	F	B

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

BGP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = PAXTON RD.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	62	298	298	0.00	0.00	0.18
NT	1	1	2	1700	1700	3400	529	2539	2539	0.31	1.49	0.75
NR	0	0	0	0	0	0	31	149	149	0.00	0.00	0.00
SL	0	0	1	0	0	1700	71	341	341	0.00	0.00	0.20
ST	1	1	2	1700	1700	3400	442	2122	2122	0.26	1.25	0.62
SR	0	0	0	0	0	0	0	5	5	0.00	0.00	0.00
EL	0	0	0	0	0	0	15	72	72	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	12	58	58	0.01	0.03	0.03
ER	0	0	0	0	0	0	19	91	91	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	58	58	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	5	5	0.00	0.00	0.00
WR	0	0	0	0	0	0	20	95	95	0.00	0.00	0.00
						NORTH/SOUTH CRITICAL SUMS				0.31	1.49	0.95
						EAST/WEST CRITICAL SUMS				0.01	0.03	0.03
						CLEARANCE				0.02	0.02	0.02
						ICU VALUE				0.34	1.54	1.00
						LOS				A	F	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

BGP

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = YUCCA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	20	96	96	0.00	0.00	0.06
NT	1	1	2	1700	1700	3400	87	418	418	0.05	0.25	0.12
NR	0	0	0	0	0	0	45	216	216	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	566	566	0.00	0.00	0.33
ST	1	1	2	1700	1700	3400	117	562	562	0.07	0.33	0.17
SR	0	0	0	0	0	0	56	269	269	0.00	0.00	0.00
EL	0	0	1	0	0	1700	120	576	576	0.00	0.00	0.34
ET	1	1	2	1700	1700	3400	304	1459	1459	0.18	0.86	0.43
ER	0	0	0	0	0	0	60	288	288	0.00	0.00	0.00
WL	0	0	1	0	0	1700	48	230	230	0.00	0.00	0.14
WT	1	1	2	1700	1700	3400	215	1032	1032	0.13	0.61	0.30
WR	0	0	0	0	0	0	151	725	725	0.00	0.00	0.00
						NORTH/SOUTH CRITICAL SUMS				0.07	0.33	0.46
						EAST/WEST CRITICAL SUMS				0.18	0.86	0.64
						CLEARANCE				0.02	0.02	0.02
						ICU VALUE				0.27	1.21	1.12
						LOS				A	F	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = AVALON DR.
PEAK HOUR = PM
LOCATION = YUCCA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	S.B. COUNTY G.P.	BUILD OUT WITH MITIGA.
NL	0	0	0	0	0	0	15	72	72	0.00	0.00	0.00
NT	1	1	1	1700	1700	1700	139	667	667	0.08	0.39	0.39
NR	0	0	0	0	0	0	15	72	72	0.00	0.00	0.00
SL	0	0	0	0	0	0	10	48	48	0.00	0.00	0.00
ST	1	1	1	1700	1700	1700	38	182	182	0.02	0.11	0.11
SR	0	0	0	0	0	0	17	82	82	0.00	0.00	0.00
EL	0	0	0	0	0	0	37	178	178	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	192	923	923	0.11	0.54	0.54
ER	0	0	0	0	0	0	134	643	643	0.00	0.00	0.00
WL	0	0	0	0	0	0	46	221	221	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	150	720	720	0.09	0.42	0.42
WR	0	0	0	0	0	0	40	192	192	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.08	0.39	0.39
							EAST/WEST CRITICAL SUMS			0.11	0.54	0.54
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.21	0.95	0.95
							LOS			A	E	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = CAMINO DEL CIELO

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	0	0	0	0	12	39	39	0.00	0.00	0.00
NT	1	1	1	1700	1700	1700	6	19	19	0.00	0.01	0.01
NR	0	0	0	0	0	0	6	19	19	0.00	0.00	0.00
SL	0	0	1	0	0	1700	6	19	19	0.00	0.00	0.01
ST	1	1	1	1700	1700	1700	4	13	13	0.00	0.01	0.01
SR	0	0	0	0	0	0	12	39	39	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	27	86	86	0.02	0.05	0.05
ET	2	2	3	3400	3400	5100	745	2602	2602	0.22	0.77	0.51
ER	0	0	0	0	0	0	11	35	35	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	25	84	84	0.02	0.05	0.05
WT	2	2	3	3400	3400	5100	693	2391	2391	0.20	0.70	0.47
WR	0	0	0	0	0	0	38	122	122	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.01	0.02
							EAST/WEST CRITICAL SUMS			0.23	0.81	0.56
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	0.84	0.60
							LOS			A	D	A

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = KICKAPOO TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	1	1700	1700	1700	61	196	196	0.04	0.12	0.12
NT	1	1	1	1700	1700	1700	5	16	16	0.00	0.01	0.01
NR	0	0	0	0	0	0	60	193	193	0.00	0.00	0.00
SL	1	1	0	1700	1700	0	1	3	3	0.00	0.00	0.00
ST	1	1	1	1700	1700	1700	1	3	3	0.00	0.00	0.00
SR	0	0	0	0	0	0	3	11	11	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	22	66	66	0.01	0.04	0.04
ET	2	2	3	3400	3400	5100	782	2713	2713	0.23	0.80	0.53
ER	0	0	0	0	0	0	61	195	195	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	103	103	0.02	0.06	0.06
WT	2	2	3	3400	3400	5100	693	2414	2414	0.20	0.71	0.47
WR	0	0	0	0	0	0	9	28	28	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.04	0.12	0.12
							EAST/WEST CRITICAL SUMS			0.25	0.66	0.59
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.00	0.73
							LOS			A	E	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = DEER TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	1	1700	1700	1700	114	365	365	0.07	0.21	0.21
NT	1	1	1	1700	1700	1700	30	96	96	0.02	0.06	0.06
NR	1	1	1	1700	1700	1700	50	160	160	0.03	0.09	0.09
SL	0	0	1	0	0	1700	16	50	50	0.00	0.00	0.03
ST	1	1	1	1700	1700	1700	8	25	25	0.00	0.01	0.01
SR	0	0	0	0	0	0	133	426	426	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	37	119	119	0.02	0.07	0.07
ET	2	2	3	3400	3400	5100	741	2595	2595	0.22	0.76	0.51
ER	0	0	0	0	0	0	65	208	208	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	23	74	74	0.01	0.04	0.04
WT	2	2	3	3400	3400	5100	616	2135	2135	0.18	0.63	0.42
WR	0	0	0	0	0	0	74	238	238	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.23	0.23
							EAST/WEST CRITICAL SUMS			0.23	0.81	0.55
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.32	1.06	0.80
							LOS			A	F	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = ACOMA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	68	218	218	0.00	0.00	0.13
NT	1	1	1	1700	1700	1700	28	90	90	0.02	0.05	0.05
NR	0	0	0	0	0	0	38	122	122	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	86	275	275	0.05	0.16	0.16
ST	1	1	1	1700	1700	1700	42	134	134	0.02	0.08	0.08
SR	0	0	0	0	0	0	22	71	71	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	15	48	48	0.01	0.03	0.03
ET	2	2	3	3400	3400	5100	732	2563	2563	0.22	0.75	0.50
ER	0	0	0	0	0	0	30	95	95	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	63	200	200	0.04	0.12	0.12
WT	2	2	3	3400	3400	5100	622	2225	2225	0.18	0.65	0.44
WR	0	0	0	0	0	0	52	166	166	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.21	0.21
							EAST/WEST CRITICAL SUMS			0.25	0.87	0.62
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.34	1.10	0.65
							LOS			A	F	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = PALM AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	95	303	303	0.00	0.00	0.18
NT	1	1	1	1700	1700	1700	8	25	25	0.00	0.01	0.01
NR	0	0	0	0	0	0	46	153	153	0.00	0.00	0.00
SL	0	0	1	0	0	1700	18	57	57	0.00	0.00	0.03
ST	1	1	1	1700	1700	1700	8	25	25	0.00	0.01	0.01
SR	0	0	0	0	0	0	151	482	482	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	46	147	147	0.03	0.09	0.09
ET	2	2	3	3400	3400	5100	761	2664	2664	0.22	0.78	0.52
ER	0	0	0	0	0	0	113	362	362	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	102	102	0.02	0.06	0.06
WT	2	2	3	3400	3400	5100	830	2858	2858	0.24	0.84	0.56
WR	0	0	0	0	0	0	61	102	102	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.01	0.19
							EAST/WEST CRITICAL SUMS			0.27	0.93	0.65
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.29	0.96	0.86
							LOS			A	E	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SAGE AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	2	1700	1700	3400	225	719	719	0.13	0.42	0.21
NT	1	1	1	1700	1700	1700	16	51	51	0.01	0.03	0.03
NR	0	0	0	0	0	0	18	57	57	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	65	207	207	0.04	0.12	0.12
ST	1	1	1	1700	1700	1700	16	51	51	0.01	0.03	0.03
SR	1	1	1	1700	1700	1700	22	71	71	0.01	0.04	0.04
EL	1	1	2	1700	1700	3400	44	141	141	0.03	0.08	0.04
ET	2	2	3	3400	3400	5100	776	2704	2704	0.23	0.80	0.53
ER	0	0	0	0	0	0	197	630	630	0.00	0.00	0.00
WL	1	1	2	1700	1700	3400	54	173	173	0.03	0.10	0.05
WT	2	2	3	3400	3400	5100	676	2342	2342	0.20	0.69	0.46
WR	0	0	0	0	0	0	78	250	250	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.14	0.45	0.24
							EAST/WEST CRITICAL SUMS			0.26	0.90	0.58
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.42	1.37	0.84
							LOS			A	F	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SR-247 - JOSHUA LN.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	2	1700	1700	3400	82	263	263	0.05	0.15	0.08
NT	1	1	3	1700	1700	5100	150	479	479	0.09	0.28	0.09
NR	0	0	1	0	0	1700	26	83	83	0.00	0.00	0.05
SL	1	1	2	1700	1700	3400	138	431	431	0.08	0.25	0.13
ST	1	1	3	1700	1700	5100	210	1113	1113	0.12	0.65	0.22
SR	0	0	1	0	0	1700	255	815	815	0.00	0.00	0.48
EL	1	1	2	1700	1700	3400	212	657	657	0.12	0.39	0.19
ET	2	2	3	3400	3400	5100	652	2166	2166	0.19	0.64	0.42
ER	0	0	1	0	0	1700	66	208	208	0.00	0.00	0.12
WL	1	1	2	1700	1700	3400	127	336	336	0.07	0.20	0.10
WT	2	2	3	3400	3400	5100	575	1720	1720	0.17	0.51	0.34
WR	0	0	1	0	0	1700	152	516	516	0.00	0.00	0.30
							NORTH/SOUTH CRITICAL SUMS			0.17	0.81	0.35
							EAST/WEST CRITICAL SUMS			0.29	0.89	0.53
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.48	1.72	0.91
							LOS			A	F	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = WARREN VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	82	263	263	0.00	0.00	0.15
NT	1	1	1	1700	1700	1700	14	45	45	0.01	0.03	0.03
NR	0	0	0	0	0	0	44	141	141	0.00	0.00	0.00
SL	0	0	1	0	0	1700	20	64	64	0.00	0.00	0.04
ST	1	1	1	1700	1700	1700	9	28	28	0.01	0.02	0.02
SR	0	0	0	0	0	0	42	134	134	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	33	105	105	0.02	0.06	0.06
ET	2	2	3	3400	3400	5100	815	2890	2890	0.24	0.85	0.57
ER	0	0	0	0	0	0	44	141	141	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	17	53	53	0.01	0.03	0.03
WT	2	2	3	3400	3400	5100	355	1236	1236	0.10	0.36	0.24
WR	0	0	0	0	0	0	22	69	69	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.03	0.17
							EAST/WEST CRITICAL SUMS			0.25	0.88	0.60
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.26	0.93	0.79
							LOS			A	E	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = BALSA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	1	1700	1700	1700	38	121	121	0.02	0.07	0.07
NT	1	1	1	1700	1700	1700	31	99	99	0.02	0.06	0.06
NR	0	0	0	0	0	0	26	83	83	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	48	154	154	0.03	0.09	0.09
ST	1	1	1	1700	1700	1700	14	45	45	0.01	0.03	0.03
SR	0	0	0	0	0	0	62	198	198	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	21	66	66	0.01	0.04	0.04
ET	2	2	3	3400	3400	5100	824	2870	2870	0.24	0.84	0.56
ER	0	0	0	0	0	0	72	229	229	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	22	70	70	0.01	0.04	0.04
WT	2	2	3	3400	3400	5100	353	1227	1227	0.10	0.36	0.24
WR	0	0	0	0	0	0	82	262	262	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.05	0.15	0.15
							EAST/WEST CRITICAL SUMS			0.26	0.89	0.60
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.06	0.77
							LOS			A	F	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = AVALON DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	1	1	1	1700	1700	1700	97	310	310	0.06	0.18	0.18
NT	1	1	1	1700	1700	1700	24	76	76	0.01	0.04	0.04
NR	0	0	0	0	0	0	56	56	56	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	12	39	39	0.01	0.02	0.02
ST	1	1	1	1700	1700	1700	6	17	17	0.00	0.01	0.01
SR	0	0	0	0	0	0	34	108	108	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	28	88	88	0.02	0.05	0.05
ET	2	2	3	3400	3400	5100	716	2507	2507	0.21	0.74	0.49
ER	0	0	0	0	0	0	64	205	205	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	38	121	121	0.02	0.07	0.07
WT	2	2	3	3400	3400	5100	279	1015	1015	0.08	0.30	0.20
WR	0	0	0	0	0	0	7	25	25	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.19	0.19
							EAST/WEST CRITICAL SUMS			0.23	0.81	0.56
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.02	0.77
							LOS			A	F	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = YUCCA MESA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	2	0	0	3400	113	361	361	0.00	0.00	0.11
NT	1	1	1	1700	1700	1700	14	44	44	0.01	0.03	0.03
NR	0	0	0	0	0	0	15	48	48	0.00	0.00	0.00
SL	0	0	1	0	0	1700	28	83	83	0.00	0.00	0.05
ST	1	1	1	1700	1700	1700	12	39	39	0.01	0.02	0.02
SR	0	0	0	0	0	0	229	732	732	0.00	0.00	0.00
EL	1	1	2	1700	1700	3400	172	724	724	0.10	0.43	0.21
ET	2	2	3	3400	3400	5100	586	2085	2085	0.17	0.61	0.41
ER	0	0	0	0	0	0	31	99	99	0.00	0.00	0.00
WL	1	1	2	1700	1700	3400	21	66	66	0.01	0.04	0.02
WT	2	2	3	3400	3400	5100	660	2323	2323	0.19	0.68	0.46
WR	0	0	0	0	0	0	54	172	172	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.03	0.13
							EAST/WEST CRITICAL SUMS			0.30	1.11	0.67
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.16	0.82
							LOS			A	F	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = YUCCA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	20	64	64	0.00	0.00	0.04
NT	1	1	2	1700	1700	3400	87	278	278	0.05	0.16	0.08
NR	0	0	0	0	0	0	45	144	144	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	377	377	0.00	0.00	0.22
ST	1	1	2	1700	1700	3400	117	374	374	0.07	0.22	0.11
SR	0	0	0	0	0	0	56	178	178	0.00	0.00	0.00
EL	0	0	1	0	0	1700	120	383	383	0.00	0.00	0.23
ET	1	1	2	1700	1700	3400	304	97	97	0.18	0.06	0.03
ER	0	0	0	0	0	0	60	192	192	0.00	0.00	0.00
WL	0	0	1	0	0	1700	48	153	153	0.00	0.00	0.09
WT	1	1	2	1700	1700	3400	215	688	688	0.13	0.40	0.20
WR	0	0	0	0	0	0	151	482	482	0.00	0.00	0.00
								NORTH/SOUTH CRITICAL SUMS		0.07	0.22	0.30
								EAST/WEST CRITICAL SUMS		0.18	0.40	0.43
								CLEARANCE		0.02	0.02	0.02
								ICU VALUE		0.27	0.64	0.75
								LOS		A	B	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = AVALON DR.
PEAK HOUR = PM
LOCATION = YUCCA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	0	0	0	0	15	47	47	0.00	0.00	0.00
NT	1	1	1	1700	1700	1700	139	444	444	0.08	0.26	0.26
NR	0	0	0	0	0	0	15	48	48	0.00	0.00	0.00
SL	0	0	0	0	0	0	10	31	31	0.00	0.00	0.00
ST	1	1	1	1700	1700	1700	38	121	121	0.02	0.07	0.07
SR	0	0	0	0	0	0	17	54	54	0.00	0.00	0.00
EL	0	0	0	0	0	0	37	118	118	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	192	714	714	0.11	0.42	0.42
ER	0	0	0	0	0	0	134	428	428	0.00	0.00	0.00
WL	0	0	0	0	0	0	46	147	147	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	150	779	779	0.09	0.46	0.46
WR	0	0	0	0	0	0	40	128	128	0.00	0.00	0.00
								NORTH/SOUTH CRITICAL SUMS		0.08	0.26	0.26
								EAST/WEST CRITICAL SUMS		0.11	0.46	0.46
								CLEARANCE		0.02	0.02	0.02
								ICU VALUE		0.21	0.74	0.74
								LOS		A	C	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = ONAGA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	45	144	144	0.00	0.00	0.08
NT	1	1	2	1700	1700	3400	65	207	207	0.04	0.12	0.06
NR	0	0	0	0	0	0	43	137	137	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	377	377	0.00	0.00	0.22
ST	1	1	2	1700	1700	3400	101	322	322	0.06	0.19	0.09
SR	0	0	0	0	0	0	55	176	176	0.00	0.00	0.00
EL	0	0	1	0	0	1700	72	229	229	0.00	0.00	0.13
ET	1	1	2	1700	1700	3400	281	898	898	0.17	0.53	0.26
ER	0	0	0	0	0	0	54	172	172	0.00	0.00	0.00
WL	0	0	1	0	0	1700	47	150	150	0.00	0.00	0.09
WT	1	1	2	1700	1700	3400	280	894	894	0.16	0.53	0.26
WR	0	0	0	0	0	0	134	427	427	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.19	0.28
							EAST/WEST CRITICAL SUMS			0.17	0.53	0.40
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	0.74	0.70
							LOS			A	C	B

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = JOSHUA DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	0	0	0	0	42	133	133	0.00	0.00	0.00
NT	1	1	2	1700	1700	3400	100	319	319	0.06	0.19	0.09
NR	0	0	0	0	0	0	8	25	25	0.00	0.00	0.00
SL	0	0	0	0	0	0	21	67	67	0.00	0.00	0.00
ST	1	1	2	1700	1700	3400	32	102	102	0.02	0.06	0.03
SR	0	0	0	0	0	0	11	35	35	0.00	0.00	0.00
EL	0	0	0	0	0	0	32	102	102	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	71	226	226	0.04	0.13	0.13
ER	0	0	0	0	0	0	56	178	178	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	38	38	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	40	127	127	0.02	0.07	0.07
WR	0	0	0	0	0	0	32	102	102	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.19	0.09
							EAST/WEST CRITICAL SUMS			0.04	0.13	0.13
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.12	0.34	0.24
							LOS			A	A	A

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = SKYLINE DR. – BUENA VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	18	57	57	0.00	0.00	0.03
NT	1	1	2	1700	1700	3400	159	508	508	0.09	0.30	0.15
NR	0	0	0	0	0	0	29	92	92	0.00	0.00	0.00
SL	0	0	1	0	0	1700	42	133	133	0.00	0.00	0.08
ST	1	1	2	1700	1700	3400	427	1365	1365	0.25	0.80	0.40
SR	0	0	0	0	0	0	42	133	133	0.00	0.00	0.00
EL	0	0	0	0	0	0	0	11	11	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	2	39	39	0.00	0.02	0.02
ER	0	0	0	0	0	0	14	45	45	0.00	0.00	0.00
WL	0	0	0	0	0	0	52	166	166	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	6	6	0.00	0.00	0.00
WR	0	0	0	0	0	0	0	23	23	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.25	0.80	0.44
							EAST/WEST CRITICAL SUMS			0.00	0.02	0.02
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.27	0.84	0.48
							LOS			A	D	A

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = PAXTON RD.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	ALT #1 PROPOSE CAPACITY	ALT #2 PROPOSE CAPACITY	1993 EXISTING VOLUME	2015 PREFERRED ALT.	2015 WITH MITIGA.	1993 EXISTING V/C	2015 PREFERRED ALT.	2015 WITH MITIGA.
NL	0	0	1	0	0	1700	62	198	198	0.00	0.00	0.12
NT	1	1	2	1700	1700	3400	529	1691	1691	0.31	0.99	0.50
NR	0	0	0	0	0	0	31	99	99	0.00	0.00	0.00
SL	0	0	1	0	0	1700	71	425	425	0.00	0.00	0.25
ST	1	1	2	1700	1700	3400	442	2097	2097	0.26	1.23	0.62
SR	0	0	0	0	0	0	0	124	124	0.00	0.00	0.00
EL	0	0	0	0	0	0	15	15	15	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	12	38	38	0.01	0.02	0.02
ER	0	0	0	0	0	0	19	62	62	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	39	39	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	58	58	0.00	0.03	0.03
WR	0	0	0	0	0	0	20	64	64	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.31	1.23	0.75
							EAST/WEST CRITICAL SUMS			0.01	0.03	0.03
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.34	1.28	0.80
							LOS			A	F	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = CAMINO DEL CIELO

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	0	0	0	0	12	44	44	0.00	0.00	0.00
NT	1	1	1	1700	1700	1700	6	22	22	0.00	0.01	0.01
NR	0	0	0	0	0	0	6	22	22	0.00	0.00	0.00
SL	0	0	1	0	0	1700	6	22	22	0.00	0.00	0.01
ST	1	1	1	1700	1700	1700	4	15	15	0.00	0.01	0.01
SR	0	0	0	0	0	0	12	44	44	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	27	100	100	0.02	0.06	0.06
ET	2	2	3	3400	3400	5100	745	2764	2764	0.22	0.81	0.54
ER	0	0	0	0	0	0	11	41	41	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	26	96	96	0.02	0.06	0.06
WT	2	2	3	3400	3400	5100	693	2571	2571	0.20	0.76	0.50
WR	0	0	0	0	0	0	38	141	141	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.01	0.03
							EAST/WEST CRITICAL SUMS			0.23	0.87	0.60
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	0.90	0.65
							LOS			A	D *	B

N = NORTHBOUND, S = SOUTHBOUND.
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = KICKAPOO TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	61	226	226	0.04	0.13	0.13
NT	1	1	1	1700	1700	1700	5	19	19	0.00	0.01	0.01
NR	0	0	0	0	0	0	60	223	223	0.00	0.00	0.00
SL	1	1	0	1700	1700	0	1	4	4	0.00	0.00	0.00
ST	1	1	1	1700	1700	1700	1	4	4	0.00	0.00	0.00
SR	0	0	0	0	0	0	3	11	11	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	22	82	82	0.01	0.05	0.05
ET	2	2	3	3400	3400	5100	782	2901	2901	0.23	0.85	0.57
ER	0	0	0	0	0	0	61	226	226	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	119	119	0.02	0.07	0.07
WT	2	2	3	3400	3400	5100	693	2571	2571	0.20	0.76	0.50
WR	0	0	0	0	0	0	9	33	33	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.04	0.14	0.14
							EAST/WEST CRITICAL SUMS			0.25	0.92	0.64
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.08	0.80
							LOS			A	F *	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = DEER TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	114	443	443	0.07	0.26	0.26
NT	1	1	1	1700	1700	1700	30	111	111	0.02	0.07	0.07
NR	1	1	1	1700	1700	1700	50	186	186	0.03	0.11	0.11
SL	0	0	1	0	0	1700	16	59	59	0.00	0.00	0.03
ST	1	1	1	1700	1700	1700	8	30	30	0.00	0.02	0.02
SR	0	0	0	0	0	0	133	493	493	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	37	137	137	0.02	0.08	0.08
ET	2	2	3	3400	3400	5100	741	2749	2749	0.22	0.81	0.54
ER	0	0	0	0	0	0	65	241	241	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	23	85	85	0.01	0.05	0.05
WT	2	2	3	3400	3400	5100	616	2285	2285	0.18	0.67	0.45
WR	0	0	0	0	0	0	74	275	275	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.28	0.28
							EAST/WEST CRITICAL SUMS			0.23	0.86	0.59
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.32	1.16	0.89
							LOS			A	F *	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 61-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = ACOMA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	68	252	252	0.00	0.00	0.15
NT	1	1	1	1700	1700	1700	28	104	104	0.02	0.06	0.06
NR	0	0	0	0	0	0	38	141	141	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	86	319	319	0.05	0.19	0.19
ST	1	1	1	1700	1700	1700	42	156	156	0.02	0.09	0.09
SR	0	0	0	0	0	0	22	82	82	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	15	56	56	0.01	0.03	0.03
ET	2	2	3	3400	3400	5100	732	2716	2716	0.22	0.80	0.53
ER	0	0	0	0	0	0	30	14	14	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	63	234	234	0.04	0.14	0.14
WT	2	2	3	3400	3400	5100	622	2308	2308	0.18	0.68	0.45
WR	0	0	0	0	0	0	52	193	193	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.07	0.25	0.25
							EAST/WEST CRITICAL SUMS			0.25	0.94	0.67
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.34	1.21	0.94
							LOS			A	F *	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 61-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = PALM AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	95	352	352	0.00	0.00	0.21
NT	1	1	1	1700	1700	1700	8	30	30	0.00	0.02	0.02
NR	0	0	0	0	0	0	48	178	178	0.00	0.00	0.00
SL	0	0	1	0	0	1700	18	67	67	0.00	0.00	0.04
ST	1	1	1	1700	1700	1700	8	30	30	0.00	0.02	0.02
SR	0	0	0	0	0	0	151	560	560	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	46	171	171	0.03	0.10	0.10
ET	2	2	3	3400	3400	5100	761	2823	2823	0.22	0.83	0.55
ER	0	0	0	0	0	0	113	419	419	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	32	119	119	0.02	0.07	0.07
WT	2	2	3	3400	3400	5100	830	3079	3079	0.24	0.91	0.60
WR	0	0	0	0	0	0	61	226	226	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.00	0.02	0.22
							EAST/WEST CRITICAL SUMS			0.27	1.01	0.70
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.29	1.05	0.94
							LOS			A	F *	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SAGE AVE.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	2	1700	1700	3400	225	835	835	0.13	0.49	0.25
NT	1	1	1	1700	1700	1700	16	60	60	0.01	0.04	0.04
NR	0	0	0	0	0	0	18	67	67	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	65	241	241	0.04	0.14	0.14
ST	1	1	1	1700	1700	1700	16	59	59	0.01	0.03	0.03
SR	1	1	1	1700	1700	1700	22	82	82	0.01	0.05	0.05
EL	1	1	1	1700	1700	1700	44	163	163	0.03	0.10	0.10
ET	2	2	3	3400	3400	5100	776	2879	2879	0.23	0.85	0.56
ER	0	0	0	0	0	0	197	731	731	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	54	200	200	0.03	0.12	0.12
WT	2	2	3	3400	3400	5100	676	2508	2508	0.20	0.74	0.49
WR	0	0	0	0	0	0	76	289	289	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.14	0.53	0.28
							EAST/WEST CRITICAL SUMS			0.26	0.95	0.68
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.42	1.51	0.98
							LOS			A	F *	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = SR-247 - JOSHUA LN.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	2	1700	1700	3400	82	304	304	0.05	0.18	0.09
NT	1	1	3	1700	1700	5100	150	557	557	0.09	0.33	0.11
NR	0	0	1	0	0	1700	26	96	96	0.00	0.00	0.06
SL	1	1	2	1700	1700	3400	138	512	512	0.08	0.30	0.15
ST	1	1	3	1700	1700	5100	210	779	779	0.12	0.46	0.15
SR	0	0	1	0	0	1700	255	946	946	0.00	0.00	0.56
EL	1	1	2	1700	1700	3400	212	786	786	0.12	0.46	0.23
ET	2	2	3	3400	3400	5100	652	2419	2419	0.19	0.71	0.47
ER	0	0	1	0	0	1700	66	245	245	0.00	0.00	0.14
WL	1	1	2	1700	1700	3400	127	471	471	0.07	0.28	0.14
WT	2	2	3	3400	3400	5100	575	2133	2133	0.17	0.63	0.42
WR	0	0	1	0	0	1700	162	601	601	0.00	0.00	0.35
							NORTH/SOUTH CRITICAL SUMS			0.17	0.64	0.41
							EAST/WEST CRITICAL SUMS			0.29	1.09	0.65
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.48	1.75	1.08
							LOS			A	F *	F

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = WARREN VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	82	304	304	0.00	0.00	0.18
NT	1	1	1	1700	1700	1700	14	52	52	0.01	0.03	0.03
NR	0	0	0	0	0	0	44	163	163	0.00	0.00	0.00
SL	0	0	1	0	0	1700	20	74	74	0.00	0.00	0.04
ST	1	1	1	1700	1700	1700	9	33	33	0.01	0.02	0.02
SR	0	0	0	0	0	0	42	156	156	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	33	122	122	0.02	0.07	0.07
ET	2	2	3	3400	3400	5100	815	3024	3024	0.24	0.89	0.59
ER	0	0	0	0	0	0	44	164	164	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	17	63	63	0.01	0.04	0.04
WT	2	2	3	3400	3400	5100	355	1317	1317	0.10	0.39	0.26
WR	0	0	0	0	0	0	22	82	82	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.03	0.20
							EAST/WEST CRITICAL SUMS			0.25	0.93	0.63
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.28	0.98	0.85
							LOS			A	E *	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = BALSA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	38	141	141	0.02	0.08	0.08
NT	1	1	1	1700	1700	1700	31	115	115	0.02	0.07	0.07
NR	0	0	0	0	0	0	26	96	96	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	48	178	178	0.03	0.10	0.10
ST	1	1	1	1700	1700	1700	14	52	52	0.01	0.03	0.03
SR	0	0	0	0	0	0	62	230	230	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	21	78	78	0.01	0.05	0.05
ET	2	2	3	3400	3400	5100	824	3057	3057	0.24	0.90	0.60
ER	0	0	0	0	0	0	72	267	267	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	22	82	82	0.01	0.05	0.05
WT	2	2	3	3400	3400	5100	353	1310	1310	0.10	0.39	0.26
WR	0	0	0	0	0	0	82	304	304	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.05	0.17	0.17
							EAST/WEST CRITICAL SUMS			0.26	0.95	0.65
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.14	0.84
							LOS			A	F *	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = AVALON DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	1	1	1	1700	1700	1700	97	360	360	0.06	0.21	0.21
NT	1	1	1	1700	1700	1700	24	89	89	0.01	0.05	0.05
NR	0	0	0	0	0	0	56	208	208	0.00	0.00	0.00
SL	1	1	1	1700	1700	1700	12	45	45	0.01	0.03	0.03
ST	1	1	1	1700	1700	1700	6	22	22	0.00	0.01	0.01
SR	0	0	0	0	0	0	34	126	126	0.00	0.00	0.00
EL	1	1	1	1700	1700	1700	28	104	104	0.02	0.06	0.06
ET	2	2	3	3400	3400	5100	718	2664	2664	0.21	0.78	0.52
ER	0	0	0	0	0	0	64	237	237	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	38	141	141	0.02	0.08	0.08
WT	2	2	3	3400	3400	5100	279	1035	1035	0.08	0.30	0.20
WR	0	0	0	0	0	0	7	26	26	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.22	0.22
							EAST/WEST CRITICAL SUMS			0.23	0.87	0.61
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.31	1.11	0.85
							LOS			A	F *	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-62
PEAK HOUR = PM
LOCATION = YUCCA MESA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	113	419	419	0.00	0.00	0.25
NT	1	1	1	1700	1700	1700	14	52	52	0.01	0.03	0.03
NR	0	0	0	0	0	0	15	56	56	0.00	0.00	0.00
SL	0	0	1	0	0	1700	26	96	96	0.00	0.00	0.06
ST	1	1	1	1700	1700	1700	12	45	45	0.01	0.03	0.03
SR	0	0	0	0	0	0	229	650	650	0.00	0.00	0.00
EL	1	1	2	1700	1700	3400	172	638	638	0.10	0.38	0.19
ET	2	2	3	3400	3400	5100	586	2174	2174	0.17	0.64	0.43
ER	0	0	0	0	0	0	31	115	115	0.00	0.00	0.00
WL	1	1	1	1700	1700	1700	21	78	78	0.01	0.05	0.05
WT	2	2	3	3400	3400	5100	660	2449	2449	0.19	0.72	0.48
WR	0	0	0	0	0	0	54	200	200	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.01	0.03	0.27
							EAST/WEST CRITICAL SUMS			0.30	1.10	0.67
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.33	1.15	0.96
							LOS			A	F	E

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = ONAGA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	45	167	167	0.00	0.00	0.10
NT	1	1	2	1700	1700	3400	65	241	241	0.04	0.14	0.07
NR	0	0	0	0	0	0	43	160	160	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	436	436	0.00	0.00	0.26
ST	1	1	2	1700	1700	3400	101	375	375	0.06	0.22	0.11
SR	0	0	0	0	0	0	55	204	204	0.00	0.00	0.00
EL	0	0	1	0	0	1700	72	267	267	0.00	0.00	0.16
ET	1	1	2	1700	1700	3400	281	1043	1043	0.17	0.61	0.31
ER	0	0	0	0	0	0	54	200	200	0.00	0.00	0.00
WL	0	0	1	0	0	1700	47	174	174	0.00	0.00	0.10
WT	1	1	2	1700	1700	3400	280	1039	1039	0.16	0.61	0.31
WR	0	0	0	0	0	0	134	497	497	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.22	0.33
							EAST/WEST CRITICAL SUMS			0.17	0.61	0.46
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.25	0.85	0.81
							LOS			A	D	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = JOSHUA DR.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	0	0	0	0	42	156	156	0.00	0.00	0.00
NT	1	1	2	1700	1700	3400	100	371	371	0.06	0.22	0.11
NR	0	0	0	0	0	0	8	30	30	0.00	0.00	0.00
SL	0	0	0	0	0	0	21	78	78	0.00	0.00	0.00
ST	1	1	2	1700	1700	3400	32	119	119	0.02	0.07	0.04
SR	0	0	0	0	0	0	11	41	41	0.00	0.00	0.00
EL	0	0	0	0	0	0	32	119	119	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	71	263	263	0.04	0.15	0.15
ER	0	0	0	0	0	0	56	208	208	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	45	45	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	40	148	148	0.02	0.09	0.09
WR	0	0	0	0	0	0	32	119	119	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.06	0.22	0.11
							EAST/WEST CRITICAL SUMS			0.04	0.15	0.15
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.12	0.39	0.28
							LOS			A	A	A

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = PAXTON RD.

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	62	230	230	0.00	0.00	0.14
NT	1	1	2	1700	1700	3400	529	1963	1963	0.31	1.15	0.58
NR	0	0	0	0	0	0	31	115	115	0.00	0.00	0.00
SL	0	0	1	0	0	1700	71	263	263	0.00	0.00	0.15
ST	1	1	2	1700	1700	3400	442	1640	1640	0.26	0.96	0.48
SR	0	0	0	0	0	0	0	4	4	0.00	0.00	0.00
EL	0	0	0	0	0	0	15	56	56	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	12	45	45	0.01	0.03	0.03
ER	0	0	0	0	0	0	19	70	70	0.00	0.00	0.00
WL	0	0	0	0	0	0	12	45	45	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	4	4	0.00	0.00	0.00
WR	0	0	0	0	0	0	20	74	74	0.00	0.00	0.00
							NORTH/SOUTH CRITICAL SUMS			0.31	1.15	0.73
							EAST/WEST CRITICAL SUMS			0.01	0.03	0.03
							CLEARANCE			0.02	0.02	0.02
							ICU VALUE			0.34	1.20	0.78
							LOS			A	F	C

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = SR-247
PEAK HOUR = PM
LOCATION = SKYLINE DR. – BUENA VISTA

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	18	67	67	0.00	0.00	0.04
NT	1	1	2	1700	1700	3400	159	590	590	0.09	0.35	0.17
NR	0	0	0	0	0	0	29	108	108	0.00	0.00	0.00
SL	0	0	1	0	0	1700	42	156	156	0.00	0.00	0.09
ST	1	1	2	1700	1700	3400	427	1584	1584	0.25	0.93	0.47
SR	0	0	0	0	0	0	42	156	156	0.00	0.00	0.00
EL	0	0	0	0	0	0	0	4	4	0.00	0.00	0.00
ET	1	1	1	1700	1700	1700	2	7	7	0.00	0.00	0.00
ER	0	0	0	0	0	0	14	52	52	0.00	0.00	0.00
WL	0	0	0	0	0	0	52	193	193	0.00	0.00	0.00
WT	1	1	1	1700	1700	1700	0	4	4	0.00	0.00	0.00
WR	0	0	0	0	0	0	0	4	4	0.00	0.00	0.00
									NORTH/SOUTH CRITICAL SUMS	0.25	0.93	0.51
									EAST/WEST CRITICAL SUMS	0.00	0.00	0.00
									CLEARANCE	0.02	0.02	0.02
									ICU VALUE	0.27	0.95	0.53
									LOS	A	E	A

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700

INTERSECTION CAPACITY UTILIZATION ANALYSIS

ARTERIAL = JOSHUA LN.
PEAK HOUR = PM
LOCATION = YUCCA TRAIL

MOVEMENT	# OF LANES	ALT #1 PROP. LANES	LANES WITH MITIGA.	EXISTING CAPACITY	PROPOSE CAPACITY	PROPOSE CAPACITY	1993 EXISTING VOLUME	ALT. #1 PLAN	BUILD OUT WITH MITIGA.	1993 EXISTING V/C	ALT. #1 PLAN	BUILD OUT WITH MITIGA.
NL	0	0	1	0	0	1700	20	74	74	0.00	0.00	0.04
NT	1	1	2	1700	1700	3400	87	323	323	0.05	0.19	0.10
NR	0	0	0	0	0	0	45	167	167	0.00	0.00	0.00
SL	0	0	1	0	0	1700	118	438	438	0.00	0.00	0.26
ST	1	1	2	1700	1700	3400	117	434	434	0.07	0.26	0.13
SR	0	0	0	0	0	0	56	208	208	0.00	0.00	0.00
EL	0	0	1	0	0	1700	120	445	445	0.00	0.00	0.26
ET	1	1	2	1700	1700	3400	304	1126	1126	0.18	0.66	0.33
ER	0	0	0	0	0	0	60	223	223	0.00	0.00	0.00
WL	0	0	1	0	0	1700	48	178	178	0.00	0.00	0.10
WT	1	1	2	1700	1700	3400	215	798	798	0.13	0.47	0.23
WR	0	0	0	0	0	0	151	560	560	0.00	0.00	0.00
									NORTH/SOUTH CRITICAL SUMS	0.07	0.26	0.35
									EAST/WEST CRITICAL SUMS	0.18	0.66	0.50
									CLEARANCE	0.02	0.02	0.02
									ICU VALUE	0.27	0.94	0.87
									LOS	A	E	D

N = NORTHBOUND, S = SOUTHBOUND
E = EASTBOUND, W = WESTBOUND
L = LEFT, T = THROUGH, R = RIGHT
N.S. = NOT SIGNALIZED
LOS = LEVEL OF SERVICE
* = CRITICAL MOVEMENTS

00-60 = LOS A 81-90 = LOS D
61-70 = LOS B 91-100= LOS E
71-80 = LOS C 101 + = LOS F

THROUGH LANE CAPACITY =	1700	1700	1700
LEFT TURN LANE CAPACITY =	1700	1700	1700