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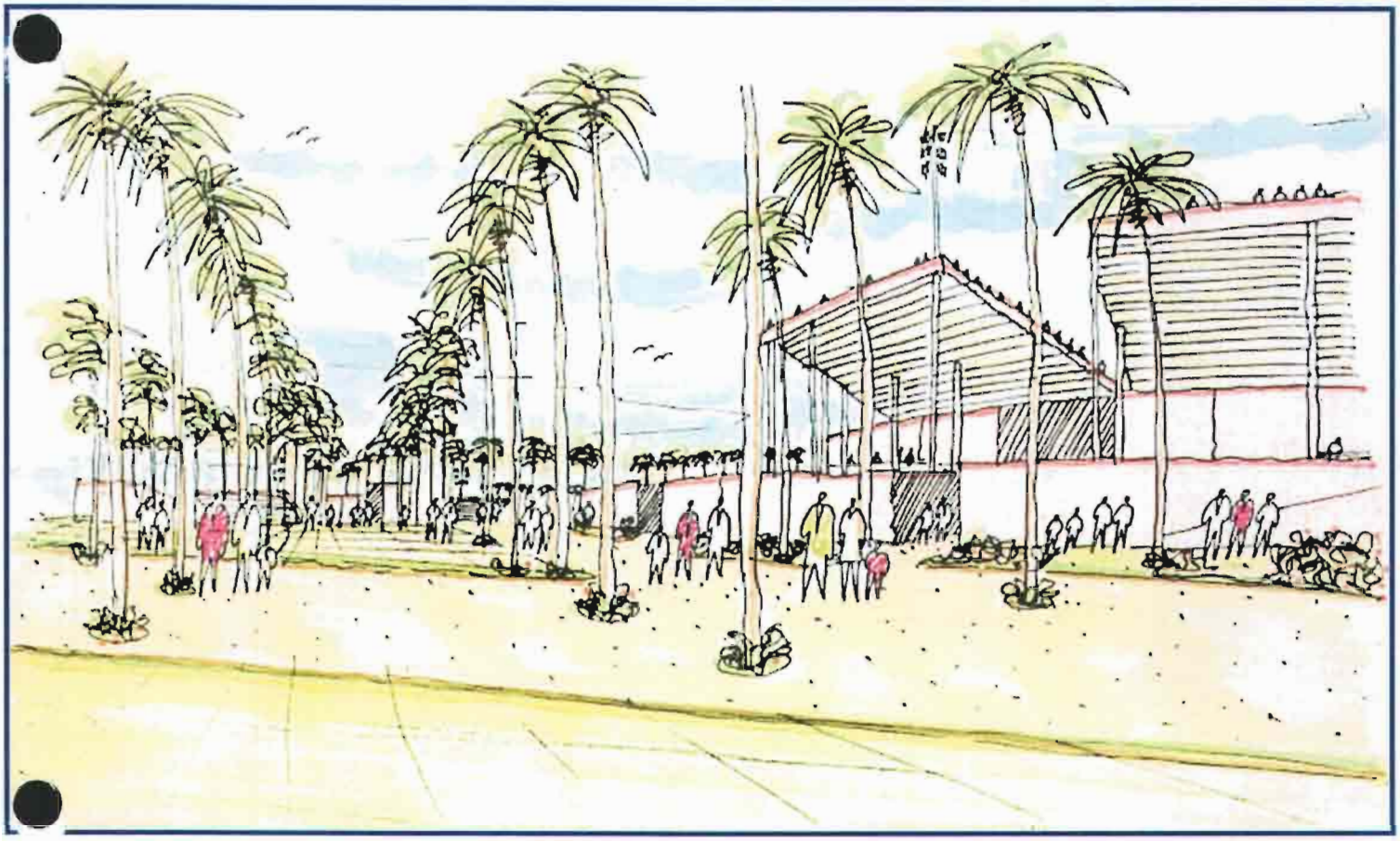

Program Environmental Impact Report

GARDEN OF CHAMPIONS

VOLUME II

Appendices 11.2 - 11.11

SCH NO. 98041039

Comprehensive General Plan Amendment (CGPA No. 446)
Change of Zone (CZ No. 6349)
Conditional Use Permit (CUP No. 3258)
Commercial Parcel Maps (CPM Nos. 28833 and 28812)
Bay Club Drive (Future) Road Abandonment

JULY 15, 1998

Prepared For: **County of Riverside**

Project Applicant: **PM Sports Management Corporation**

Prepared By: **Robert Bein, William Frost & Associates**

DRAFT
PROGRAM ENVIRONMENTAL IMPACT REPORT NO. 403
(GARDEN OF CHAMPIONS)

VOLUME II

APPENDICES 11.2 - 11.11

SCH No. 98041039

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July 15, 1998

JN 301524

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GARDEN OF CHAMPIONS

TRAFFIC ANALYSIS

County of Riverside

Prepared for

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INTRODUCTION

This study analyzes the forecast traffic impact of the proposed Garden of Champions project in the City of Indian Wells sphere of influence in unincorporated Riverside County. The proposed project is planned to be constructed in two phases.

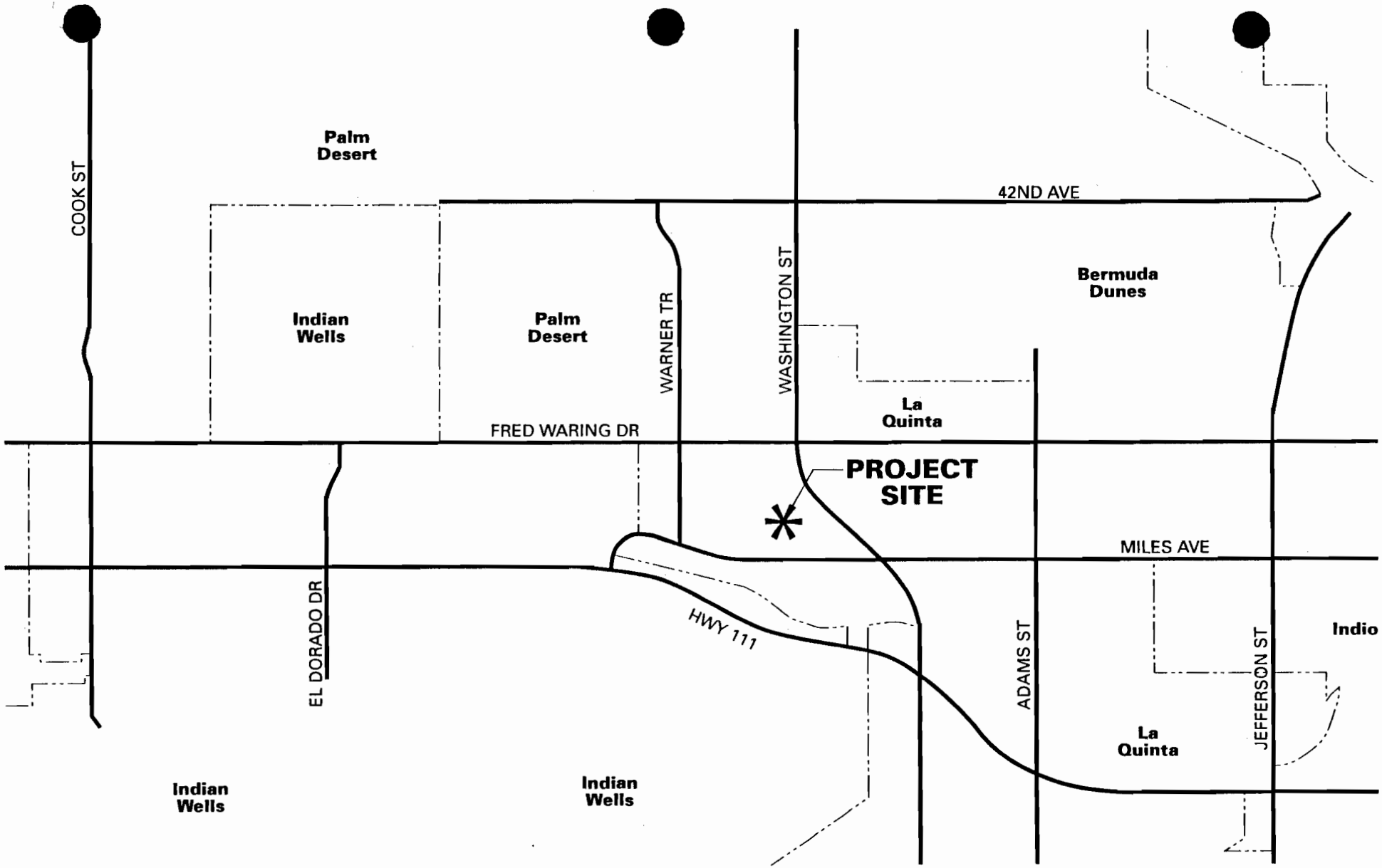
The first phase of the project consists of a tennis facility to host the annual Garden of Champions Tennis Event approximately two weeks out of the year, and will serve as a tennis club the remainder of the year. The second or final phase of the project consists of two 350-room hotels, 140 casita suites, a 12-pump service station/car wash/mini mart facility, and 68,000 square feet of quality restaurants.

As shown in Exhibit 1, the proposed project is located west of Washington Street, between Fred Waring Drive and Miles Avenue.

Study Area

The following ten study intersections, shown in Exhibit 2, were identified for analysis in this study based on discussions with staff at the County of Riverside and the Cities of Palm Desert, Indian Wells, and La Quinta:

1) Highway 111/Cook Street;
2) Highway 111/El Dorado Drive;
3) Highway 111/Miles Avenue;
4) Highway 111/Washington Street;



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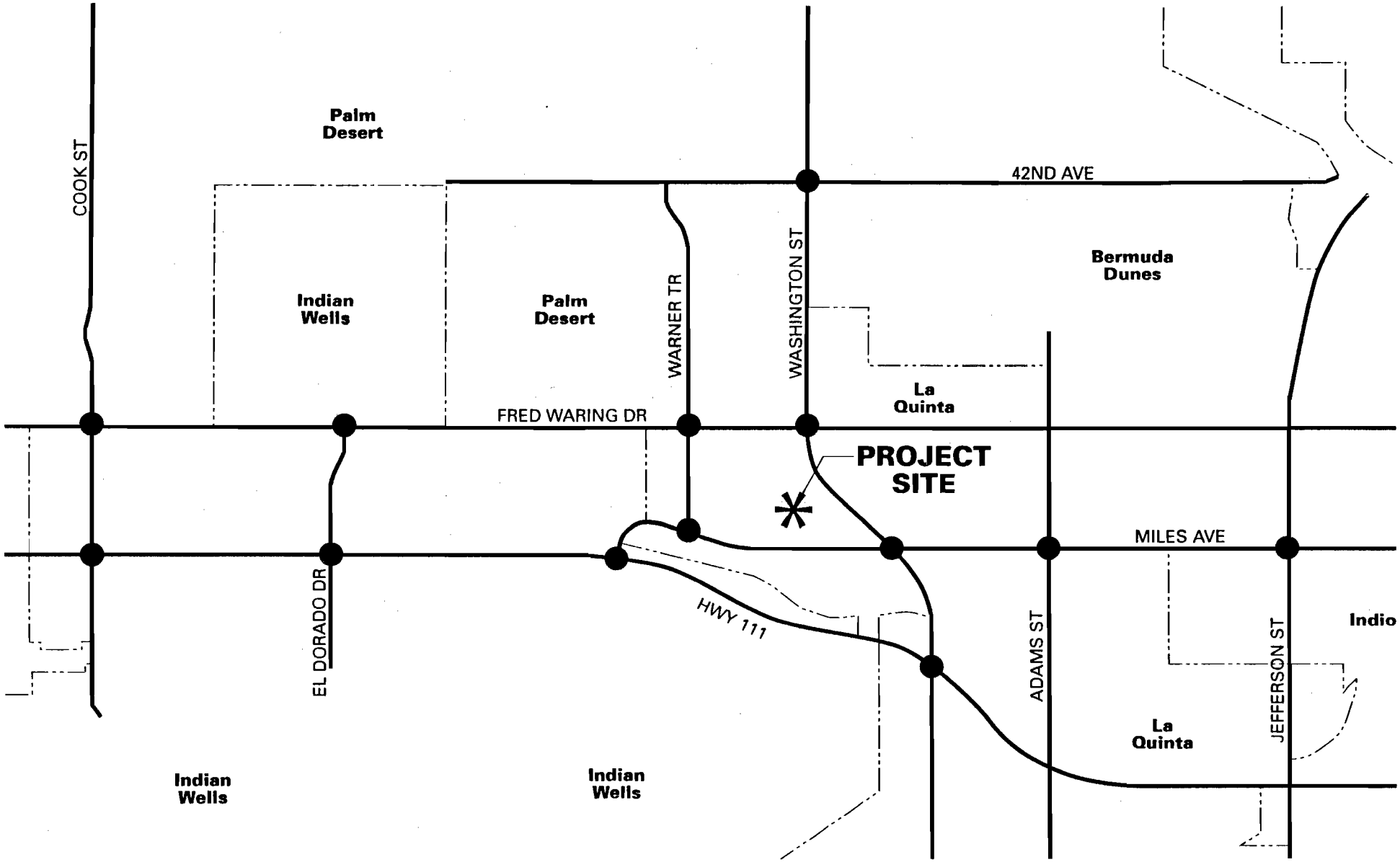
Project Location

Exhibit 1

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
4-98 JN 301524-5437



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Study Intersection

Study Intersections

Exhibit 2

BEIN, WILLIAM FROST & ASSOCIATES
JN 301524-5437

5) Fred Waring Drive/Cook Street;
6) Fred Waring Drive/El Dorado Drive;
7) Fred Waring Drive/Warner Trail;
8) Fred Waring Drive/Washington Street;
9) Miles Avenue/Warner Trail; and
10) Miles Avenue/Washington Street
11) Miles Avenue/Adams Street
12) Miles Avenue/Jefferson Street
13) 42nd Street/Washington Street

The analysis examines the above study intersections for the following traffic scenarios:

- existing conditions;
- existing plus phase 1 project conditions;
- existing plus phase 1 project plus cumulative conditions;
- existing-plus-project buildout conditions;
- existing-plus-project buildout plus cumulative conditions;
- existing plus phase 1 event project conditions;
- existing plus phase 1 event project plus cumulative conditions;
- existing-plus-project buildout plus event conditions; and
- existing-plus-project buildout plus event plus cumulative conditions.

All analysis scenarios assume that Miles Avenue is open to traffic between Highway 111 and Washington Street.

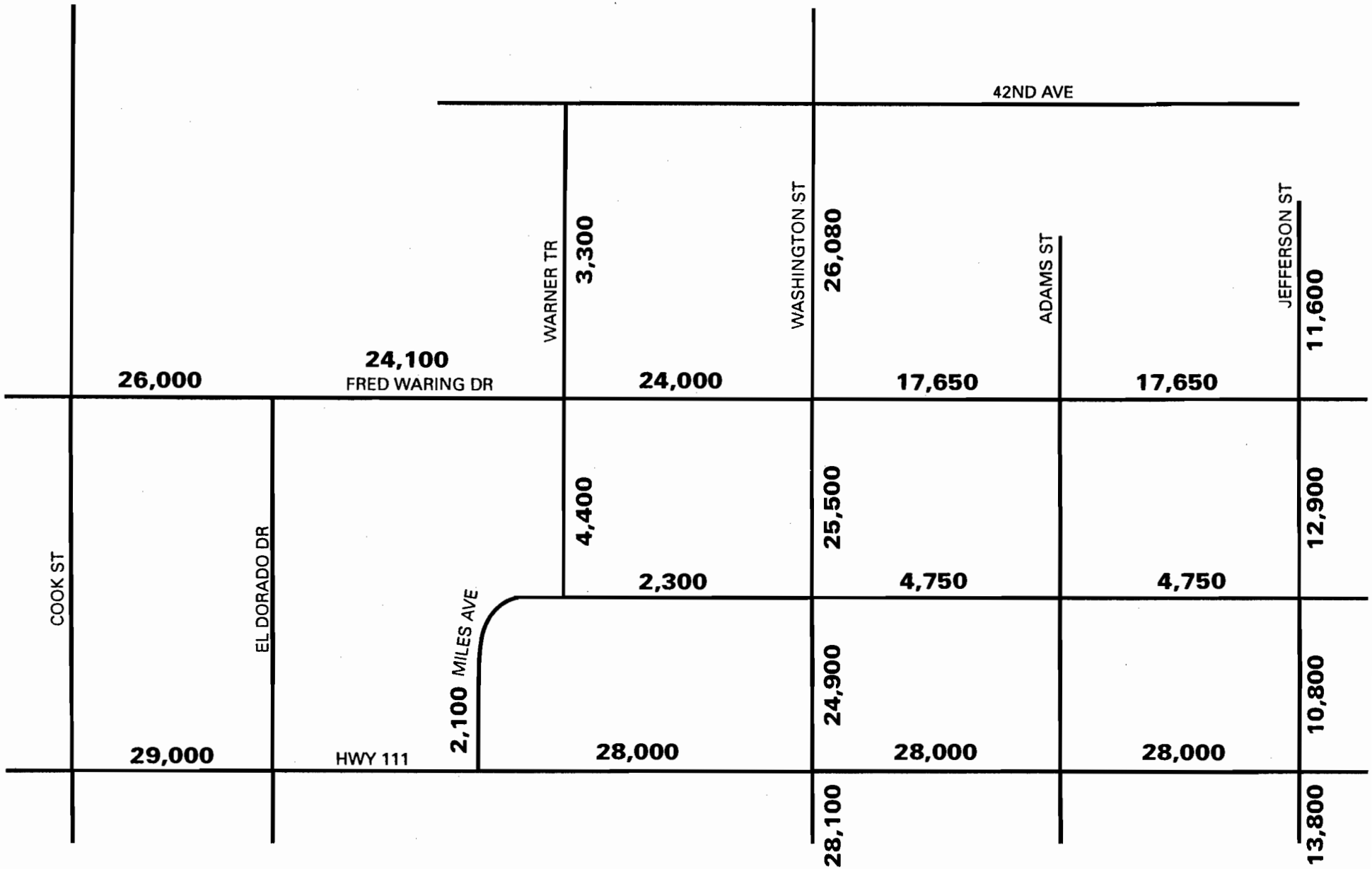
EXISTING CONDITIONS

Existing Daily Traffic Volumes

Exhibit 3 shows the existing average daily traffic (ADT) volumes for the roadway circulation system in the vicinity of the project site based on recent traffic count data supplied by the Coachella Valley Association of Governments (CVAG) and Caltrans. Existing traffic was manually redistributed to Miles Avenue to assuming that Miles Avenue is open to traffic between Highway 111 and Washington Street.

Existing Peak Hour Level of Service

To determine the existing operation of the roadway circulation system in the vicinity of the project site, existing a.m. and p.m. peak hour intersection movement counts were taken at the study intersections; detailed existing peak hour traffic count data is included in Appendix A.



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Existing ADT

Exhibit 3

BEIN, WILLIAM FROST & ASSOCIATES
JN 301524-5437
6-98

Exhibit 4 shows the existing a.m. peak hour and p.m. peak hour volumes at the study intersections, assuming that Miles Avenue is open to traffic between Highway 111 and Washington Street. Exhibit 5 shows how existing peak hour intersection volumes were redistributed to reflect the opening of Miles Avenue between Highway 111 and Washington Street, since Miles Avenue was closed when the existing peak hour traffic volumes were counted.

The Highway Capacity Manual (HCM) analysis methodology for *Signalized Intersections* and *Unsignalized Intersections* was utilized to determine the operating Level of Service (LOS) of the study intersections. With the exception of the Miles Avenue/Warner Trail intersection, all the study intersections are signalized

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A to LOS F, based on corresponding stopped delay per vehicle ratios for signalized and unsignalized intersections shown in Table 1.

Table 1
LOS & Delay Ranges

LOS	Delay	
	Signalized	Unsignalized
A	≤ 5.0	≤ 5.0
B	> 5.0 to ≤ 15.0	> 5.0 to ≤ 10.0
C	> 15.0 to ≤ 25.0	> 10.0 to ≤ 20.0
D	> 25.0 to ≤ 40.0	> 20.0 to ≤ 30.0
E	> 40.0 to ≤ 60.0	> 30.0 to ≤ 45.0
F	> 60.0	> 45.0

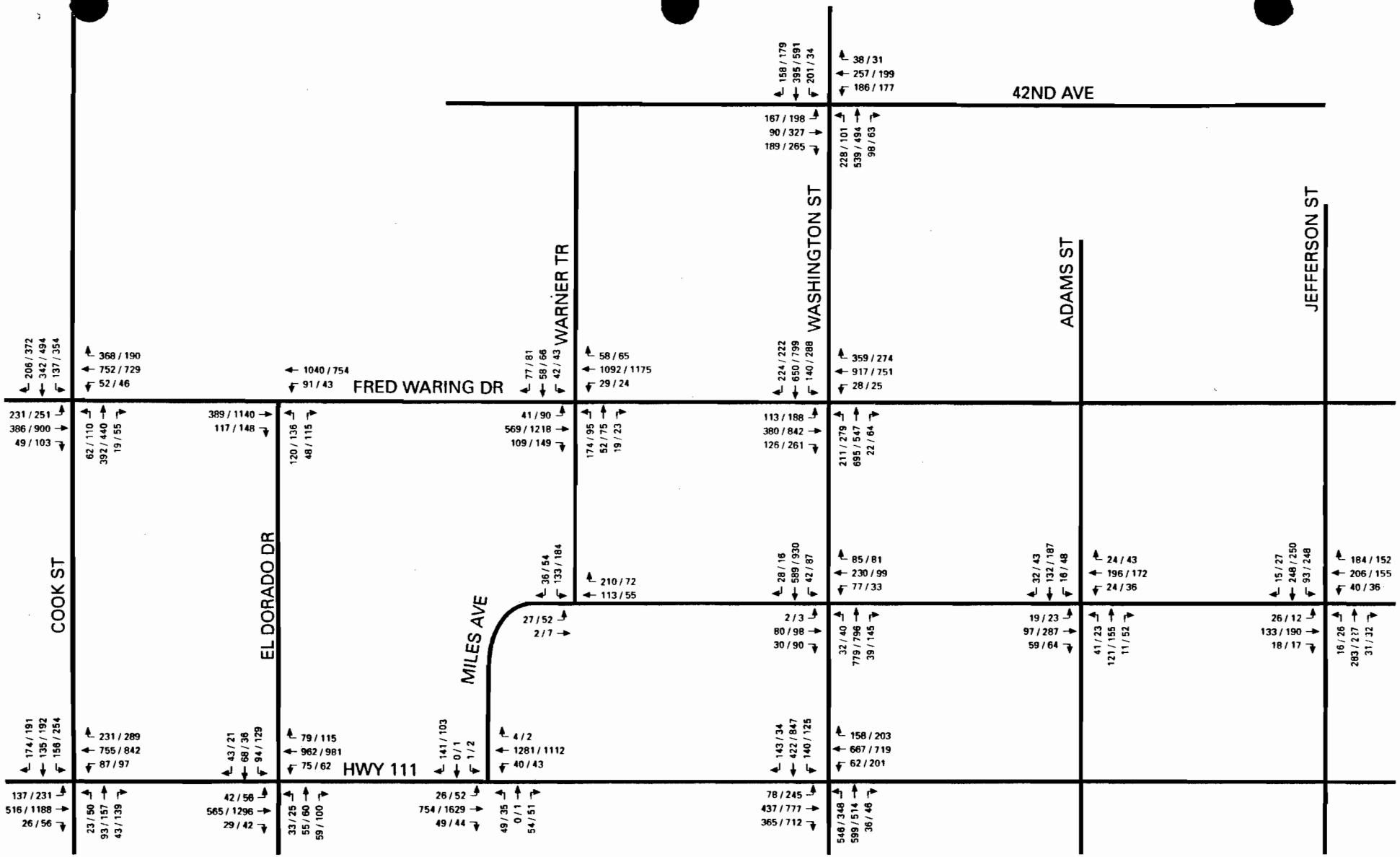
LOS operation from LOS A to LOS D is considered acceptable peak hour LOS operation by the County of Riverside, with LOS E and LOS F is considered an unacceptable, requiring improvement or mitigation to achieve LOS D or better operation.

Table 2 summarizes the existing a.m. and p.m. peak hour LOS of the study intersections based on the existing peak hour intersection turning movements shown in Exhibit 4 with recommended improvements as necessary to achieve LOS D peak hour operation; detailed HCM calculation sheets are contained in Appendix B.

Table 2
Existing Delay & LOS

Intersection		Delay - LOS		Recommended Improvements
Highway 111 and		Base Case	Improved	-
Cook	AM	18.5-C	-	-
	PM	32.3-D	-	-
Eldorado	AM	20.5-C	-	-
	PM	22.3-C	-	-
Miles	AM	17.1-C	-	-
	PM	17.6-C	-	-
Washington	AM	27.8-D	-	-
	PM	20.5-C	-	-
Fred Waring and				
Cook	AM	17.0-C	-	-
	PM	19.6-C	-	-
Eldorado	AM	11.8-B	-	-
	PM	12.3-B	-	-
Warner Trail	AM	22.2-C	-	-
	PM	20.3-C	-	-
Washington	AM	* - F	38.0-D	Add 2 SB thru lanes & 1 NB thru lane
	PM	* - F	37.5-D	Add 2 SB thru lanes & 1 NB thru lane
Miles and				
Warner Trail	AM	2.2-A	-	-
	PM	3.6-A	-	-
Washington	AM	27.3-D	-	-
	PM	27.5-D	-	-
Adams	AM	14.9-B	-	-
	PM	17.6-C	-	-
Jefferson	AM	36.3-E	25.0-C	Signalize intersection
	PM	116.0-F	28.1-D	Signalize intersection
42nd and				
Washington	AM	32.5-D	-	-
	PM	34.9-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



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Existing (Miles Ave Open) AM/PM

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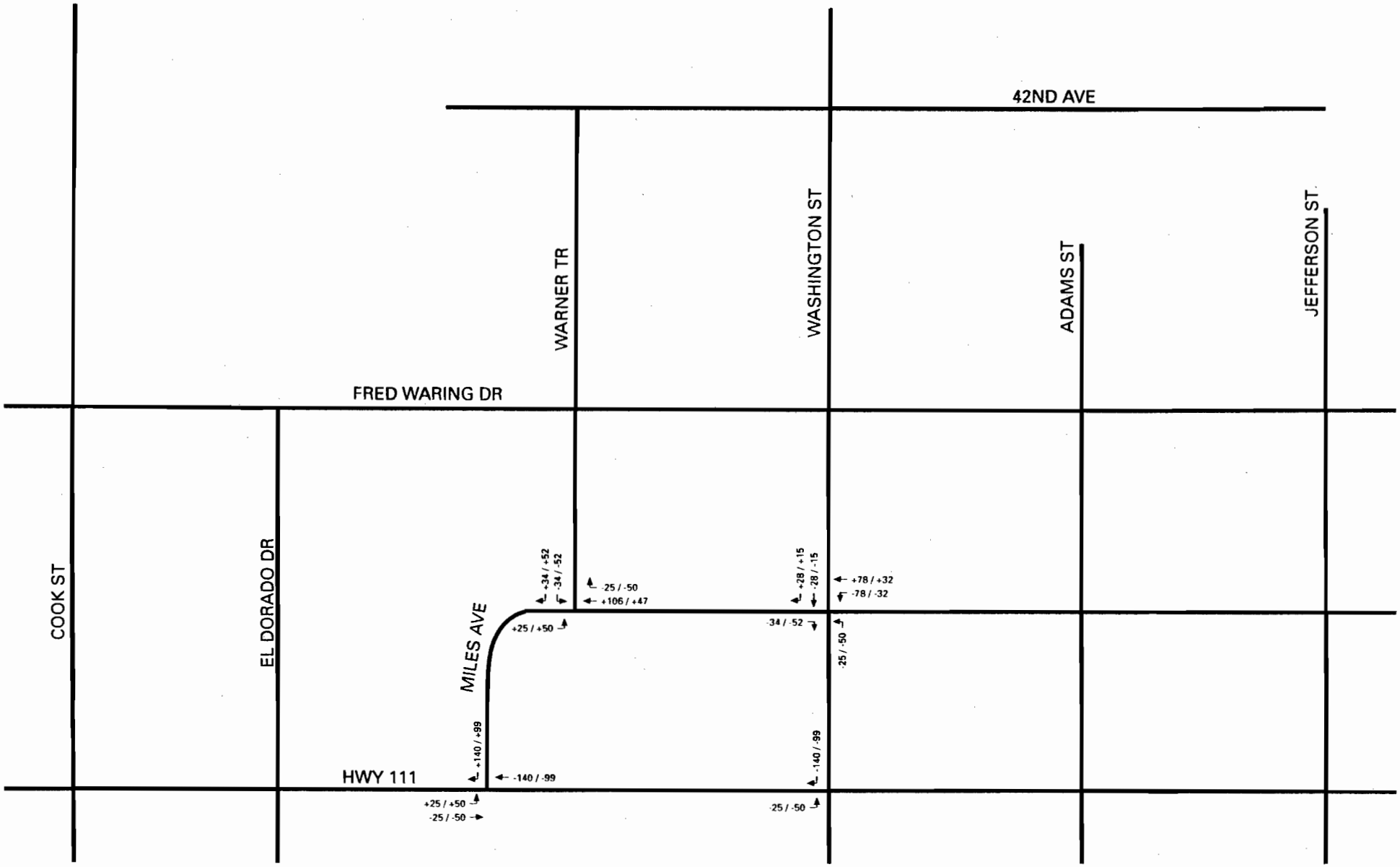
Exhibit 4



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Existing AM/PM Trips Resdistributed Per Miles Opening

Exhibit 5

RBF Rolf Ebein, William Frost & Associates
JN 301524-5437

As shown in Table 2, with the exception of the Fred Waring Drive/Washington Street intersection and the Miles Avenue/Jefferson Street intersection, the study intersections are currently operating at an acceptable LOS.

The addition of two southbound through lanes and one additional northbound through lane on Washington Street is recommended to address the existing deficiency at the Fred Waring Drive/Washington Street intersection, while signalization of the Miles Avenue/Jefferson Street results is recommended. As shown in Table 2, the recommended Washington Street improvement at Fred Waring results in the Fred Waring Drive/Washington Street intersection operating at an acceptable LOS D during both the a.m. and p.m. peak hours. Signalization of the Miles Avenue/Jefferson Street intersection is forecast to result in LOS C operation in the a.m. peak hour and LOS D operation in the p.m. peak hour.

PROJECT IMPACTS

Analysis Scenarios

The following eight traffic scenarios are examined in this analysis:

1) Phase 1 - consists of the tennis complex, which is planned to operate as a 300 to 400 member tennis club with 18 tennis courts available for play by the club membership on a regular basis when the annual tennis event is not held.

2) Phase 1 Plus Cumulative Conditions - consists of Phase 1, plus 10 percent growth in existing traffic volumes to represent cumulative traffic growth for approximately two years (based on review of CVAG traffic census data), when phase 1 is expected to be complete.

3) Project Buildout - consists of Phase 1, plus the remainder of the project consisting of two 350-room hotels, 140 casita suites, a 12 fuel pumping position/mini-mart/carwash service station, and 68,000 square feet of quality restaurants.

4) Project Buildout Plus Cumulative Conditions - consists of Project Buildout Conditions, plus 20 percent growth in existing traffic volumes to represent cumulative traffic growth for approximately five years (based on review of CVAG traffic census data).

5) Phase 1 Plus Annual Tennis Event - consists of the annual tennis event when only phase 1 of the project is complete, during which time the onsite tennis club would cease operation.

6) Phase 1 Plus Annual Tennis Event Plus Cumulative Conditions - consists of Phase 1 Annual Tennis Event Conditions, plus 10 percent growth in existing traffic volumes to represent cumulative traffic increases for approximately two years (based on review of CVAG traffic census data).

7) Project Buildout Annual Tennis Event Conditions - consists Project Buildout Conditions, plus the annual tennis event, during which time the onsite tennis club would cease operation.

8) Project Buildout Annual Tennis Event Plus Cumulative Conditions - consists of Project Buildout Annual Tennis Event Conditions, plus 20 percent growth in existing traffic volumes to represent cumulative traffic increases for approximately five years (based on review of CVAG traffic census data), when the project is expected to be built out.

Project Trip Generation

To determine the traffic impact of the proposed project, *Institute of Transportation Engineers (ITE) Trip Generation* rates were utilized for all planned land uses on site, with the exception of the annual tennis event, which is discussed later in this section. Table 3 summarizes the ITE trip generation rates utilized in this analysis for peak hour and daily conditions.

Table 3
Proposed Project ITE Trip Generation Rates

Land Use (ITE Code)	AM Peak Hour			PM Peak Hour			ADT
	In	Out	Total	In	Out	Total	
Tennis Club (491)	0.92/ court	0.92/ court	1.83/ court	1.84/ court	1.84/ court	3.67/ court	31.08/ court
Hotel (310)	0.29/ room	0.23/ room	0.52/ room	0.35/ room	0.26/ room	0.61/ room	8.24/ room
Casita Suites (311)	0.22/ suite	0.18/ suite	0.40/ suite	0.18/ suite	0.22/ suite	0.40/ suite	4.90/ suite
Service/Wash/Mart Station (846)	5.43/ pump	5.21/ pump	10.64/ pump	6.60/ pump	6.60/ pump	13.19/ pump	152.84/ pump
Quality Restaurant (831)	4.57/ 1000 sf	1.00/ 1000 sf	5.57/ 1000 sf	5.59/ 1000 sf	3.43/ 1000 sf	9.02/ 1000 sf	89.95/ 1000 sf

***Source:** Institute of Transportation Engineers*

Table 4 summarizes the forecast trip generation for the proposed project utilizing the trip generation rates contained in Table 3.

Table 4
Forecast Proposed Project Trip Generation

Land Use	AM Peak Hour			PM Peak Hour			ADT
	In	Out	Total	In	Out	Total	
Phase 1 Tennis Club - 18 courts	17	16	33	33	33	66	559
Total Phase 1	**17**	**16**	**33**	**33**	**33**	**66**	**559**
Phase 2 Hotel - 700 room	203	161	364	245	182	427	5,768
Casita Suites - 140 suites	31	25	56	25	31	56	686
Service/Wash/Mart Station - 12 pump positions	65	62	127	79	79	158	1,834
Quality Restaurant - 68,000 sq ft	311	68	379	380	233	613	6,117
Total Phase 2	**610**	**316**	**562**	**729**	**525**	**1,254**	**14,405**
Total Project Buildout	**627**	**332**	**595**	**762**	**558**	**1,320**	**14,964**

As shown in Table 4, phase 1 of the proposed project is forecast to generate approximately 33 a.m. peak hour trips, 66 p.m. peak hour trips, and 559 ADT. Buildout of the proposed project is forecast to generate approximately 595 a.m. peak hour trips, 1,320 p.m. peak hour trips, and 14,964 ADT.

Annual Tennis Event Trip Generation

To determine the forecast trip generation of the annual tennis event, existing daily traffic counts were taken on Friday and Saturday (March 13, 1998 and March 14, 1998) at this year's event to determine the number of cars entering and exiting the event parking sites at Miles Avenue and Eldorado Drive; detailed count data is included in Appendix A.

The ADT generation rate for the event was calculated by averaging the 24-hour Friday and Saturday event counts, adding 10 percent to the traffic counts to account for event staff, media, and players not assumed to utilize the public parking areas, and then dividing number of trips by the number of seats at this year's event (11,500 seats).

The a.m. peak hour trip generation rate was calculated by averaging this year's Friday and Saturday event counts during the 7:45 a.m. to 8:30 a.m. period when the street system surrounding the project site experienced its a.m. peak hour conditions, and then dividing number of trips by the number of seats at the event (11,500 seats).

Similarly, the p.m. peak hour trip generation rate was calculated by averaging this year's Friday and Saturday event counts during the 4:45 p.m. to 5:30 p.m. period when the street system surrounding the project site experienced its p.m. peak hour conditions, and then dividing number of trips by the number of seats at the event (11,500 seats).

Table 5 summarizes the calculated peak hour and daily trip generation rates calculated for the annual tennis event.

Table 5
Calculated Annual Tennis Event Trip Generation Rates

Event	AM Peak Hour			PM Peak Hour			ADT
	In	Out	Total	In	Out	Total	
Annual Tennis Event	0.030/ seat	0.008/ seat	0.038/ seat	0.036/ seat	0.085/ seat	0.121/ seat	1.23/ seat

Table 6 summarizes the forecast trip generation for the annual tennis event utilizing the trip generation rates contained in Table 5.

Table 6
Forecast Annual Tennis Event Trip Generation

Proposed Event	AM Peak Hour			PM Peak Hour			ADT
	In	Out	Total	In	Out	Total	
16,000 seat Annual Event	480	128	608	576	1,360	1,936	19,680

As shown in Table 6, the proposed annual tennis event is forecast to generate approximately 608 a.m. peak hour trips, 1,360 p.m. peak hour trips, and 19,680 ADT.

The forecast trip generation for the annual tennis event when Phase 1 of the project is complete is expected to be the same trip generation forecast shown in Table 6, since the phase 1 tennis club will cease operation during the event, and nothing else will have been constructed onsite during phase 1.

The trip generation for the annual tennis event when the project is built out is the trip generation forecast shown in Table 6, plus a percentage of the Phase 2 trip generation shown in Table 4. This analysis assumes that some trip capture will occur on the site between the annual event and the remainder of the land uses onsite also generating trips. No onsite trip capture discount is assumed for trip generated by the annual tennis event or the 12-pump position service/car wash/mini-mart station. However, during project buildout annual tennis

event conditions, trip generation discounts are assumed for the onsite hotels, casita suites and restaurants as shown in Table 7.

Table 7
Onsite Trip Capture Discount Assumptions

Land Use	Onsite Trip Capture Assumption	Trip Generation Discount
Annual Event	No onsite trip capture is assumed	0%
Hotels	60% of hotel rooms occupied by persons related to event	60%
Casita Suites	75% of casita suites occupied by persons related to event	75%
Service/Wash/Mart Station	No onsite trip capture is assumed	0%
Quality Restaurants	40% of restaurant patrons related to event	40%

Table 8 shows the trip generation of the project buildout annual tennis event forecast to impact the street system surrounding the project site when the site is built out, when factoring the project trip generation discount assumptions contained in Table 7.

Table 8
Forecast Project Buildout & Event Off-Site Trip Generation

Land Use	AM Peak Hour			PM Peak Hour			ADT
	In	Out	Total	In	Out	Total	
Annual Event	480	128	608	576	1,360	1,930	19,680
Hotel - 700 room	81	64	145	98	73	171	2,307
Casita Suites - 140 suites	7	7	14	6	8	14	172
Service/Wash/Mart Station - 12 pump positions	65	62	127	79	79	158	1,834
Quality Restaurant - 68,000 sq ft	187	41	228	228	140	368	3,670
Total Project & Event Off-Site Trips	**820**	**302**	**1,122**	**987**	**1,620**	**2,641**	**27,663**

As shown in Table 8, the annual event at project buildout is forecast to generate approximately 1,122 a.m. peak hour trips, 1,620 p.m. peak hour trips, and 27,663 ADT.

Project Trip Distribution

Exhibit 6 shows the forecast percent distribution of project generated trips based on discussions with the County transportation staff and the project applicant. Since this study focuses on project-related traffic impacts to the street system surrounding the project site, all project-generated trips are loaded onto Miles Avenue for distribution as shown in Exhibit 6.

Hence, the Miles Avenue/Washington Street intersection is assumed to be the sole access on Washington Street, when in reality, additional access locations may be allowed on Washington Street as individual components of the plan are processed through the County in greater detail. Therefore, as individual components of the project are processed through the County for review, additional focused traffic analyses should be prepared to specifically address the Miles Avenue/Washington Street intersection in concert with any other corresponding project site access locations.

Existing Plus Phase 1 Project Conditions

To determine existing plus phase 1 project conditions, the phase 1 project-generated trips shown in Table 4 were added to existing traffic volumes assuming the project trip percent distribution shown in Exhibit 6. Exhibit 7 shows the forecast assignment of project-generated ADT, and Exhibit 8 shows the forecast assignment of phase 1 project-generated a.m. and p.m. peak hour turning movements at the study intersections.

Existing Plus Phase 1 Project ADT Volumes

Exhibit 9 shows the forecast ADT volumes for existing plus phase 1 project conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Phase 1 Project Peak Hour Level of Service

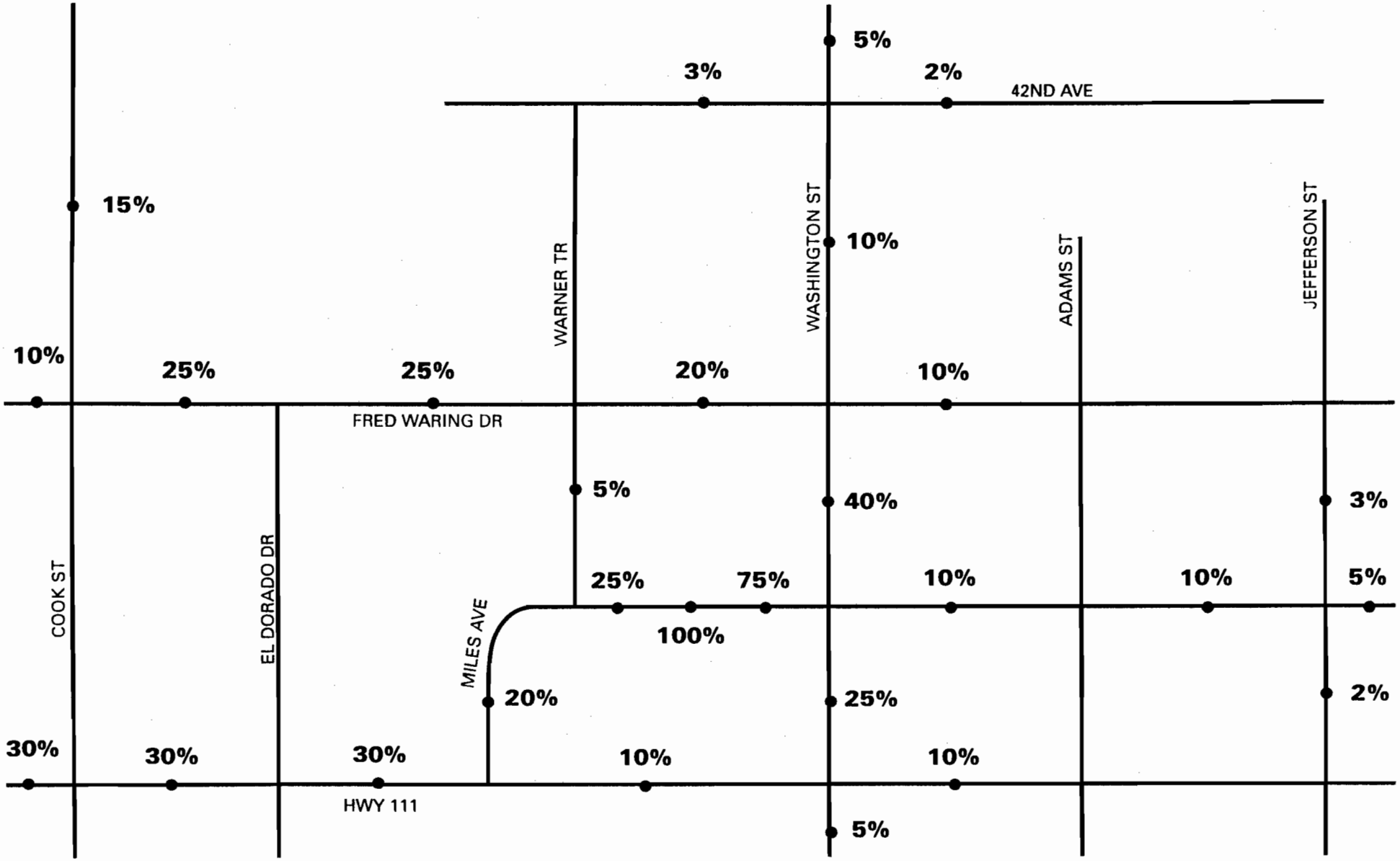
Exhibit 10 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing-plus-approved projects-plus-project conditions.

Table 9 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus phase 1 project conditions with and without recommended mitigation to maintain LOS D operation during peak hour conditions; detailed HCM calculation sheets are contained in Appendix B.

Table 9
Existing + Phase 1 Project Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base Case	Mitigated	-
Cook	AM	18.6-C	-	-
	PM	33.1-D	-	-
Eldorado	AM	20.5-C	-	-
	PM	22.7-C	-	-
Miles	AM	18.6-C	-	-
	PM	21.6-C	-	-
Washington	AM	27.9-D	-	-
	PM	21.4-C	-	-
Fred Waring and				
Cook	AM	17.0-C	-	-
	PM	19.7-C	-	-
Eldorado	AM	11.9-B	-	-
	PM	12.4-B	-	-
Warner Trail	AM	22.2-C	-	-
	PM	20.3-C	-	-
Washington	AM	36.8-D	-	None, assuming improvements recommended for existing deficiency
	PM	38.0-D	-	None, assuming improvements recommended for existing deficiency
Miles and				
Warner Trail	AM	2.2-A	-	-
	PM	3.6-A	-	-
Washington	AM	28.0-D	-	-
	PM	29.3-D	-	-
Adams	AM	20.1-C	-	-
	PM	21.7-C	-	-
Jefferson	AM	25.1-D	-	None, assuming improvements recommended for existing deficiency
	PM	28.2-D	-	None, assuming improvements recommended for existing deficiency
42nd and				
Washington	AM	32.6-D	-	-
	PM	35.0-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



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Project Trip Percent Distribution

Exhibit 6

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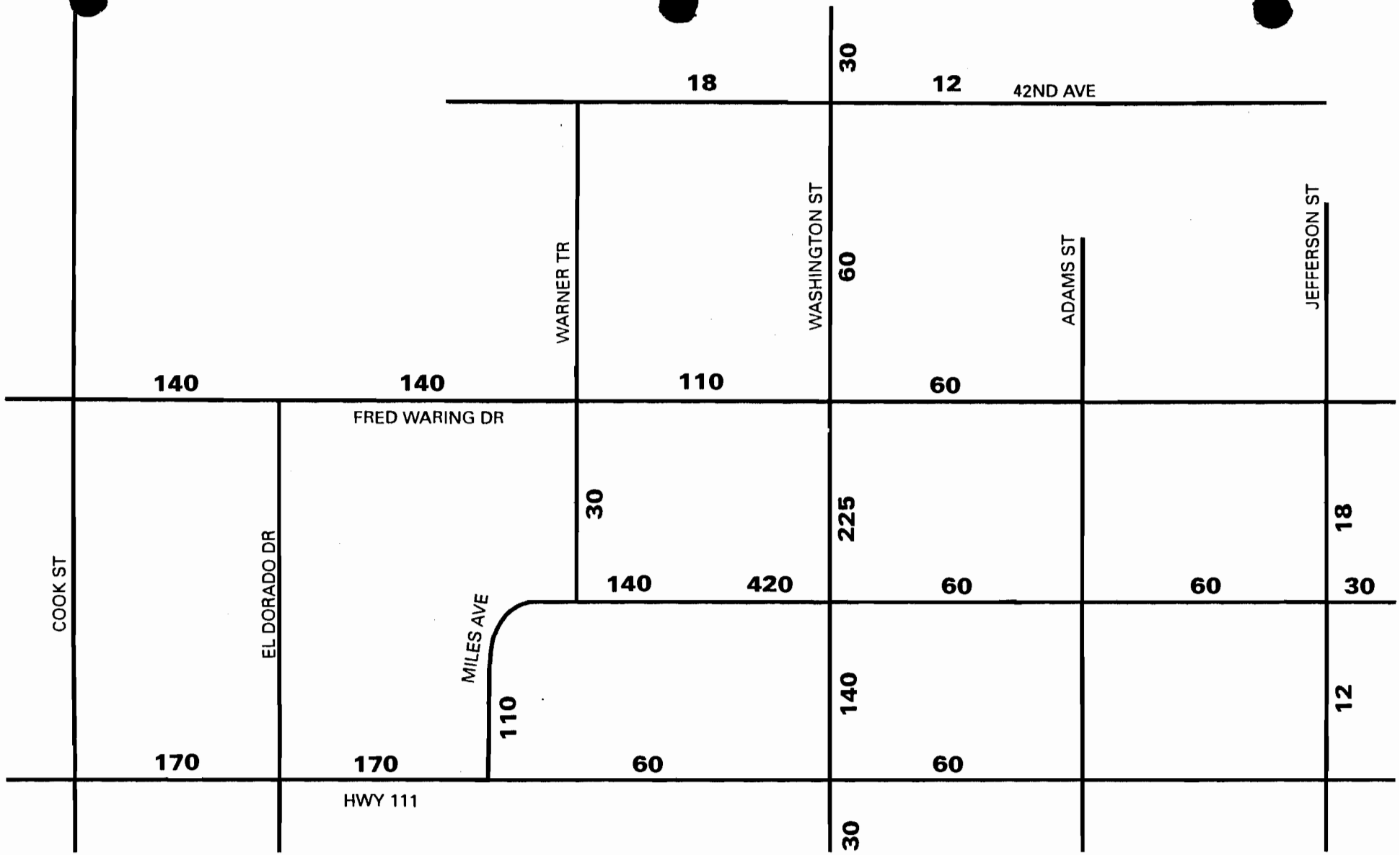
6-98 JN 301524-5437



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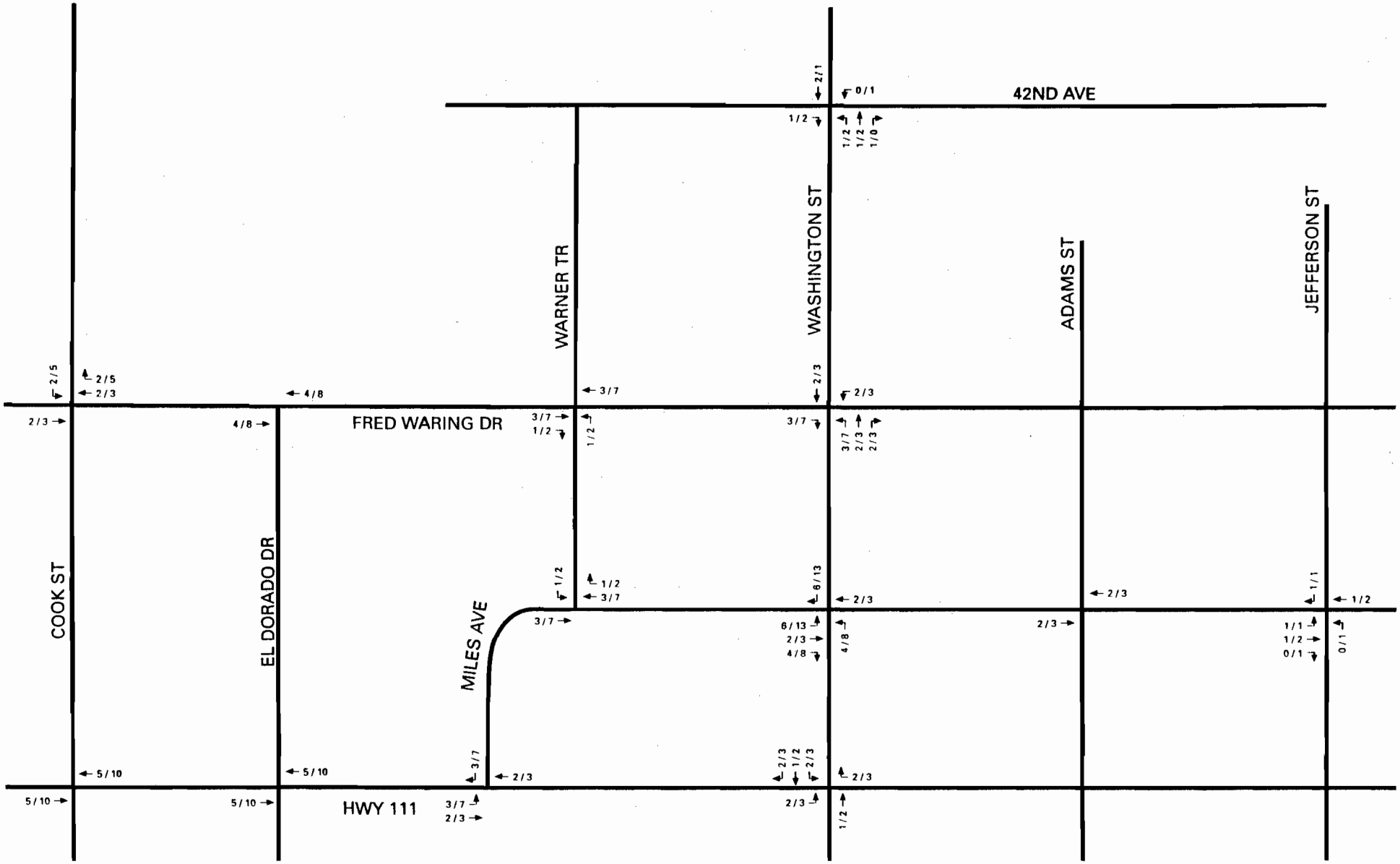
Phase I Project ADT

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
6-98 JN 301524-5437

Exhibit 7



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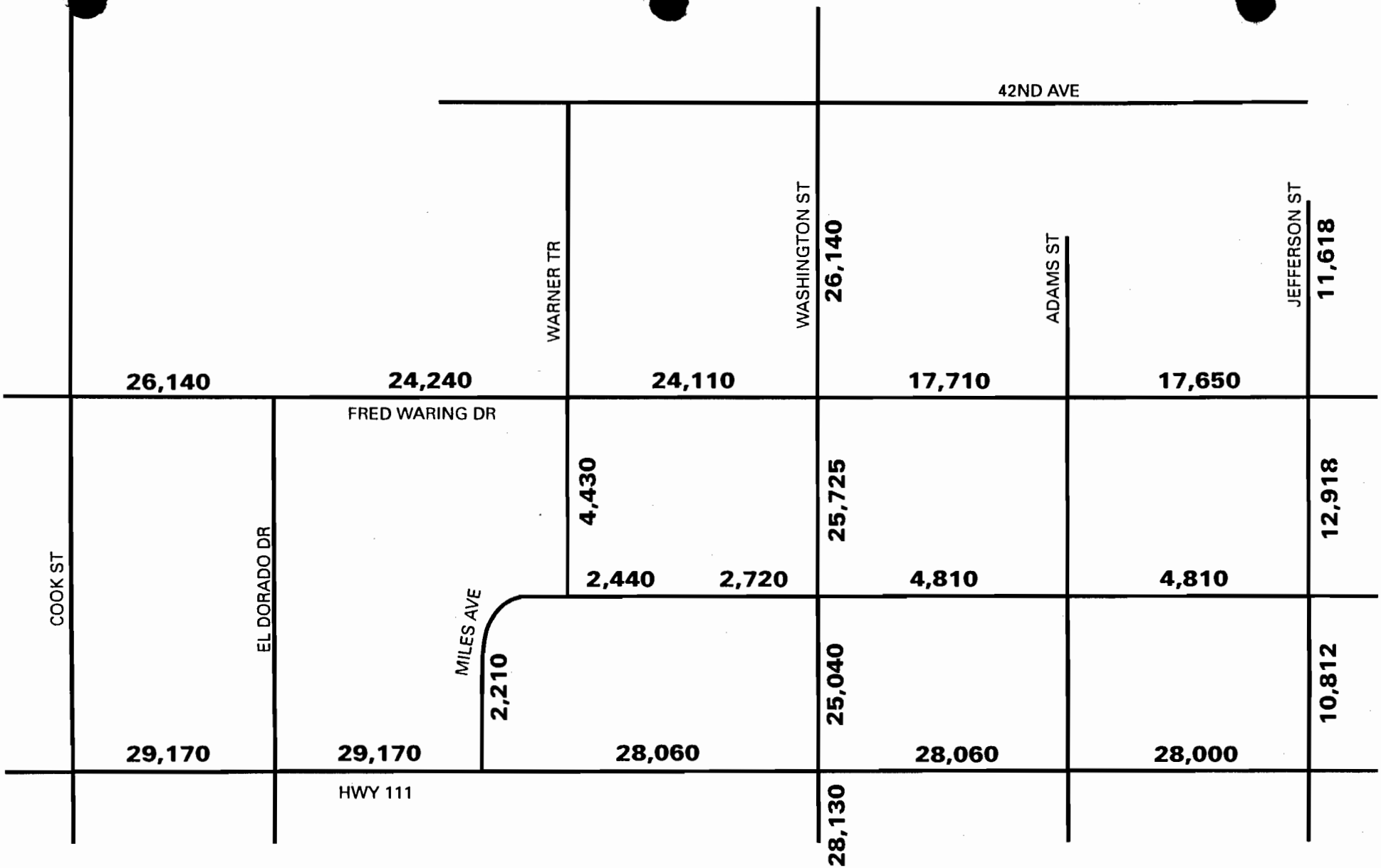
Phase I Project AM/PM Trips

Exhibit 8

RBF Rogers, Billein, William Frost & Associates
6-98 JN 301524-5437

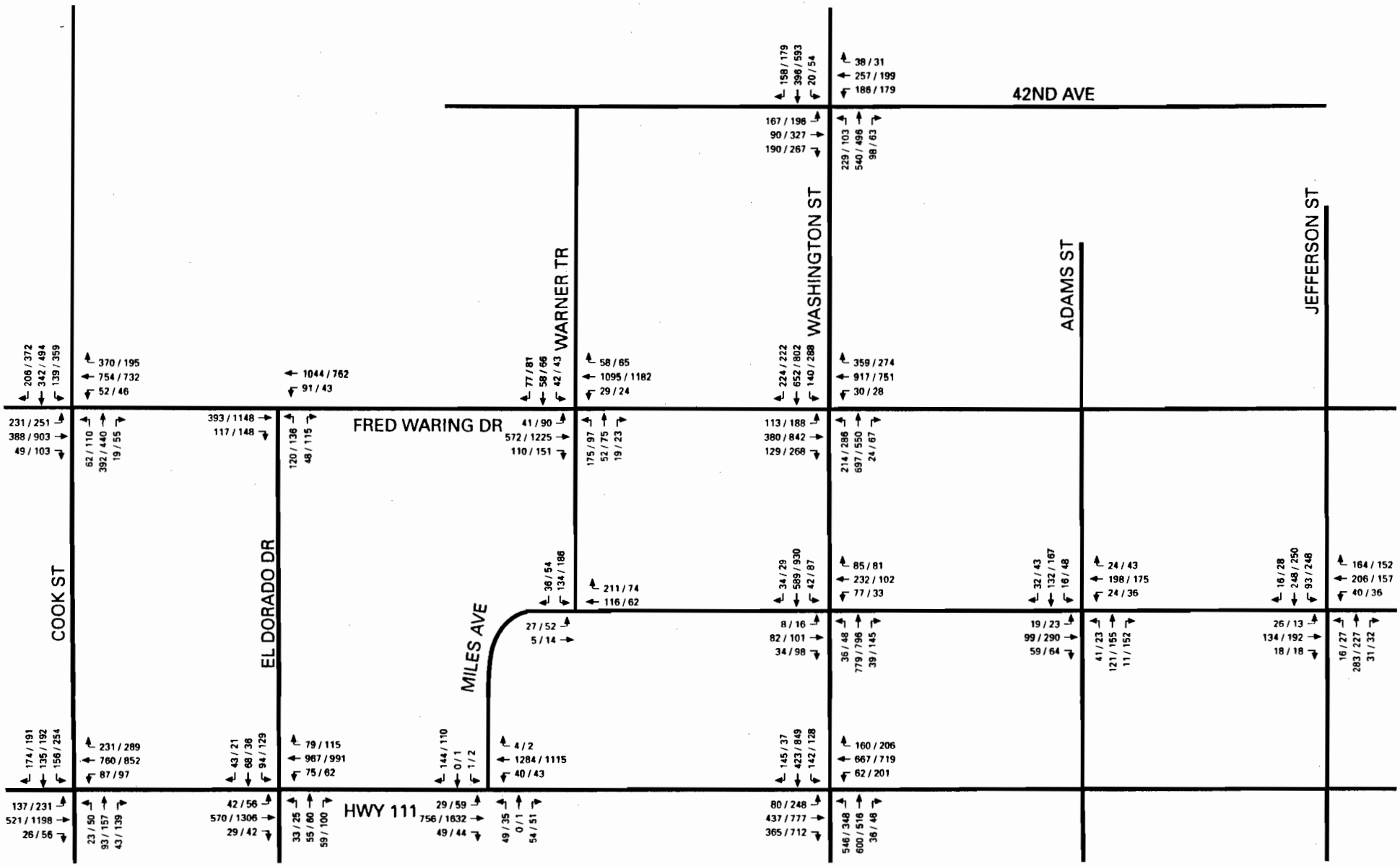


Not to Scale

Existing + Phase I ADT

Exhibit 9

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
6-98 JN 301524-5437



Not to Scale

Existing + Phase I AM/PM

Exhibit 10

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As shown in Table 9, all study intersections are forecast to operate at an acceptable LOS for existing plus phase 1 project conditions, assuming implementation of the recommended improvements to address the existing, pre-project deficiencies previously discussed in the existing conditions (see Table 2) section of this study. No addition mitigation is recommended.

Existing Plus Phase 1 Project Plus Cumulative Conditions

To determine existing plus phase 1 project plus cumulative conditions, existing traffic volumes were increased by 10 percent to account for approximately two years of cumulative traffic growth assumed to occur by the completion of phase 1 of the project based on review of CVAG traffic census data. This is a conservative cumulative traffic growth assumption since all intersection turning movements are increased by 10 percent, not just the through or major movements at an intersection.

Existing Plus Phase 1 Project Plus Cumulative ADT Volumes

Exhibit 11 shows the forecast ADT volumes for existing plus phase 1 project plus cumulative conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Phase 1 Project Plus Cumulative Peak Hour Level of Service

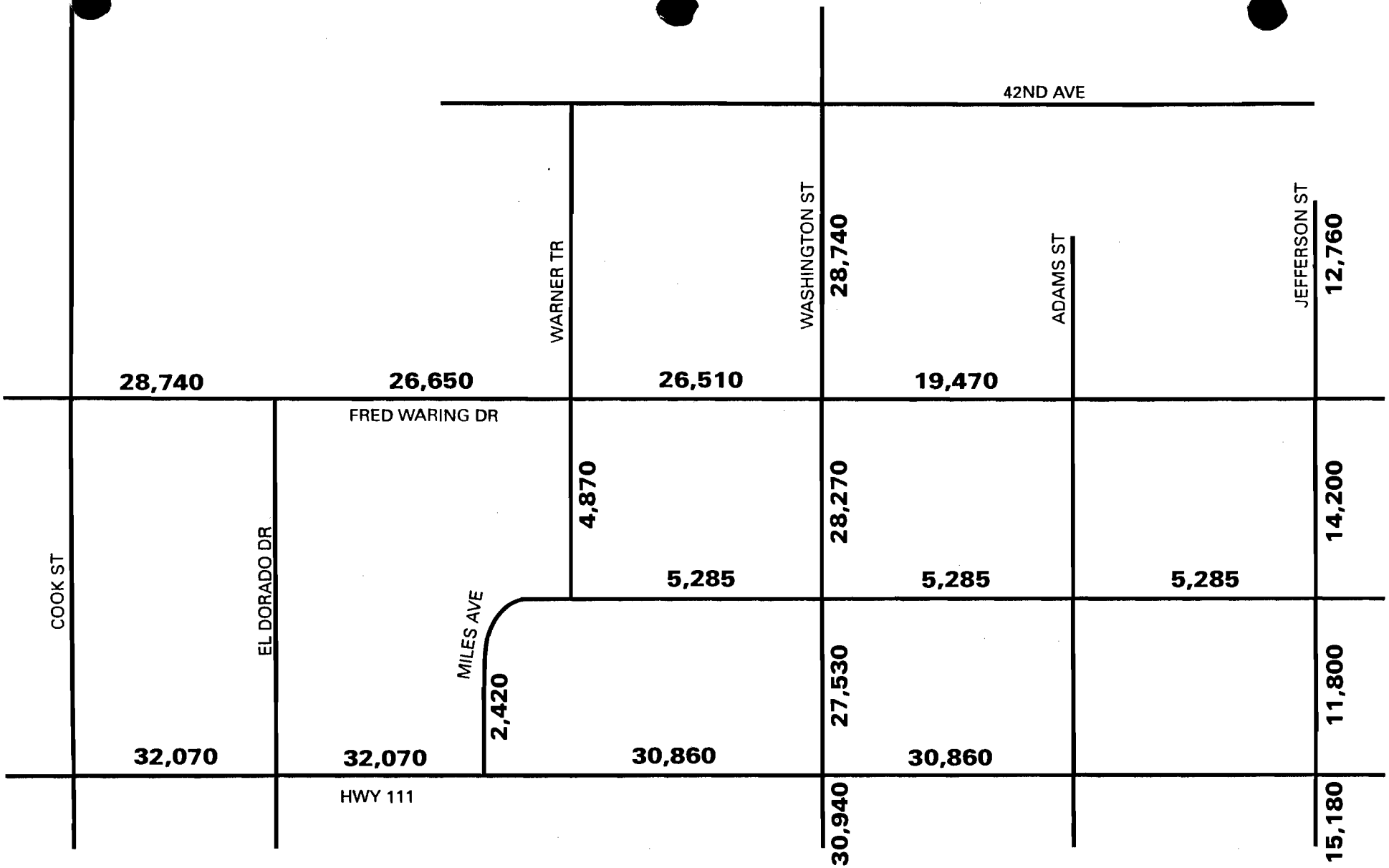
Exhibit 12 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus phase 1 project plus cumulative conditions.

Table 10 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus phase 1 project plus cumulative conditions with and without recommended mitigation to maintain LOS D operation during peak hour conditions; detailed HCM calculation sheets are contained in Appendix B.

Table 10
Existing + Phase 1 Project + Cumulative Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base	Mitigated	
Cook	AM	23.0-C	23.0-C	Add 1 EB right turn lane for PM deficiency
	PM	* - F	38.8-D	Add 1 EB right turn lane for PM deficiency
Eldorado	AM	22.9-C	-	-
	PM	31.2-D	-	-
Miles	AM	20.3-C	-	-
	PM	29.6-D	-	-
Washington	AM	32.0-D	-	-
	PM	23.6-C	-	-
Fred Waring and				
Cook	AM	18.3-C	-	-
	PM	24.9-C	-	-
Eldorado	AM	12.5-B	-	-
	PM	13.3-B	-	-
Warner Trail	AM	23.7-C	-	-
	PM	22.4-C	-	-
Washington	AM	39.4-D	36.7-D	Add 1 NB & 1 SB Left Turn Lane, and 1 NB Thru Lane
	PM	* - F	39.2-D	Add 1 NB & 1 SB Left Turn Lane, and 1 NB Thru Lane
Miles and				
Warner Trail	AM	2.4-B	-	-
	PM	3.9-B	-	-
Washington	AM	29.1-D	-	-
	PM	32.5-D	-	-
Adams	AM	20.4-C	-	-
	PM	22.0-C	-	-
Jefferson	AM	31..0-D	-	-
	PM	26.8-D	-	
42nd and				
Washington	AM	36.5-D	-	-
	PM	39.7-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Existing + Phase I + Cumulative ADT

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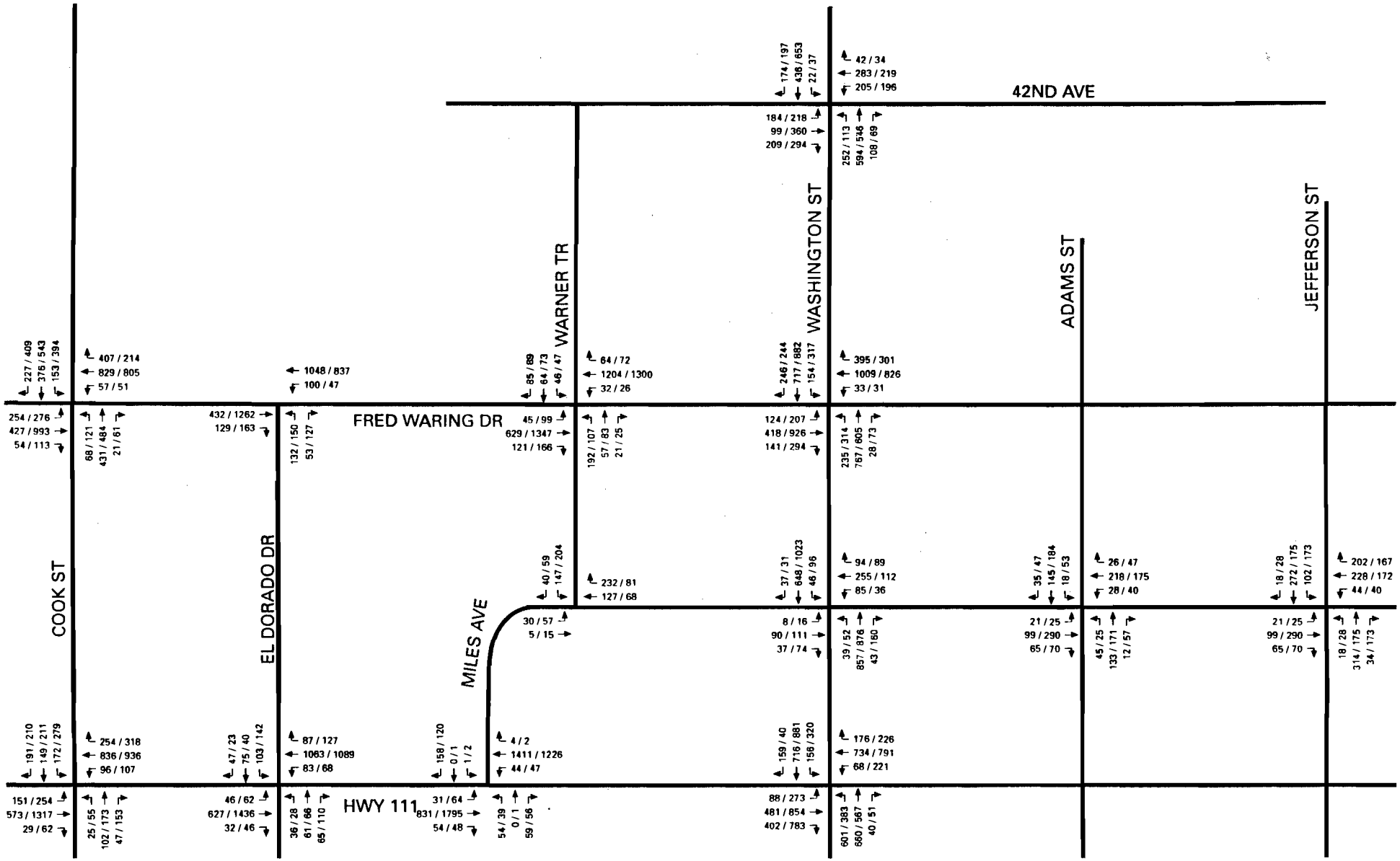
Exhibit 11



Not to Scale

Existing + Phase I + Cumulative AM/PM

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Exhibit 12

As shown in Table 10, with the exception of the Highway 111/Cook Street intersection and the Fred Waring Drive/Washington Street intersection, the study intersections are forecast to operate at an acceptable LOS for existing plus phase 1 plus cumulative conditions.

To maintain LOS D peak hour operation at the Highway 111/Cook Street intersection, an eastbound right turn lane on Highway 111 at Cook Street is recommended to mitigate the forecast p.m. peak hour deficiency caused by cumulative traffic growth. Implementation of the eastbound right turn lane is forecast to result in the Highway 111/Cook Street intersection operating at an acceptable LOS (LOS C in the a.m. peak hour and LOS D in the p.m. peak hour).

To maintain LOS D peak hour operation at the Fred Waring Drive/Washington Street intersection, additional improvements on Washington Street are required beyond those identified in Table 2 for the existing deficient condition; an additional northbound left turn lane, and additional northbound through lane, and an additional southbound left turn lane on Washington Street at Fred Waring Drive is recommended to mitigate the forecast p.m. peak hour deficiency caused by cumulative traffic growth. Implementation of these additional lanes on Washington Street is forecast to result in the Fred Waring Drive/Washington Street intersection operating at an acceptable LOS (LOS D in the a.m. and p.m. peak hours).

Existing Plus Project Buildout Conditions

To determine existing plus project buildout conditions, project buildout-generated trips shown in Table 4 were added to existing traffic volumes assuming the project trip percent distribution shown in Exhibit 6. Exhibit 13 shows the forecast assignment of project buildout-generated ADT, and Exhibit 14 shows the forecast assignment of project buildout-generated a.m. and p.m. peak hour turning movements at the study intersections.

Existing Plus Project Buildout ADT Volumes

Exhibit 15 shows the forecast ADT volumes for existing plus project buildout conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Project Buildout Peak Hour Level of Service

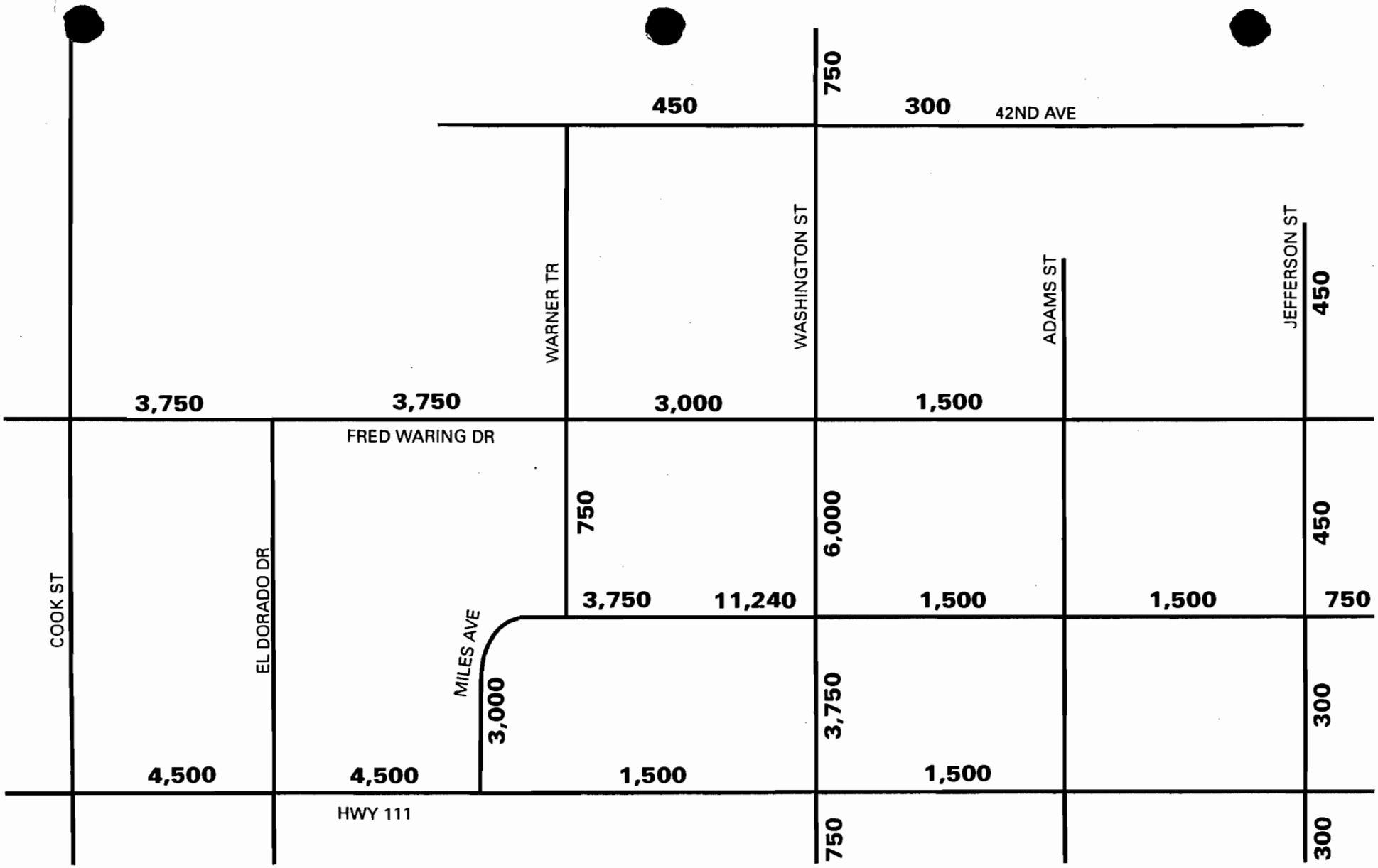
Exhibit 16 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for project buildout conditions.

Table 11 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus project buildout conditions with and without recommended mitigation to maintain LOS D operation during peak hour conditions; detailed HCM calculation sheets are contained in Appendix B.

Table 11
Existing + Project Buildout Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base Case	Mitigated	-
Cook	AM	22.1-C	-	None, assuming existing + phase 1 + cumulative mitigation
	PM	35.3-D	-	None, assuming existing + phase 1 + cumulative mitigation
Eldorado	AM	22.6-C	-	-
	PM	24.1-C	-	-
Miles	AM	22.0-C	-	-
	PM	33.7-D	-	-
Washington	AM	28.1-D	-	-
	PM	23.3-C	-	-
Fred Waring and				
Cook	AM	18.0-C	-	-
	PM	24.7-C	-	-
Eldorado	AM	12.2-B	-	-
	PM	14.0-B	-	-
Warner Trail	AM	24.3-C	-	-
	PM	22.9-C	-	-
Washington	AM	37.0-D	-	None, assuming existing+phase 1 + cumulative mitigation
	PM	39.7-D	-	None, assuming existing + phase 1+ cumulative mitigation
Miles and				
Warner Trail	AM	2.7-B	-	-
	PM	4.7-C	-	-
Washington	AM	41.9-E	30.3-D	Add 1 SB thru, 1 SB rt turn, & 1 EB rt turn for deficiency
	PM	* - F	23.8-C	Add 1 SB thru, 1 SB rt turn, & 1 EB rt turn for deficiency
Adams	AM	20.6-C	-	-
	PM	22.1-C	-	-
Jefferson	AM	27.7-D	-	-
	PM	34.2-D	-	-
42nd and				
Washington	AM	33.9-D	-	-
	PM	36.8-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Project Buildout ADT

Exhibit 13

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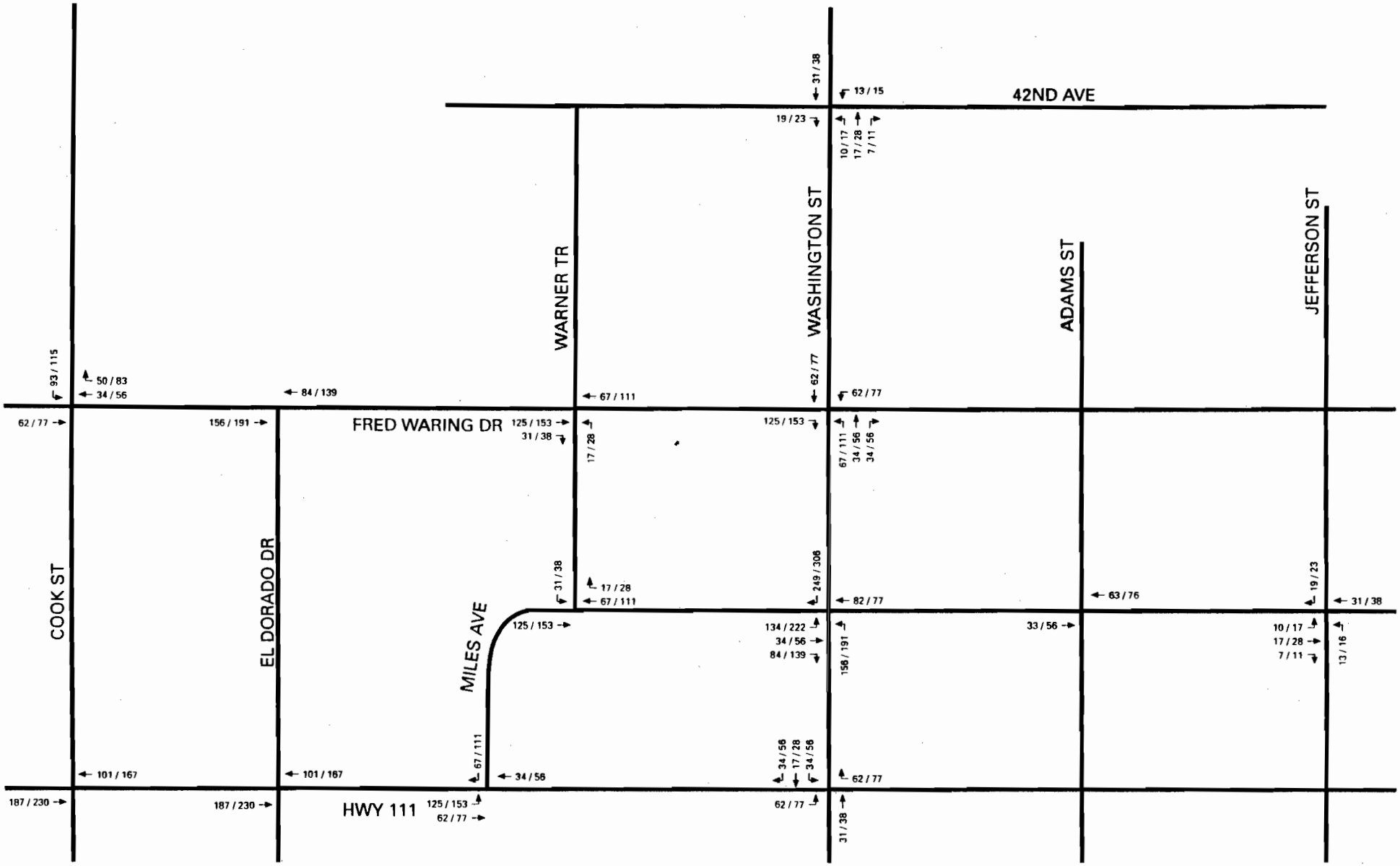
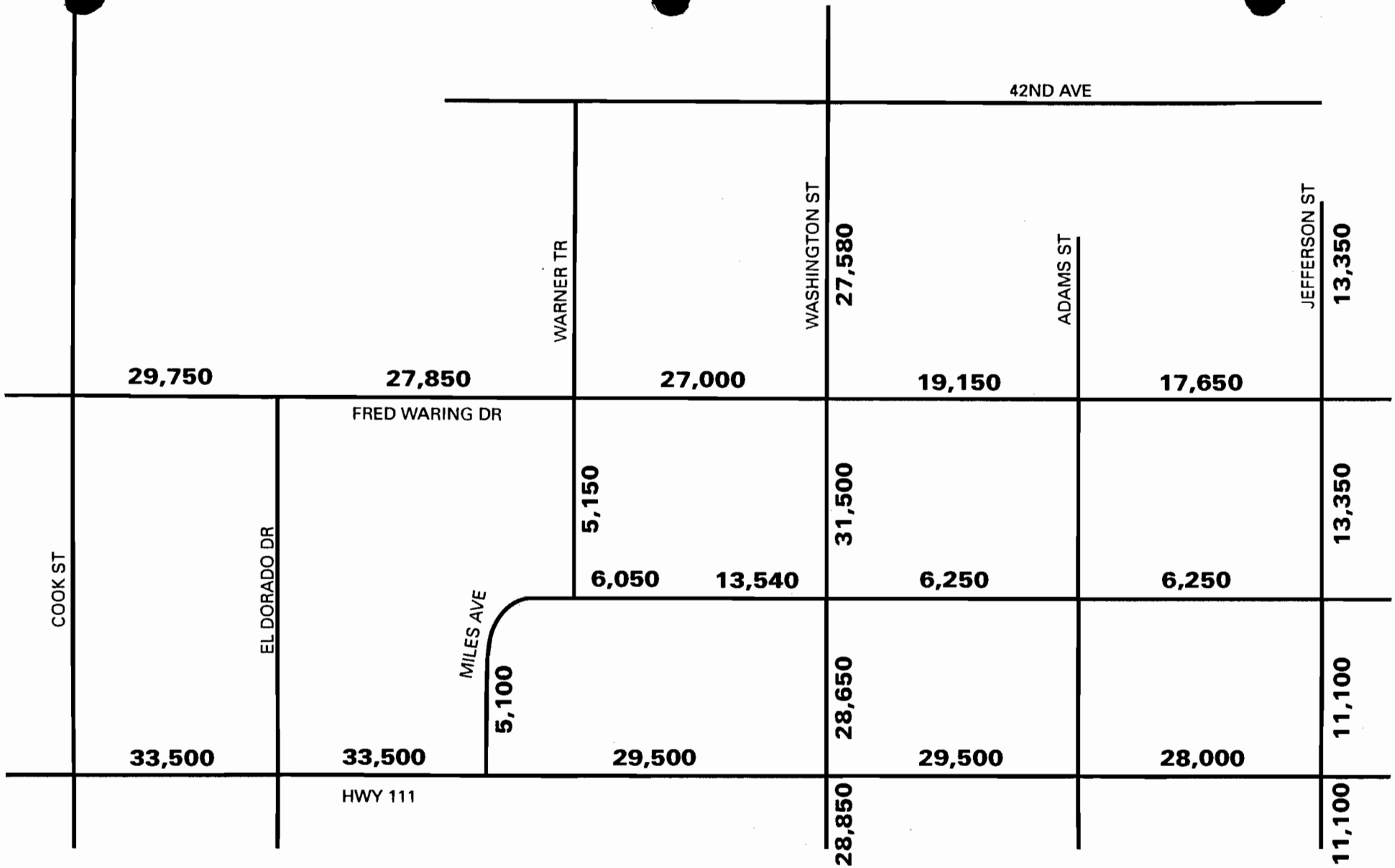


Not to Scale

Project Buildout AM/PM Trips

Bein, William Frost & Associates
JN 301524-5437

Exhibit 14

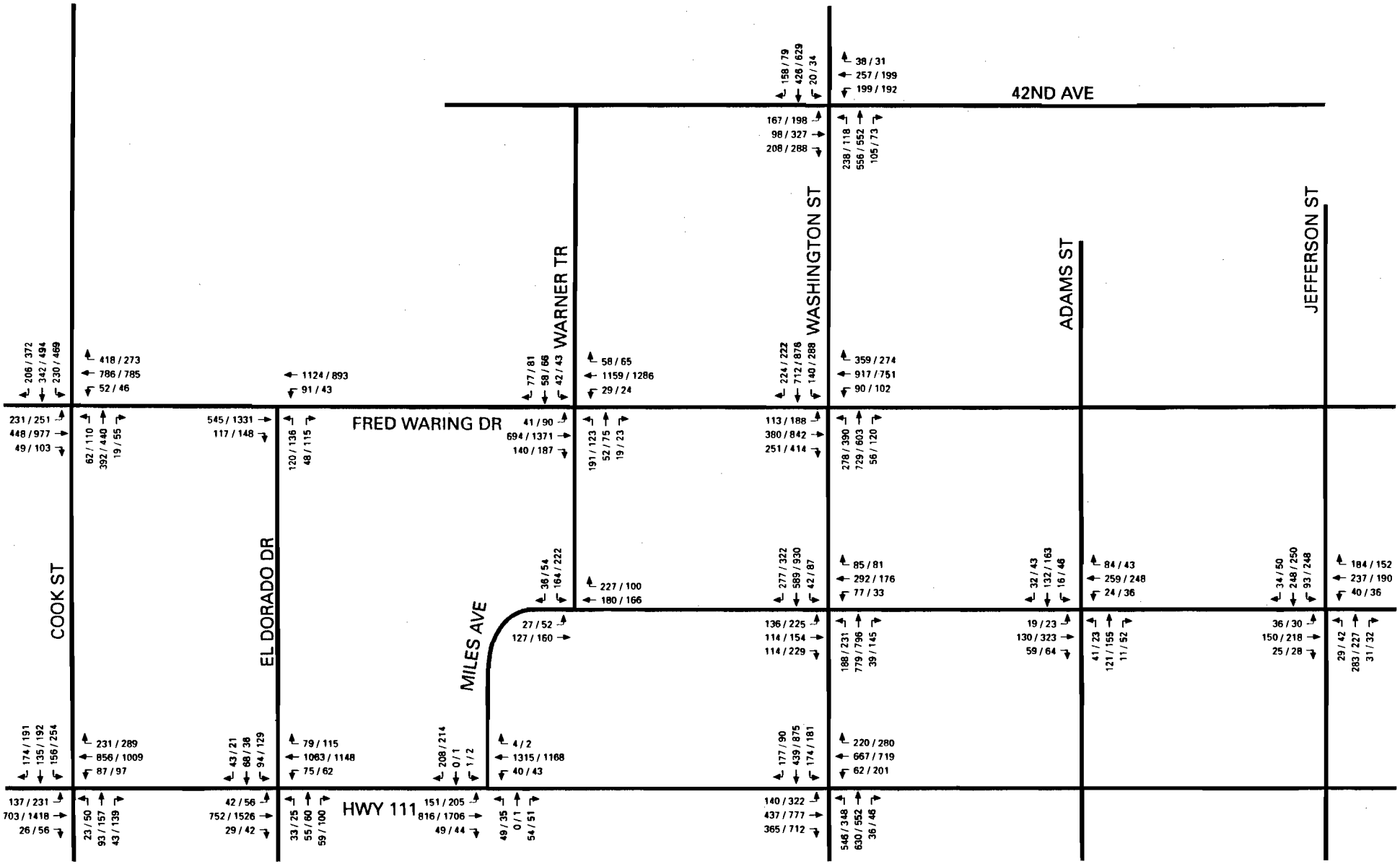


Not to Scale

Existing + Project Buildout ADT

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
6-98 JN 301524-5437

Exhibit 15



Not to Scale

Existing + Project Buildout AM/PM

Exhibit 16

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JN 301524-5437

As shown in Table 11, with the exception of the Miles Avenue/Washington Street intersection, the study intersections are forecast to operate at an acceptable LOS for existing plus project buildout conditions, assuming implementation of the recommended mitigation (eastbound right turn lane on Highway 111) at the Highway 111/Cook Street intersection for existing plus phase 1 project plus cumulative conditions, and the recommended mitigation (additional northbound left turn lane, additional southbound left turn lane, and an additional northbound through lane on Washington Street) at the Fred Waring Drive/Washington Street intersection for existing plus phase 1 project plus cumulative conditions.

To maintain LOS D peak hour operation at the Miles Avenue/Washington Street intersection, a southbound through lane and a southbound right turn lane on Washington Street at Miles Avenue, along with an eastbound right turn lane on Miles Avenue at Washington Street is recommended to mitigate the forecast peak hour deficiencies caused by project buildout traffic.

Existing Plus Project Buildout Plus Cumulative Conditions

To determine existing plus project buildout plus cumulative conditions, existing traffic volumes were increased by 20 percent to account for approximately five years of cumulative traffic growth assumed to occur by buildout of the project based on review of CVAG traffic census data. This is a conservative cumulative traffic growth assumption since all intersection turning movements are increased by 20 percent, not just the through or major movements at an intersection.

Existing Plus Project Buildout Plus Cumulative ADT Volumes

Exhibit 17 shows the forecast ADT volumes for existing plus project buildout plus cumulative conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Project Buildout Plus Cumulative Peak Hour Level of Service

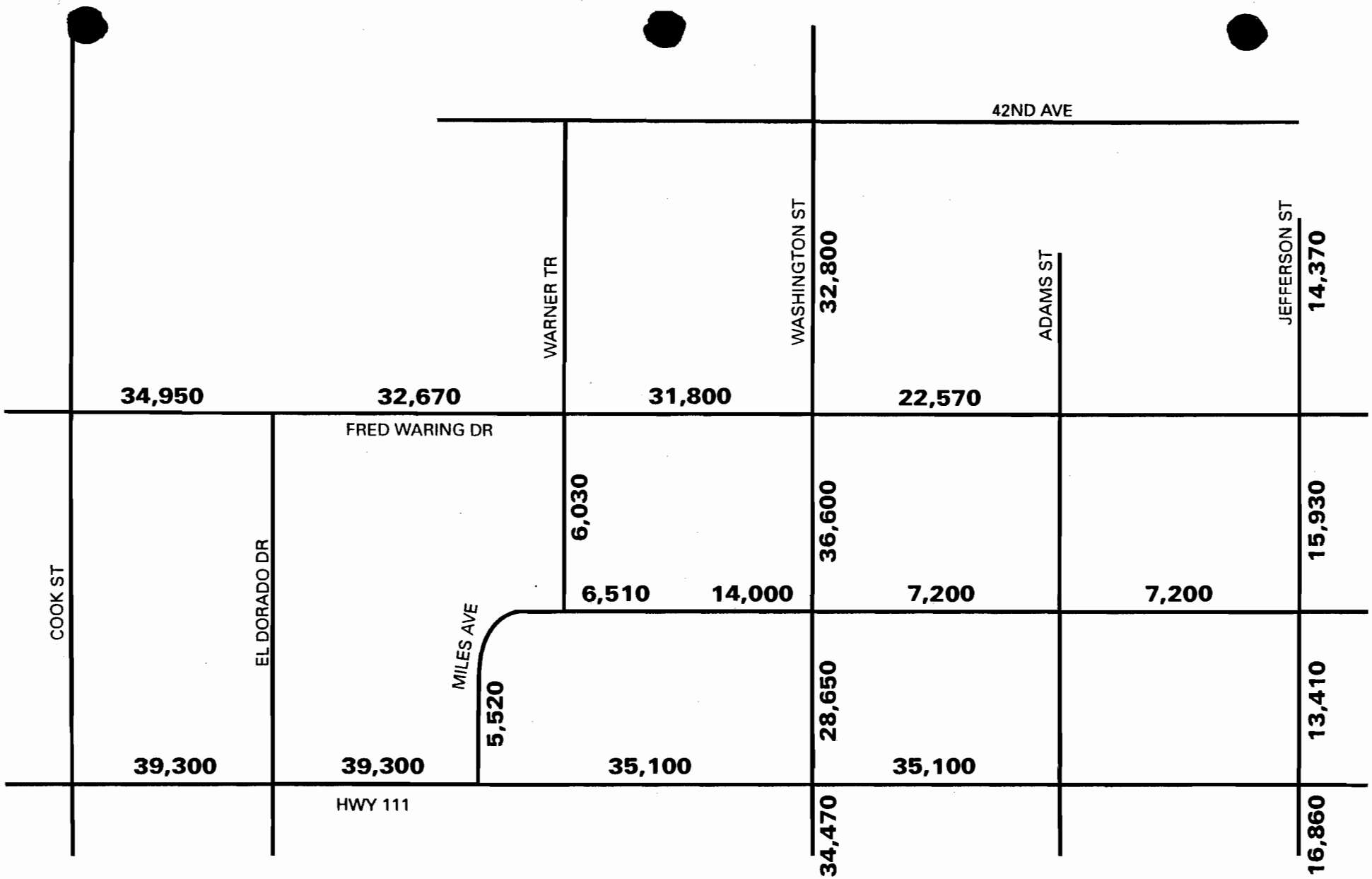
Exhibit 18 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus project buildout plus cumulative conditions.

Table 12 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus project buildout plus cumulative conditions with and without recommended mitigation to maintain LOS D operation during peak hour conditions; detailed HCM calculation sheets are contained in Appendix B.

Table 12
Existing + Project Buildout + Cumulative Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base	Mitigated	
Cook	AM	25.2-D	17.9-C	Add NB, SB, EB, WB left, EB & WB thru, convert EB rt to EB thru
	PM	* - F	37.7-D	Add NB, SB, EB, WB left, EB & WB thru, convert EB rt to EB thru
Eldorado	AM	24.9-C	-	-
	PM	30.8-D	-	-
Miles	AM	28.4-D	-	-
	PM	36.6-D	-	-
Washington	AM	38.7-D	-	-
	PM	29.1-D	-	-
Fred Waring and				
Cook	AM	23.4-C	-	-
	PM	35.5-D	-	-
Eldorado	AM	14.1-B	-	-
	PM	21.6-C	-	-
Warner Trail	AM	29.6-D	-	-
	PM	35.0-D	-	-
Washington	AM	39.4-D	-	None, assuming existing+phase 1+ cumulative mitigation
	PM	39.0-D	-	None, assuming existing+phase 1+ cumulative mitigation
Miles and				
Warner Trail	AM	3.6-A	-	-
	PM	6.6-B	-	-
Washington	AM	30.2-D	-	-
	PM	26.4-D	-	-
Adams	AM	15.8-C	-	-
	PM	23.1-C	-	-
Jefferson	AM	38.8-D	36.6-D	Add NB left, restripe SB approach to SBL & SBT/R
	PM	40.5-E	36.7-D	Add NB left, restripe SB approach to SBL & SBT/R
42nd and				
Washington	AM	43.1-E	35.9-D	Add SBL, restripe NB approach to NBL & 2 NBT
	PM	44.4-E	36.1-D	Add SBL, restripe NB approach to NBL & 2 NBT

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Existing + Project Buildout + Cumulative ADT

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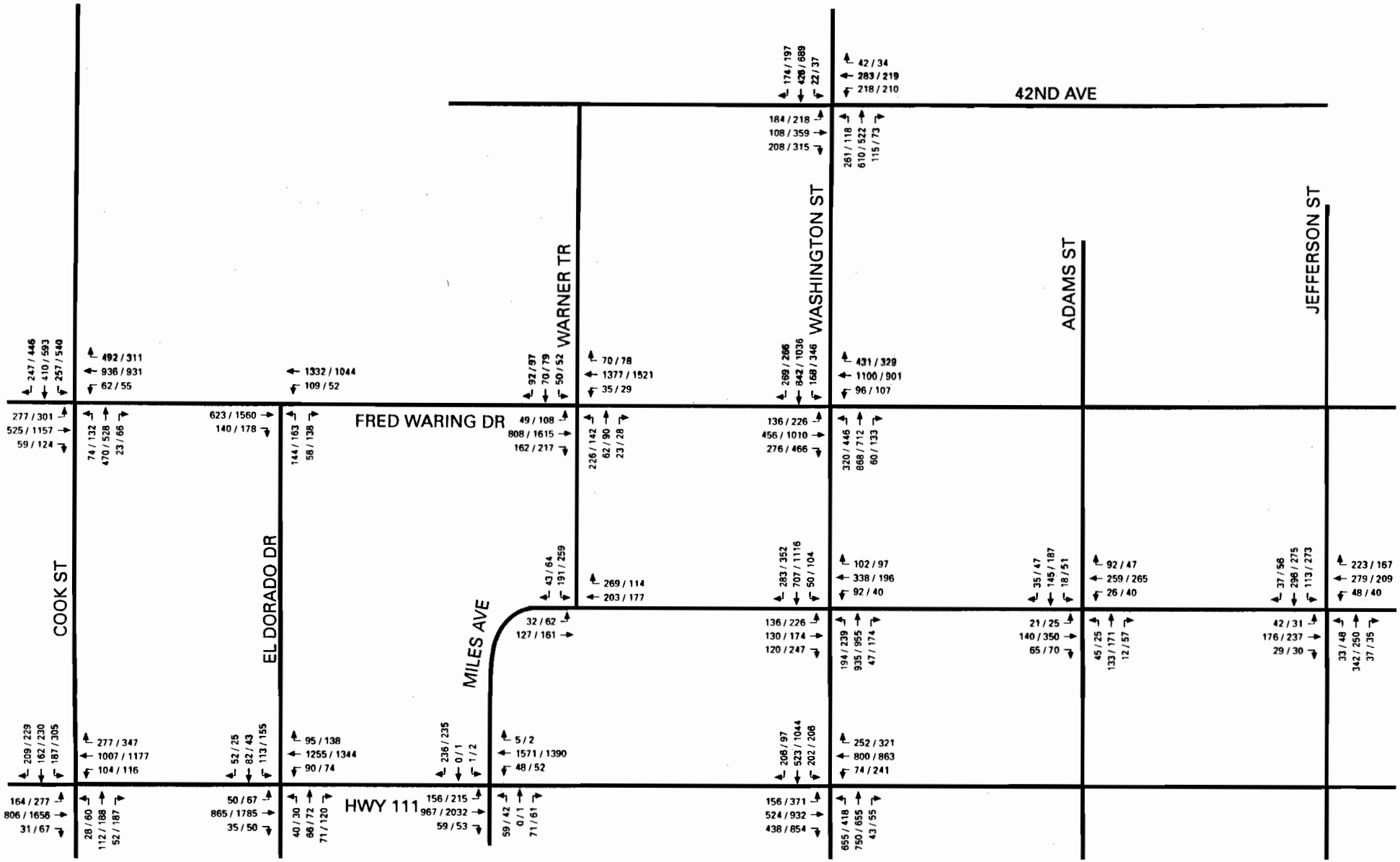
Exhibit 17



Not to Scale

Existing + Project Buildout + Cumulative AM/PM

BEIN, WILLIAM FROST & ASSOCIATES
JN 301524-5437

6-98

Exhibit 18

As shown in Table 12, with exception of the Highway 111/Cook Street intersection, the 42nd Avenue/Washington Street intersection, and the Miles Avenue/Jefferson Street intersection, the study intersections are forecast to operate at an acceptable LOS for existing plus project buildout plus cumulative conditions, assuming implementation of the recommended mitigation previously identified for the Fred Waring Drive/Washington Street intersection.

To maintain LOS D peak hour operation at the Highway 111/Cook Street intersection, the following mitigation is recommended: an additional eastbound left turn lane on Highway 111, an additional westbound left turn lane on Highway 111, an additional eastbound through lane on Highway 111, an additional westbound through lane on Highway 111, and conversion of the eastbound right turn lane (recommended for existing plus phase 1 project plus cumulative conditions) to a forth eastbound through lane, an additional southbound left turn lane on Cook Street and an additional northbound left turn lane on Cook Street.

It is worth noting that "augmentation/enhancement" of the Highway 111/Cook Street intersection in addition to the planned ultimate intersection design (ultimately the Highway 111 legs of the intersection are planned for three through lanes plus turning lanes, for example) is identified in the City of Indian Wells General Plan Circulation Element.

To maintain LOS D at the 42nd Avenue/Washington Street intersection, an additional southbound left turn lane on Washington Street at 42nd Avenue is recommended, along with restriping of the northbound Washington Street approach to 42nd Avenue to one northbound left turn lane and two northbound through lanes.

To maintain LOS D at the Miles Avenue/Jefferson Street intersection, an additional northbound left turn lane is recommended on Jefferson Street at Miles Avenue, along with restriping the southbound Jefferson Street approach at Miles Avenue to one southbound left turn and one southbound through/right turn lane.

ANNUAL TENNIS EVENT

Existing Plus Phase 1 Project Annual Tennis Event Conditions

To determine existing plus phase 1 project annual tennis event conditions, phase 1 project annual tennis event-generated trips shown in Table 6 were added to existing traffic volumes, assuming the project trip percent distribution shown in Exhibit 6. Exhibit 19 shows the forecast assignment of project-generated ADT, and Exhibit 20 shows the forecast assignment of phase 1 project annual tennis event-generated a.m. and p.m. peak hour turning movements at the study intersections.

Existing Plus Phase 1 Project Annual Tennis Event ADT Volumes

Exhibit 21 shows the forecast ADT volumes for existing plus phase 1 project annual tennis event conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Phase 1 Project Annual Tennis Event Peak Hour Level of Service

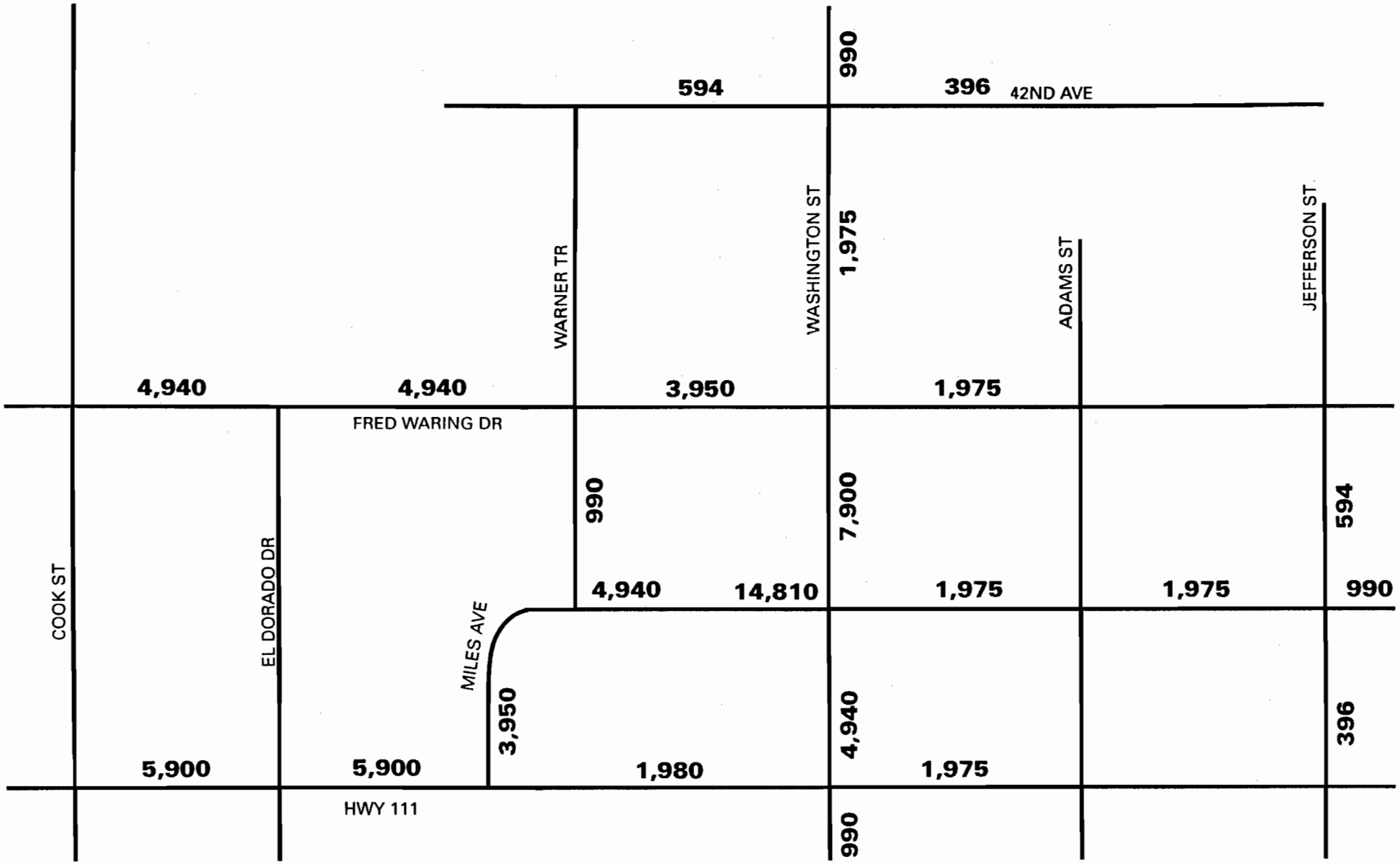
Exhibit 22 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus phase 1 project annual tennis event conditions.

Table 13 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus phase 1 project annual tennis event conditions; detailed HCM calculation sheets are contained in Appendix B. No "physical improvement" mitigation is recommended in Table 13 for identified deficient intersections to achieve LOS D operation since the annual event occurs for only approximately two weeks out of the year. "Special event" coordinating mitigation is recommended between the project applicant and the affected agencies during the special event, such as directional signage and shuttle service.

Table 13
Existing + Phase 1 Project Annual Tennis Event Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base Case	Mitigated	-
Cook	AM	19.6-C	-	-
	PM	45.5-E	-	"special event" coordination
Eldorado	AM	21.1-C	-	-
	PM	45-.1-E	-	"special event" coordination
Miles	AM	20.2-C	-	-
	PM	31.3-D	-	-
Washington	AM	28.1-D	-	-
	PM	24.5-C	-	-
Fred Waring and				
Cook	AM	17.3-C	-	-
	PM	22.5-C	-	-
Eldorado	AM	11.9-B	-	-
	PM	13.9-B	-	-
Warner Trail	AM	23.3-C	-	-
	PM	22.5-C	-	-
Washington	AM	36.0-D	-	
	PM	* - F	-	"special event" coordination
Miles and				
Warner Trail	AM	2.5-A	-	-
	PM	5.7-B	-	-
Washington	AM	36.6-D	-	-
	PM	* - F	-	"special event" coordination
Adams	AM	20.5-C	-	-
	PM	24.9-C	-	-
Jefferson	AM	27.5-D	-	-
	PM	30.9-D	-	-
42nd and				
Washington	AM	33.3-D	-	-
	PM	38.1-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Phase I Project Event ADT

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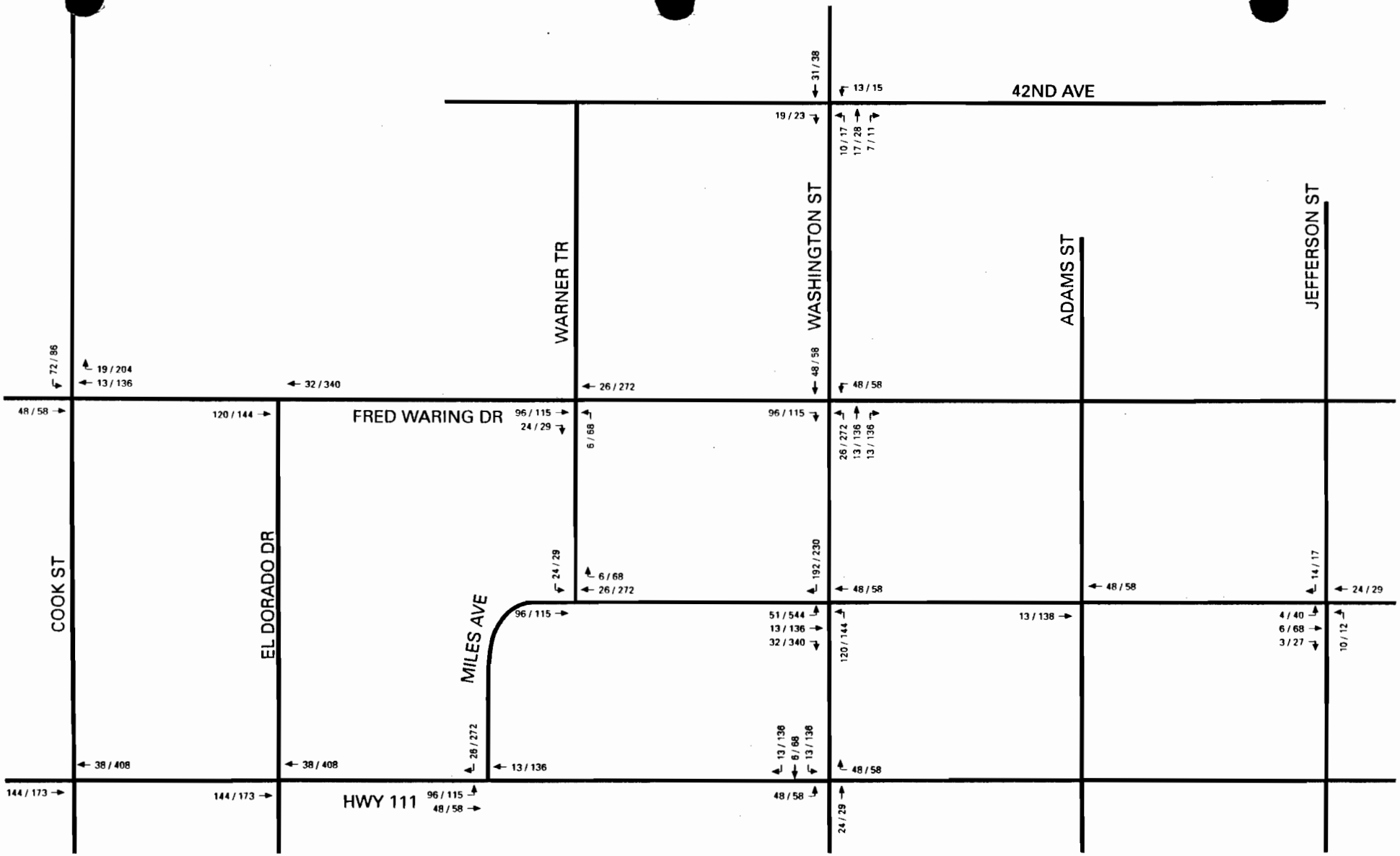
Exhibit 19



Not to Scale

Phase I Project Event AM/PM Trips

Exhibit 20

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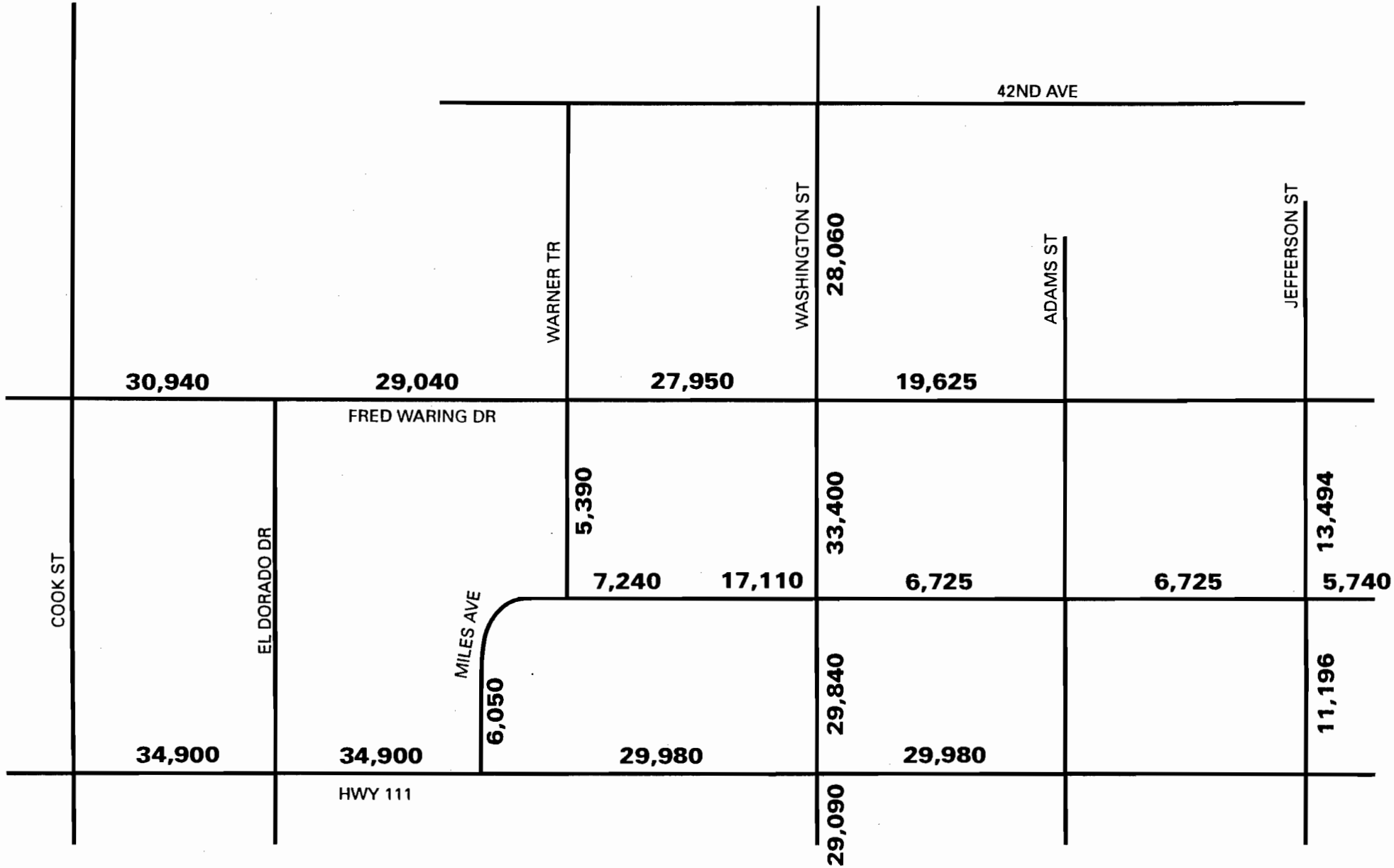

Not to Scale

Existing + Phase I Project Event ADT

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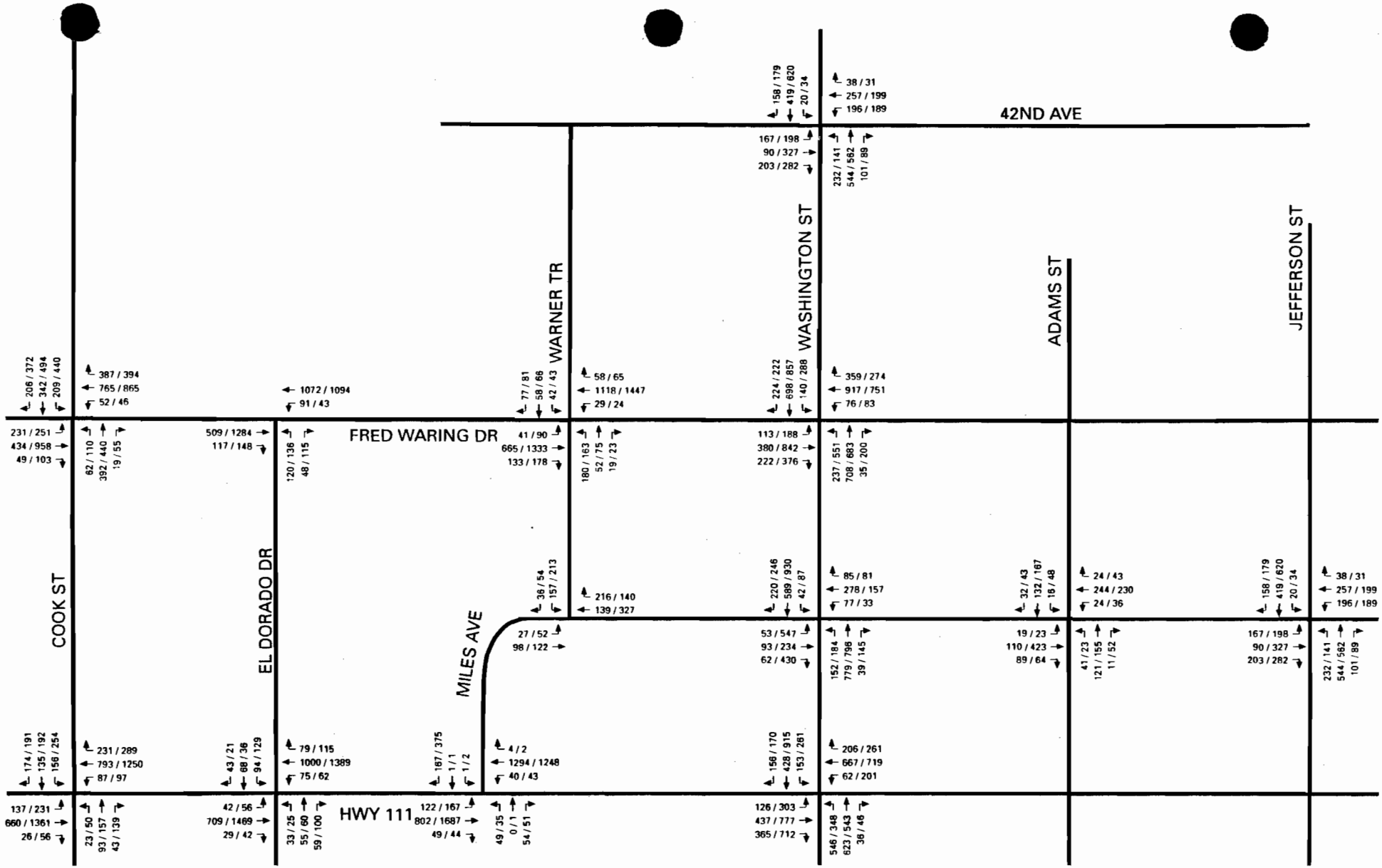
Exhibit 21



Not to Scale

Existing + Phase I Project Event AM/PM

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Exhibit 22

As shown in Table 13, "special event" coordination mitigation is recommended to address the forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the p.m. peak hour, and the Miles Avenue/Washington Street intersection in the p.m. peak hour.

Existing Plus Phase 1 Project Annual Tennis Event Plus Cumulative Conditions

To determine existing plus phase 1 project annual tennis event conditions, existing traffic volumes were increased by 10 percent to account for approximately two years of cumulative traffic growth assumed to occur by the completion of Phase 1 of the project based on review of CVAG traffic census data. This is a conservative cumulative traffic growth assumption since all intersection turning movements are increased by 10 percent, not just the through or major movements at an intersection.

Existing Plus Phase 1 Project Annual Tennis Event Plus Cumulative ADT Volumes

Exhibit 23 shows the forecast ADT volumes for existing plus phase 1 project annual tennis event plus cumulative conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Phase 1 Project Annual Tennis Event Plus Cumulative Peak Hour Level of Service

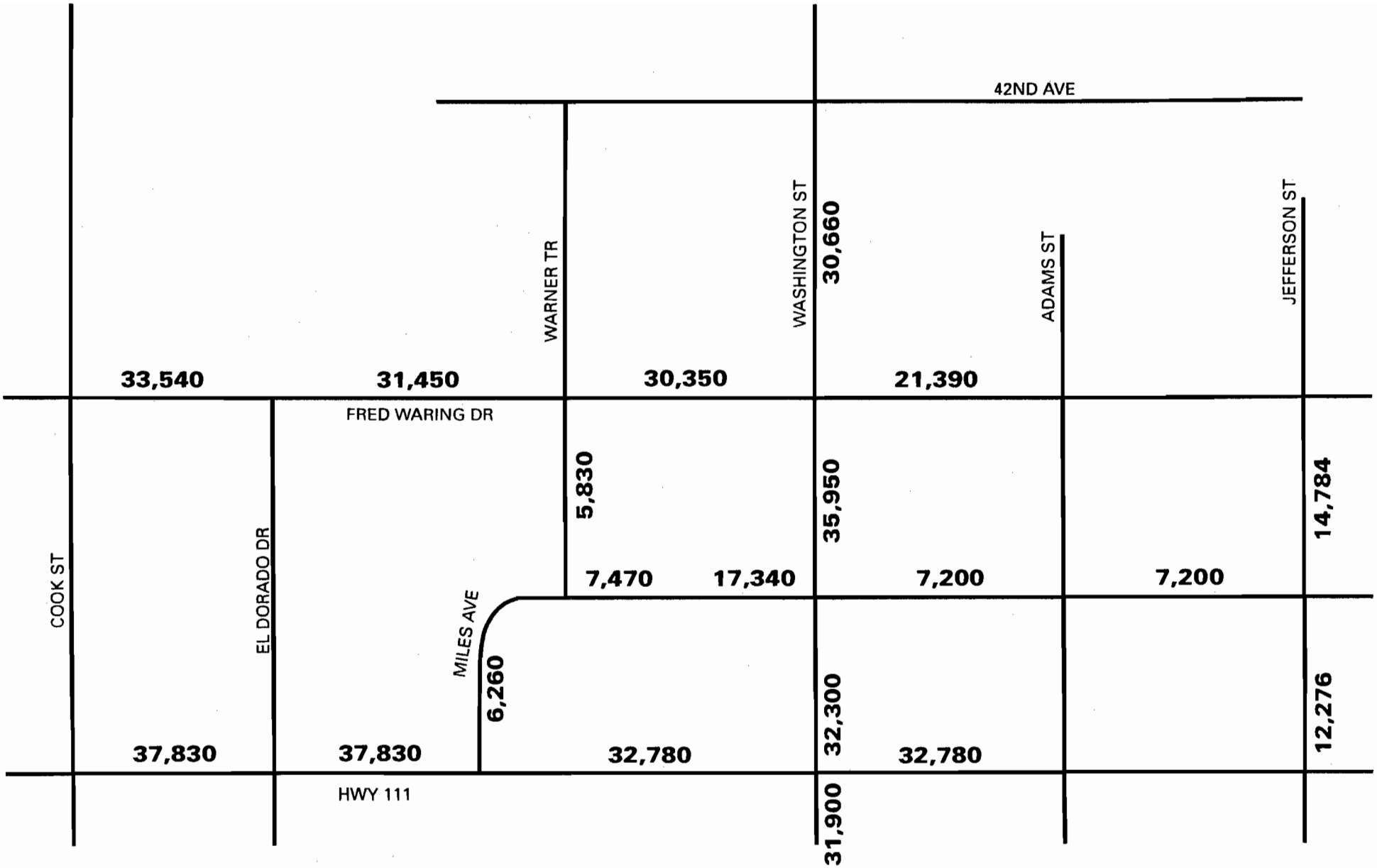
Exhibit 24 shows the forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus phase 1 project annual tennis event plus cumulative conditions.

Table 14 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus phase 1 project annual tennis event plus cumulative conditions; detailed HCM calculation sheets are contained in Appendix B. No "physical improvement" mitigation is recommended in Table 14 for identified deficient intersections to achieve LOS D operation since the annual event occurs for only approximately two weeks out of the year. "Special event" coordinating mitigation is recommended between the project applicant and the affected agencies during the special event, such as directional signage and shuttle service.

Table 14
Existing + Phase 1 Project Annual Tennis Event + Cumulative Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base	Mitigated	
Cook	AM	21.2-C	-	-
	PM	* - F	-	"special event" coordination
Eldorado	AM	24.1-C	-	-
	PM	*- F	-	"special event" coordination
Miles	AM	21.7-C	-	-
	PM	* - F	-	"special event" coordination
Washington	AM	31.5-D	-	-
	PM	27.2-D	-	-
Fred Waring and		-		
Cook	AM	18.8-C	-	-
	PM	30.4-D	-	-
Eldorado	AM	12.6-B	-	-
	PM	15.8-C	-	-
Warner Trail	AM	24.3-C	-	-
	PM	27.7-D	-	-
Washington	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Miles and				
Warner Trail	AM	2.8-A	-	-
	PM	7.3-B	-	-
Washington	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Adams	AM	20.9-C	-	-
	PM	27.1-D	-	-
Jefferson	AM	22.3-C	-	-
	PM	35.2-D	-	-
42nd and				
Washington	AM	36.2-D	-	-
	PM	44.3-E	-	"special event" coordination

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Existing + Phase I Project Event + Cumulative

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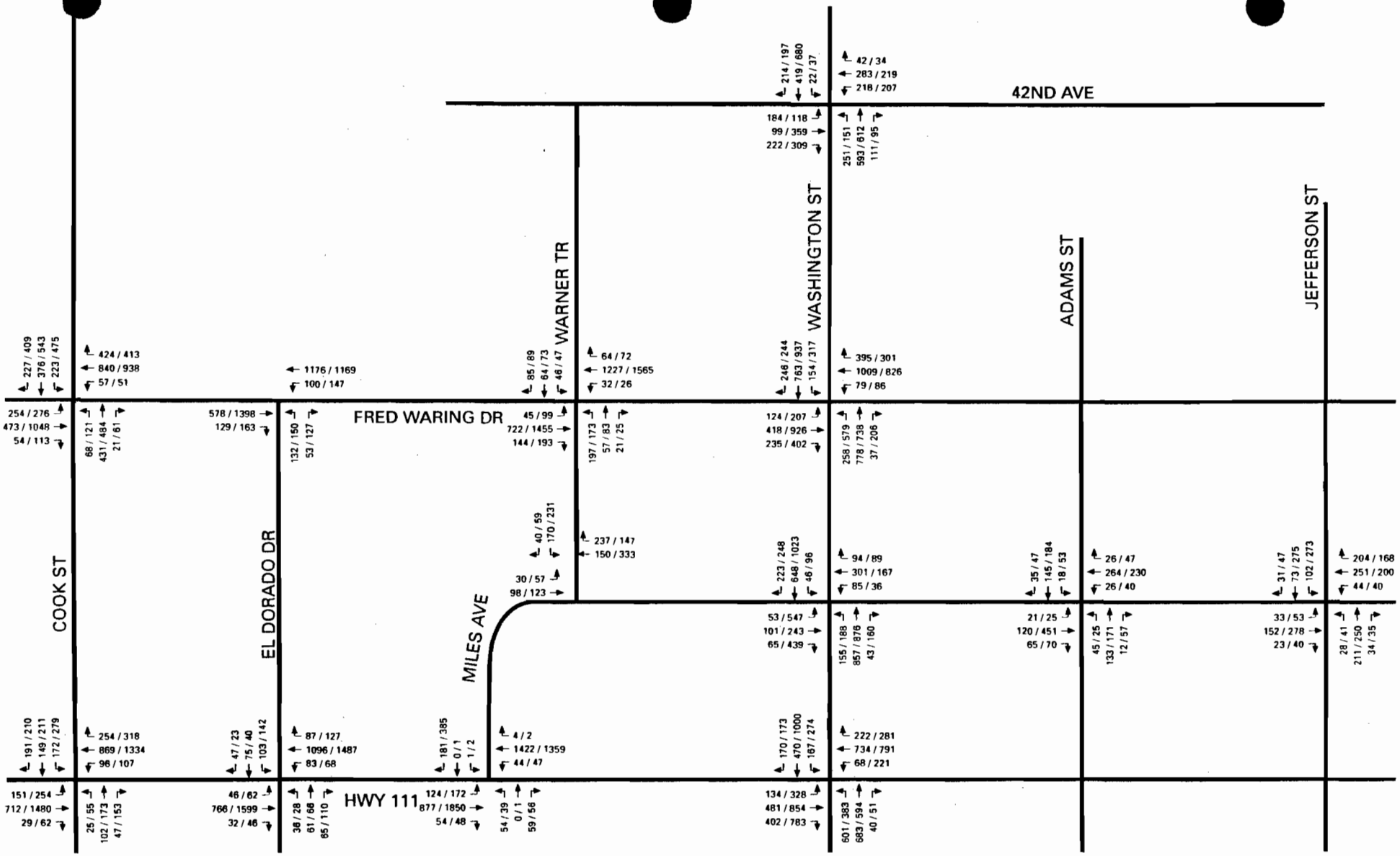
Exhibit 23



Not to Scale

Existing + Phase I Project Event + Cumulative AM/PM

Robert Bein, William Frost & Associates
6-98 JN 301524-5437

Exhibit 24

As shown in Table 14, "special event" coordination mitigation is recommended to address the forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the p.m. peak hour, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the a.m. and p.m. peak hours, the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the 42nd Avenue/Washington Street intersection in the p.m. peak hour.

Existing Plus Project Buildout Annual Tennis Event Conditions

To determine existing plus project buildout annual tennis event conditions, project buildout annual tennis event-generated offsite trips shown in Table 8 were added to existing traffic volumes, assuming the project trip percent distribution shown in Exhibit 6. Exhibit 25 shows the forecast assignment of project buildout annual tennis event-generated ADT, and Exhibit 26 shows the forecast assignment of project buildout annual tennis event-generated a.m. and p.m. peak hour trips at the study intersections.

Existing Plus Project Buildout Annual Tennis Event ADT Volumes

Exhibit 27 shows forecast ADT volumes for existing plus project buildout annual tennis event conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Project Buildout Annual Tennis Event Peak Hour Level of Service

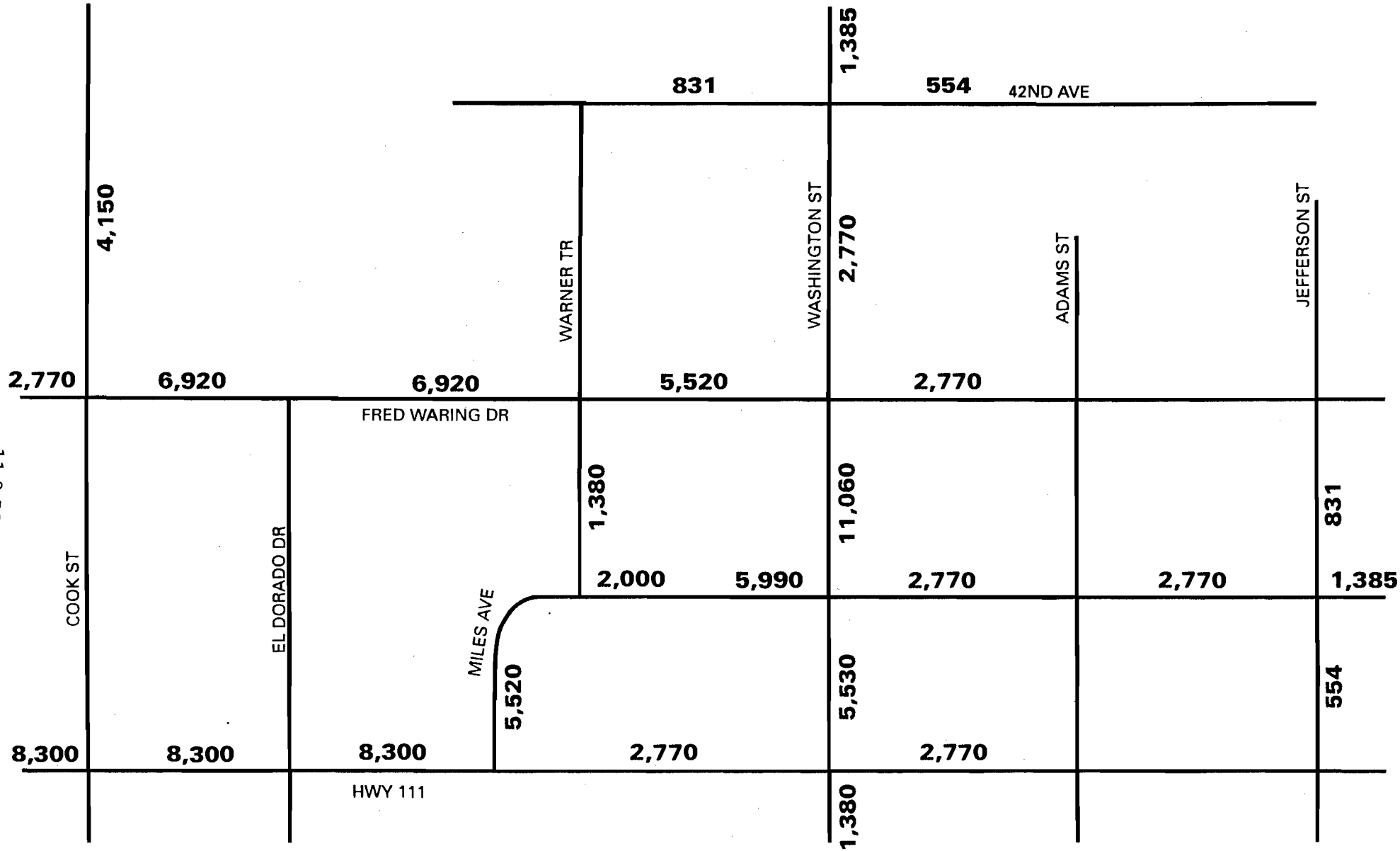
Exhibit 28 shows forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus project buildout annual tennis event conditions.

Table 15 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus project buildout annual tennis event conditions; detailed HCM calculation sheets are contained in Appendix B. No "physical improvement" mitigation is recommended in Table 15 for identified deficient intersections to achieve LOS D operation since the annual event occurs for only approximately two weeks out of the year. "Special event" coordinating mitigation is recommended between the project applicant and the affected agencies during the special event, such as directional signage and shuttle service.

Table 15
Existing + Project Buildout Annual Tennis Event Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base Case	Mitigated	-
Cook	AM	19.8-C	-	-
	PM	* - F	-	"special event" coordination
Eldorado	AM	22.4-C	-	-
	PM	* - F	-	"special event" coordination
Miles	AM	23.7-C	-	-
	PM	* - F	-	"special event" coordination
Washington	AM	28.3-D	-	-
	PM	26.0-D	-	-
Fred Waring and				
Cook	AM	18.0-C	-	-
	PM	27.2-D	-	-
Eldorado	AM	12.1-B	-	-
	PM	15.4-C	-	-
Warner Trail	AM	23.2-C	-	-
	PM	26.1-D	-	-
Washington	AM	36.9-D	-	-
	PM	* - F	-	"special event" coordination
Miles and				
Warner Trail	AM	3.0-A	-	-
	PM	11.0-C	-	-
Washington	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Adams	AM	20.9-C	-	-
	PM	25.6-D	-	-
Jefferson	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
42nd and				
Washington	AM	33.7-D	-	-
	PM	39.8-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable



Not to Scale

Project Buildout Event ADT

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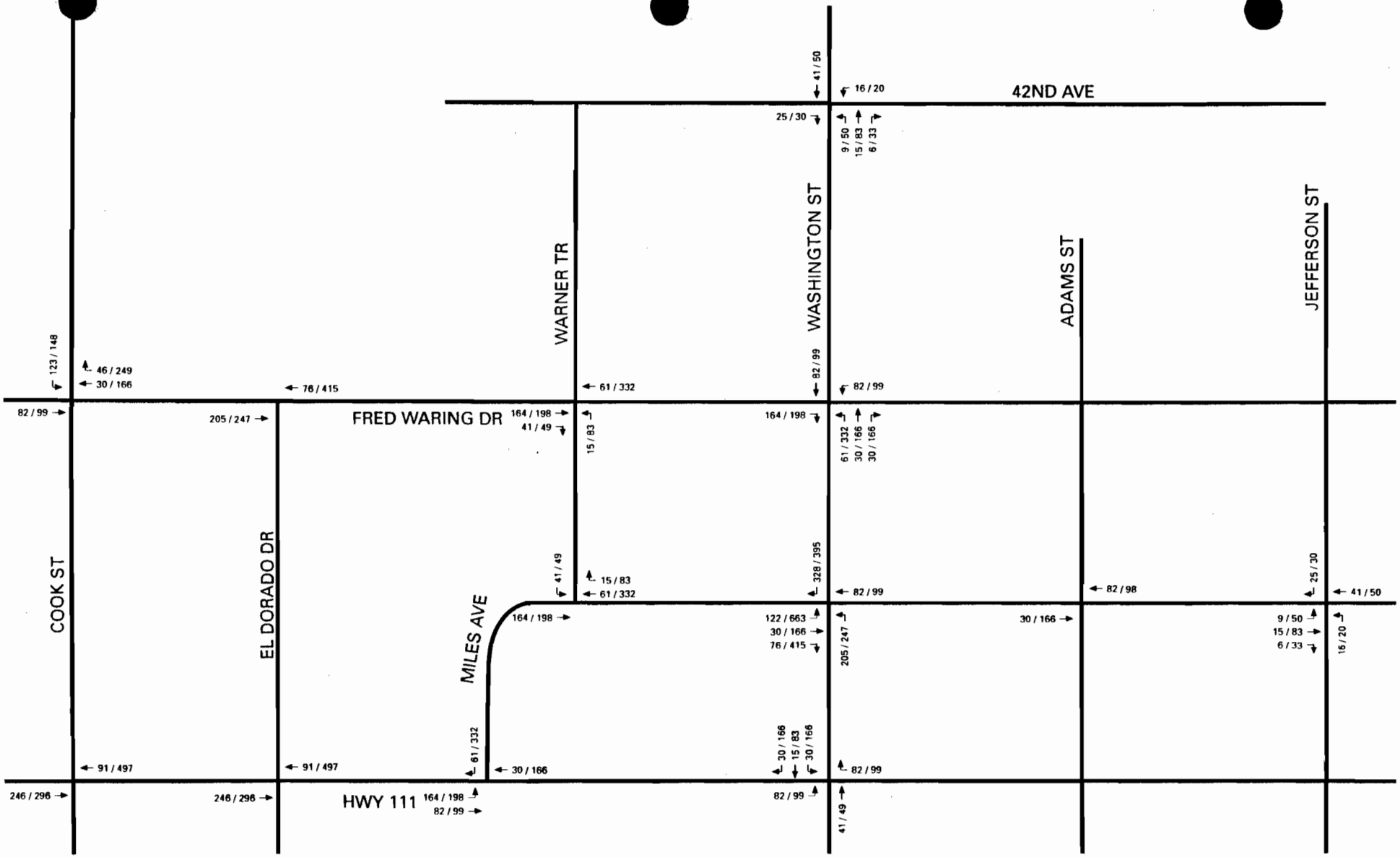
JN 301524-5437

Exhibit 25



Not to Scale

Project Buildout Event Trips

Exhibit 26

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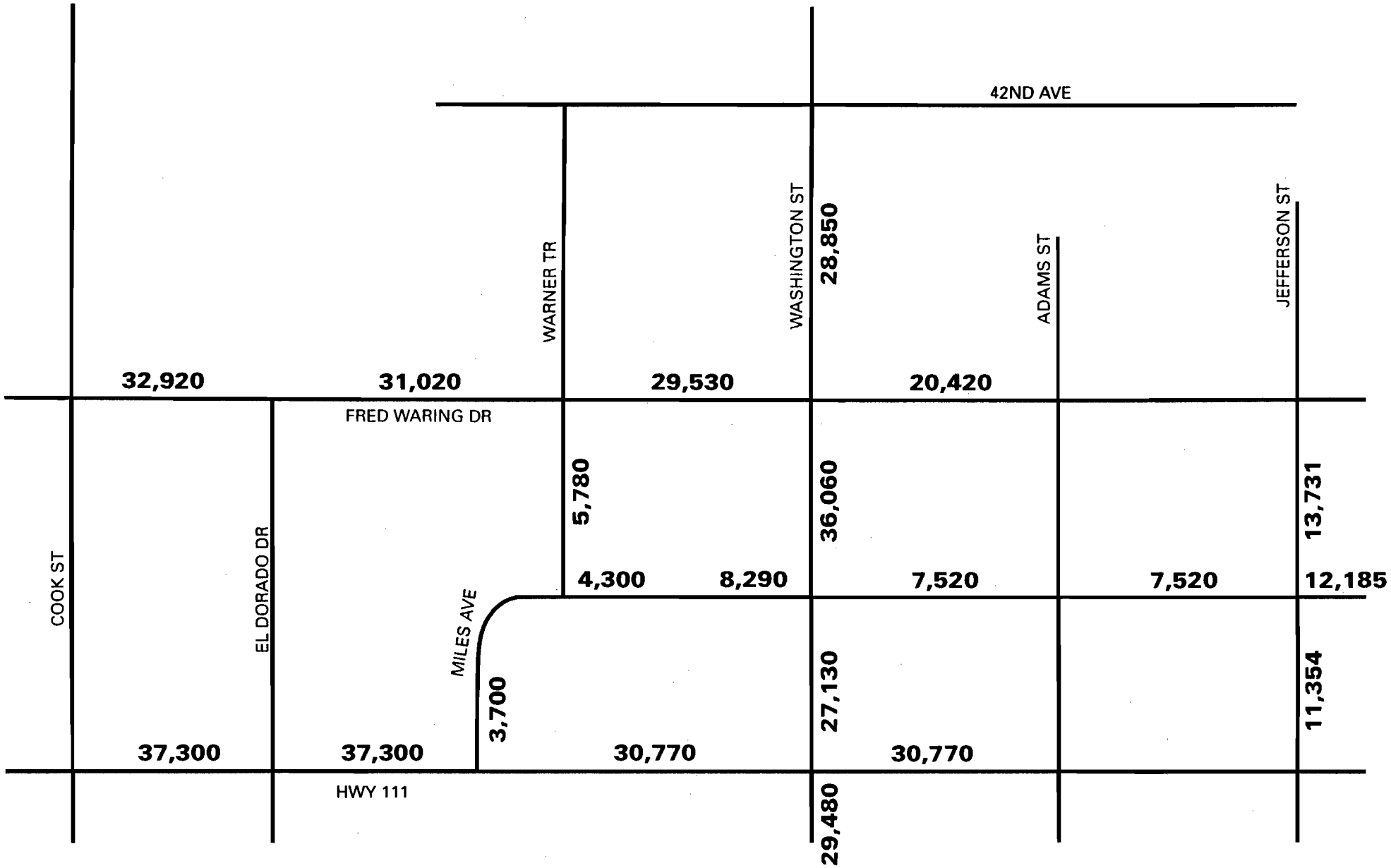

Not to Scale

Existing + Project Buildout Event ADT

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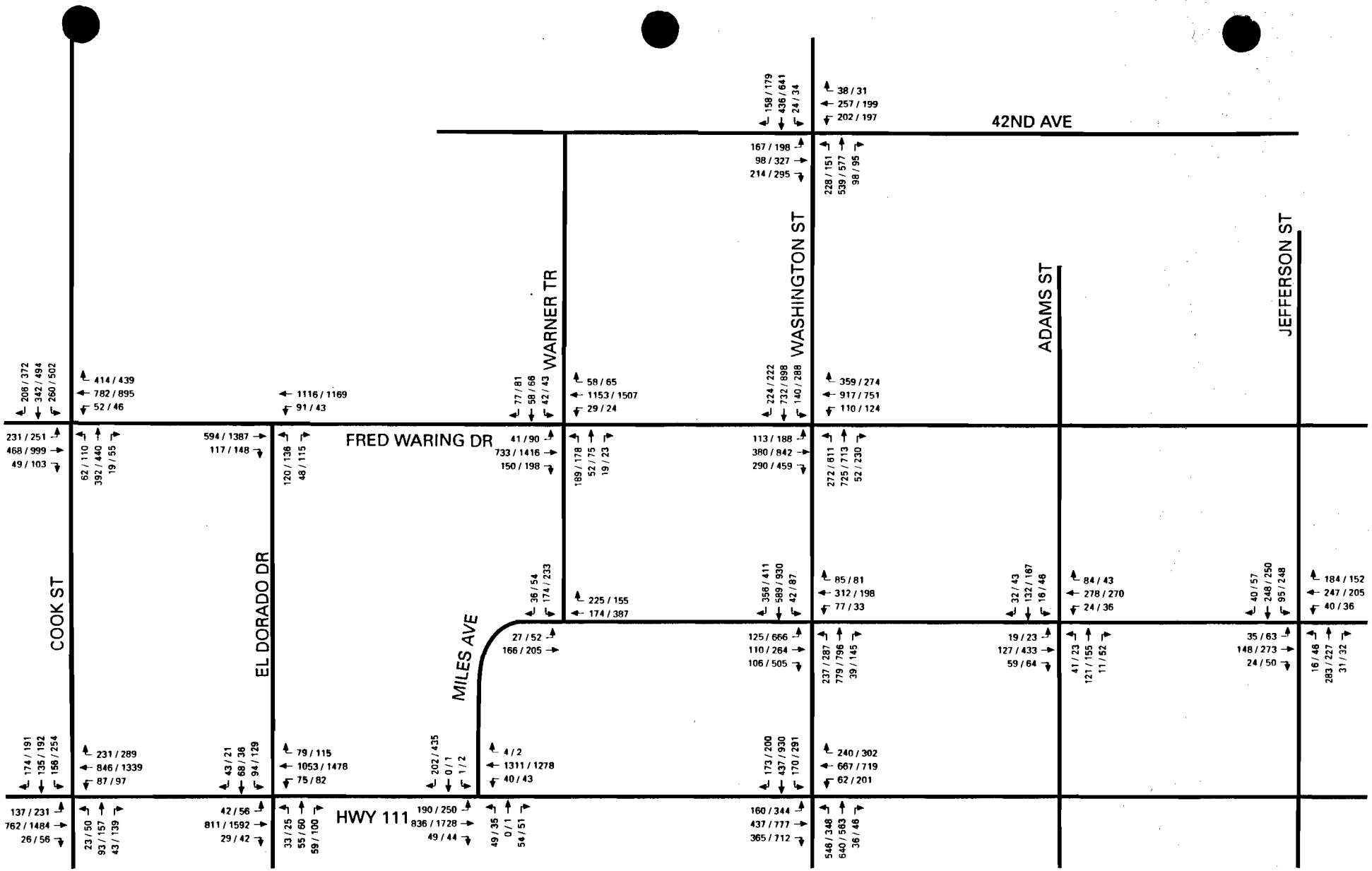
JN 301524-5437

Exhibit 27



Not to Scale

Existing + Project Buildout Event AM/PM

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Exhibit 28

As shown in Table 15, "special event" coordination mitigation is recommended to address the forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the p.m. peak hour, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the p.m. peak hour, and the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the Miles Avenue/Jefferson Street intersection in the a.m. and p.m. peak hours.

Existing Plus Project Buildout Annual Tennis Event Plus Cumulative Conditions

To determine existing plus project buildout annual tennis event plus cumulative conditions, existing traffic volumes were increased by 20 percent to account for approximately five years of cumulative traffic growth assumed to occur by the completion of buildout of the project based on review of CVAG traffic census data. This is a conservative cumulative traffic growth assumption since all intersection turning movements are increased by 20 percent, not just the through or major movements at an intersection.

Existing Plus Project Buildout Annual Tennis Event Plus Cumulative ADT Volumes

Exhibit 29 shows forecast ADT volumes for existing plus project buildout annual tennis event plus cumulative conditions on the roadway circulation system in the vicinity of the project site.

Existing Plus Project Buildout Annual Tennis Event Plus Cumulative Peak Hour Level of Service

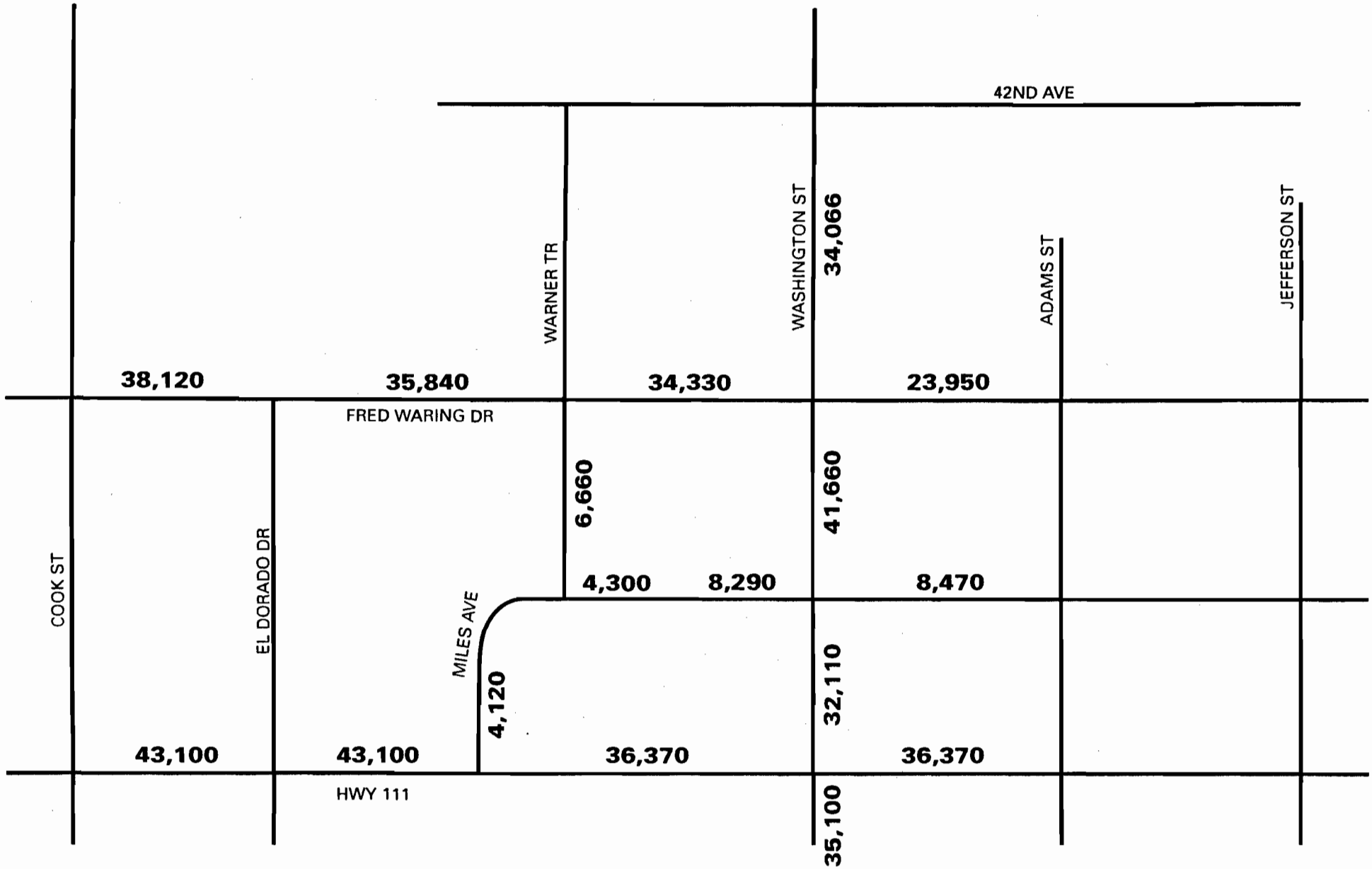
Exhibit 30 shows forecast a.m. peak hour and p.m. peak hour study intersection turning movement volumes for existing plus project buildout annual tennis event plus cumulative conditions.

Table 16 summarizes the a.m. and p.m. peak LOS of the study intersections for existing plus project buildout annual tennis event plus cumulative conditions; detailed HCM calculation sheets are contained in Appendix B. No "physical improvement" mitigation is recommended in Table 16 for identified deficient intersections to achieve LOS D operation since the annual event occurs for only approximately two weeks out of the year. "Special event" coordinating mitigation is recommended between the project applicant and the affected agencies during the special event, such as directional signage and shuttle service.

Table 16
Existing + Project Buildout Annual Tennis Event + Cumulative Delay & LOS

Intersection		Delay - LOS		Recommended Mitigation
Highway 111 and		Base Case	Mitigated	-
Cook	AM	18.2-C	-	-
	PM	* - F	-	"special event" coordination
Eldorado	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Miles	AM	32.2-D	-	-
	PM	* - F	-	"special event" coordination
Washington	AM	31.7-D	-	-
	PM	32.1-D	-	-
Fred Waring and				
Cook	AM	23.0-C	-	-
	PM	* - F	-	"special event" coordination
Eldorado	AM	14.0-B	-	-
	PM	29.7-D	-	-
Warner Trail	AM	29.4-D	-	-
	PM	35.1-D	-	-
Washington	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Miles and				
Warner Trail	AM	4.0-A	-	-
	PM	22.8-D	-	-
Washington	AM	* - F	-	"special event" coordination
	PM	* - F	-	"special event" coordination
Adams	AM	21.8-C	-	-
	PM	31.1-D	-	-
Jefferson	AM	35.2-D	-	-
	PM	47.2-E	-	"special event" coordination
42nd and				
Washington	AM	35.9-D	-	-
	PM	36.4-D	-	-

* : Infeasible Delay Calculation
- : Not Applicable

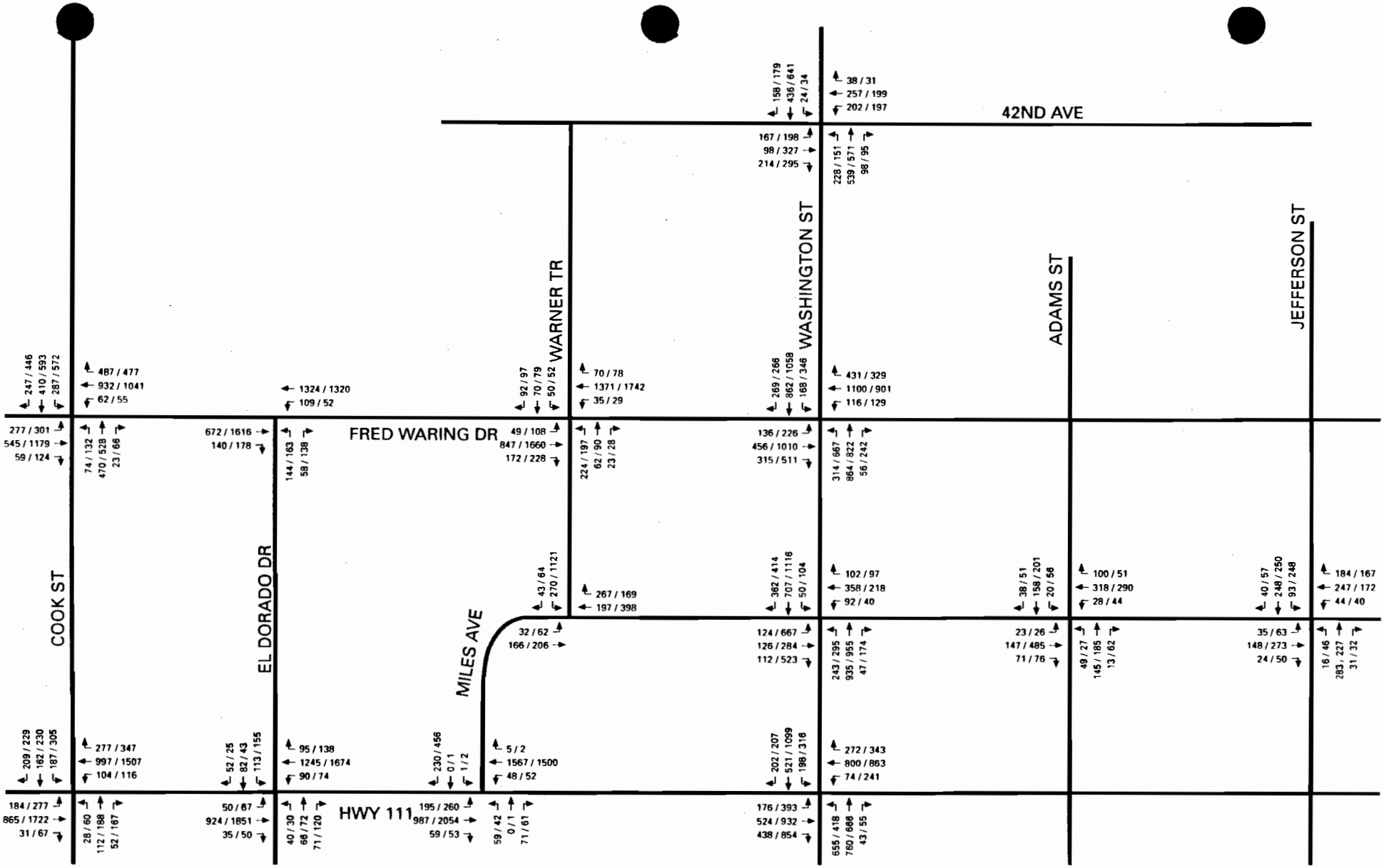


Not to Scale

Existing + Project Buildout Event + Cumulative ADT

BEIN, WILLIAM FROST & ASSOCIATES
JN 301524-5437

Exhibit 29



Not to Scale

Existing + Project Buildout Event + Cumulative AM/PM

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
6-98 JN 301524-5437

Exhibit 30

As shown in Table 16, "special event" coordination mitigation is recommended to address the forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the a.m. and p.m. peak hours,, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Cook Street intersection in the p.m. peak hour the Fred Waring Drive/Washington Street intersection in the a.m. and p.m. peak hours, the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the Miles Avenue/Jefferson Street intersection in the p.m. peak hour.

PROJECT SITE GENERAL PLAN TRIP GENERATION COMPARISON

The project site is located in the City of Indian Wells Sphere of Influence of unincorporated Riverside County. According to the City of Indian Wells General Plan Land Use Element, the 150 acre project site is designated Community Commercial, which allows (at a 0.75 Floor-Air-Ratio) retail shops, offices, restaurants, personal service shops, grocery stores, movie theaters, hotels and resort uses and similar uses. Hence, according to the City of Indian Wells General Plan, the project site could be developed with approximately 4,900,500 square feet of Community Commercial land uses.

Assuming an average trip generation rate (40 ADT/TSF and 5 peak hour trips/TSF) to allow for the Community Commercial retail land uses allowed on the project site according to the City of Indian Wells General Plan, Table 17 summarizes the forecast trip generation of the project site assuming buildout according to the City of Indian Wells General Plan in comparison to the proposed project at buildout for both annual tennis event and non-annual tennis event conditions.

Table 17
Project Site Trip Generation Scenarios

Project Site Land Use Scenarios	ADT	AM Peak Hour	PM Peak Hour
City of Indian Wells General Plan - 4,900 TSF Community Commercial	196,000	24,500	24,500
Proposed Project Buildout - Without Annual Tennis Event	14,964	595	1,320
Proposed Project Buildout - With Annual Tennis Event	27,663	1,122	2,641

As shown in Table 17, The proposed project with and without the annual tennis event is forecast to generate significantly less trips than if the project site was built out according to the City of Indian Wells General Plan.

ADJACENT SOUTHWEST COMMUNITY CHURCH

Immediately north of the project site and south of Fred Waring Drive, a public use permit has been granted to construct the proposed Southwest Community Church. According to the applicant for the proposed church, the facility is expected to approximately generate traffic as follows:

Monday P.M.:	300 inbound vehicles at 6:30 p.m. 300 outbound vehicles at 8:30 p.m.
Tuesday P.M.:	100 inbound vehicles at 6:00 p.m. 800 inbound vehicles at 6:30 p.m. 900 outbound vehicles at 8:30 p.m. 100 outbound vehicles at 9:00 p.m.
Wednesday A.M.:	900 inbound vehicles at 6:30 p.m. 900 outbound vehicles at 8:30 p.m.
Wednesday P.M.: (Every other week)	400 inbound vehicles at 6:30 p.m. 400 outbound vehicles at 8:30 p.m.
Thursday P.M.:	400 inbound vehicles at 6:30 p.m. 200 outbound vehicles at 8:30 p.m. 200 outbound vehicles at 9:30 p.m.
Friday P.M.:	300 inbound vehicles at 6:00 p.m. 300 outbound vehicles at 8:00 p.m.
Saturday P.M.:	600 inbound vehicles at 5:00 p.m. 600 outbound vehicles at 6:30 p.m.
Sunday A.M.: (Winter Season)	1,000 inbound vehicles every hour from 8:00 a.m. to 11:00 a.m. 1,000 outbound vehicles every hour from 9:00 a.m. to 12:00 p.m.
Sunday A.M.: (Summer Season)	1,000 inbound vehicles at 9:00 a.m. and at 10:30 p.m. 1,000 outbound vehicles at 9:00 a.m. to 11:30 p.m.
Sunday A.M.: (Easter Sunday)	1,500 inbound vehicles every hour from 7:00 a.m. to 11:00 a.m. 1,500 outbound vehicles every hour from 8:00 a.m. to 12:00 p.m.

Additionally, special events such as concerts, dinner theaters, etc. are occasionally anticipated to be held on Friday and Sunday evenings from 7:00 p.m. to 10:00 p.m.

Access for the planned church is provided by a one right in/right out only driveway on Washington Street south of Fred Waring Drive, a full access location on Fred Waring Drive west of Washington Street, a right in/right out only driveway on Fred Waring Drive west of the site's full access location, and a full access location at Warner Trail south of Fred Waring.

The majority of the motorists accessing the church are expected to originate west of the project site were the greatest population concentration exists in the Valley. Approximately seventy-five percent are expected to come to the church site from the west along Fred Waring Drive, fifteen percent coming from the south via Washington Street, with the ten percent coming from both the north on Washington Street and from the east on Fred Waring Drive. Hence, based on planned access to the church site combined with the geographic distribution of the forecast church-going population, a relatively small amount of church-generated traffic is expected to travel through the Fred Waring Drive/Washington Street intersection.

It is important to note that all of the scheduled church related events noted above which are forecast to generate traffic in the surrounding area are planned to occur outside of when the roadway circulation system experiences a.m. and p.m. peak hour conditions. As already discussed on page 6 and page 7 of this report, based on existing traffic count data included in Appendix A, the roadway circulation system in the vicinity of the church site and the proposed project site experiences peak conditions on weekday mornings from 7:45 a.m. to 8:30 a.m., and weekday evenings from 4:45 p.m. to 5:30 p.m.

Hence, as a worst case analysis, the peak hour analysis contained in this report analyzes project impacts during the critical a.m. and p.m. peak hours, and therefore trips forecast to be generated by the adjacent church would not be expected to change the level of service forecasts contained in this study. By the time the church generates trips, the surrounding roadway circulation system peak hour has already ended, which are also the same peak hours for all land uses planned on the proposed project site, with the exception of the annual event.

Only one of the annual tennis events on the proposed project site is anticipated to be scheduled at the same time that the adjacent church is simultaneously conducting an event as well. This would occur on Sunday morning, when the church is conducting Sunday morning services at the start of every hour, and the annual tennis event is hosting the Men's Championship Matches, which is held at 11:30 a.m. due to television contracts. While there may some overlap within the traffic study area of traffic arriving for both the 11:00 a.m. church service and the 11:30 a.m. Men's Championship Matches, the traffic impact is not expected to be significant since the majority of traffic would for both events would be staggered by approximately 30 minutes.

Also, as discussed above, approximately seventy-five percent of church-related traffic is expected to be located on Fred Waring Drive west of the Washington Street intersection, where only twenty to twenty-five percent of the annual event traffic is expected to be. Likewise, as shown in Exhibit 6, the majority (seventy-five percent) of the annual tennis event

traffic is expected to be located on Washington Street in the vicinity of Miles Avenue, where only approximately fifteen of church-related traffic is expected to be located.

To determine the operating condition of the Fred Waring/Washington Street intersection on Sunday mornings, existing traffic movements were counted Sunday morning from 9:00 a.m. to 12:00 p.m., from which a.m. peak hour Sunday intersection movements were formulated for the Fred Waring Drive/Washington Street intersection; detailed Sunday a.m. traffic count data is included in Appendix A. Exhibit 31 shows the Sunday a.m. peak hour volumes at the Fred Waring Drive/Washington Street intersection.

Also shown in Exhibit 31 is the forecast Sunday arrival church-generated a.m. peak volumes at the Fred Waring Drive/Washington Street intersection assuming typical winter season attendance arriving for a church service. Existing plus church-generated Sunday a.m. peak hour volumes at the Fred Waring/Washington Street intersection are also shown in Exhibit 31.

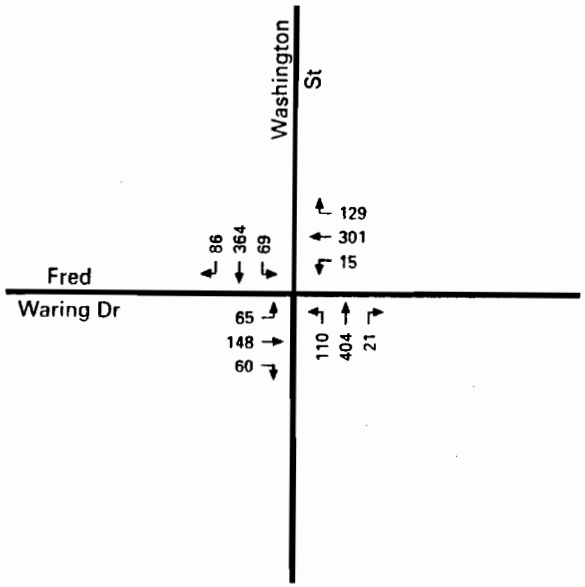
Table 18 summarizes the Sunday a.m. peak hour LOS of the Fred Waring Drive/Washington Street intersection for existing Sunday a.m. peak hour conditions and existing plus church-generated Sunday a.m. peak hour conditions assuming the both existing geometry of the Fred Waring Drive/Washington Street intersection as well as the recommended improvements to alleviate existing deficiencies in the weekday a.m. and p.m. peak hours (see Table 2); detailed HCM calculation sheets are contained in Appendix B.

Table 18
Fred Waring Drive/Washington Street Sunday A.M. Peak Delay & LOS

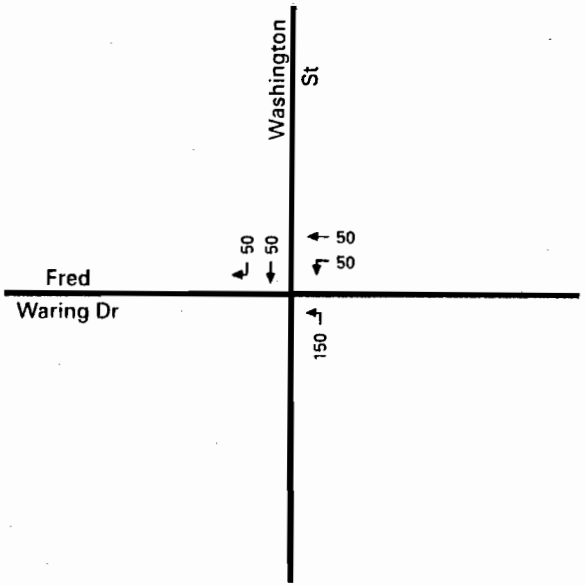
Traffic Analysis Scenario	Delay - LOS
Existing A.M. Peak Conditions (Existing Geometry)	21.3 - C
Existing A.M. Peak Conditions (Improved Geometry)	17.9 - C
Existing + Church Traffic A.M. Peak Conditions (Existing Geometry)	22.6 - C
Existing + Church Traffic A.M. Peak Conditions (Improved Geometry)	18.6 - C

As shown in Table 18, the Fred Waring Drive/Washington Street intersection is currently operating at LOS C, and is forecast to continue operating at LOS C with the addition of church generated traffic during the Sunday a.m. peak hour whether the intersection remains as currently constructed or is improved to alleviate existing a.m. and p.m. peak hour deficiencies.

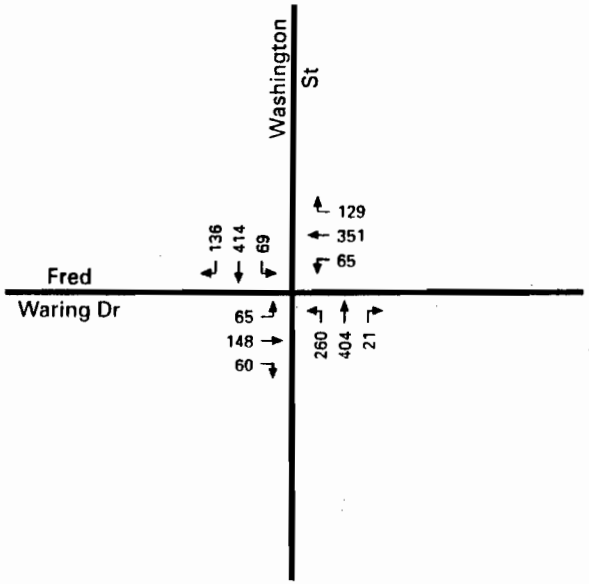
It is important to note that this is a conservative analysis, since it assumes no improvements are made to the Fred Waring Drive/Washington Street intersection when the church is constructed.



Existing Sunday
AM Peak Hour Volumes



Forecast Sunday Arrival
Church-Generated
AM Peak Hour Volumes



Existing + Sunday Arrival
Church-Generated
AM Peak Hour Volumes

11.2-64

Not to Scale

Fred Waring / Washington Street Sunday AM Peak Hour Volumes

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Exhibit 31

Therefore, since the Fred Waring Drive/Washington Street intersection is forecast to operate at a better LOS (LOS C) in the Sunday a.m. peak hour with the addition of church-generated traffic than either the existing weekday a.m. peak hour (LOS F) and/or the existing weekday p.m. peak hour (LOS F), the impacts identified for all the various traffic analysis scenarios and related mitigation contained in this traffic analysis report, which as based upon existing weekday a.m. and p.m. peak hour conditions, are expected to be greater than what would occur during the Sunday a.m. peak hour with church-generated traffic.

MITIGATION MEASURES

The following mitigation measures are recommended to reduce project-related traffic impacts to less than significant levels, assuming implementation of the recommended improvements identified in Exhibit 32, to alleviate existing deficiencies (previously identified in Table 2):

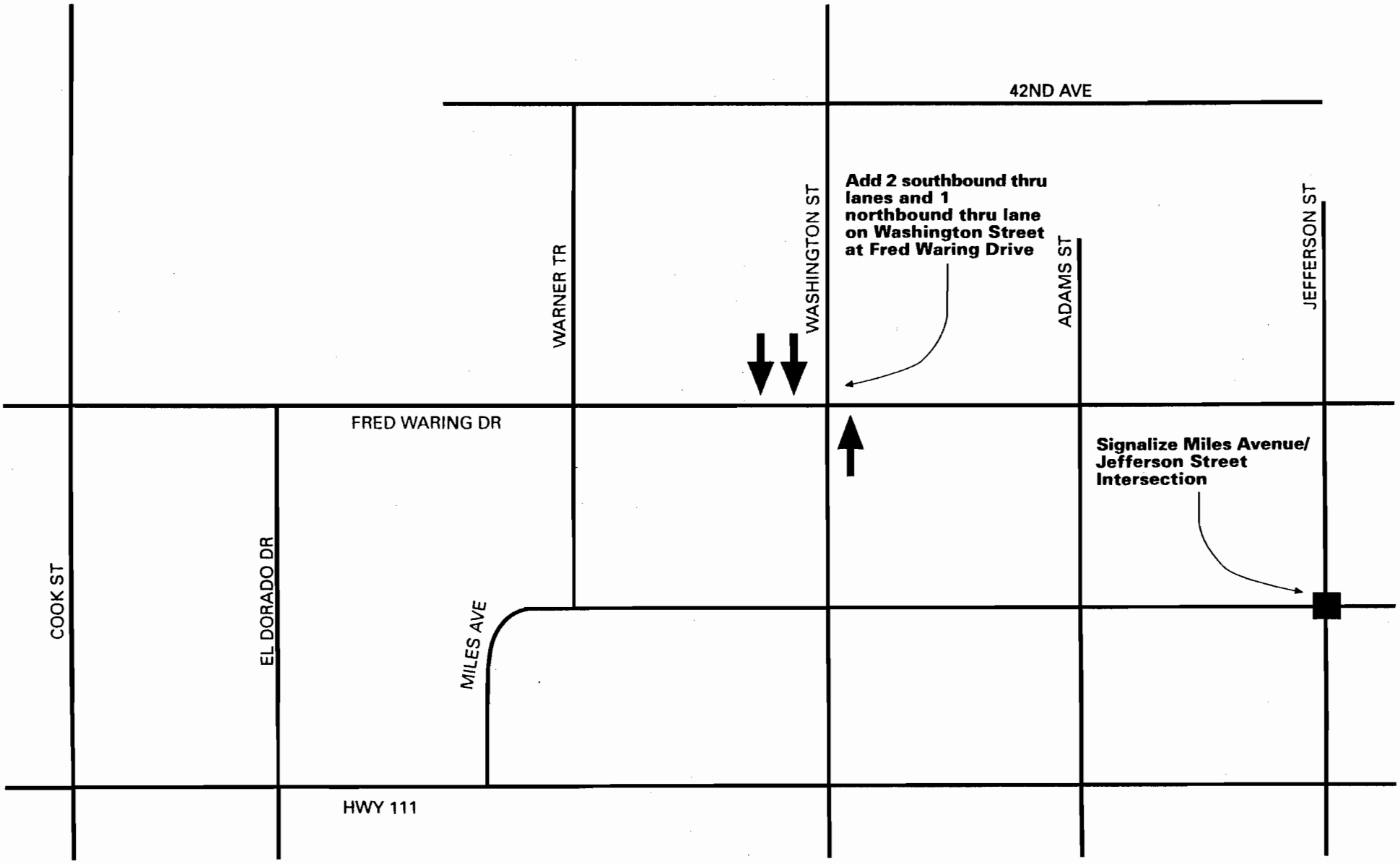
Existing Plus Phase 1 Project Conditions

Existing Plus Phase 1 Project Conditions assume improvement of the currently deficient Fred Waring Drive/Washington Street intersection to LOS D operation through the addition of two southbound through lanes on Washington Street and one northbound through lane on Washington Street. As such, the project applicant shall pay a fair share of the costs of the Fred Waring Drive/Washington Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Phase 1 Project Conditions:

Mitigation Measure No. 1: **Fred Waring Drive/Washington Street** - fair share payment of CVAG traffic mitigation fees for the addition of two southbound through lanes on Washington Street and one northbound through lane on Washington Street due to existing deficient condition.

Existing Plus Phase 1 Project Plus Cumulative Conditions

Existing Plus Phase 1 Project Plus Cumulative Conditions assume improvement of the currently deficient Fred Waring Drive/Washington Street intersection to LOS D operation through the addition of two southbound through lanes on Washington Street and one northbound through lane on Washington Street. As such, the project applicant shall pay a fair share of the costs of the Fred Waring Drive/Washington Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Phase 1 Project Plus Cumulative Conditions:



Not to Scale

Recommended Improvements to Alleviate Existing Deficiencies

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JN 301524-5437

Exhibit 32

Mitigation Measure No. 2: **Fred Waring Drive/Washington Street** - fair share payment of CVAG traffic mitigation fees for the addition of two southbound through lanes on Washington Street and one northbound through lane on Washington Street.

Despite the implementation of the improvements required for the existing deficiency at the Fred Waring Drive/Washington Street intersection, additional mitigation is required for Existing Plus Phase 1 Project Plus Cumulative Conditions. As such, the project applicant shall pay a fair share of the costs of the following improvements at the Fred Waring Drive/Washington Street intersection through payment of CVAG traffic impact mitigation fees for Existing Plus Project Plus Phase 1 Project Plus Cumulative Conditions:

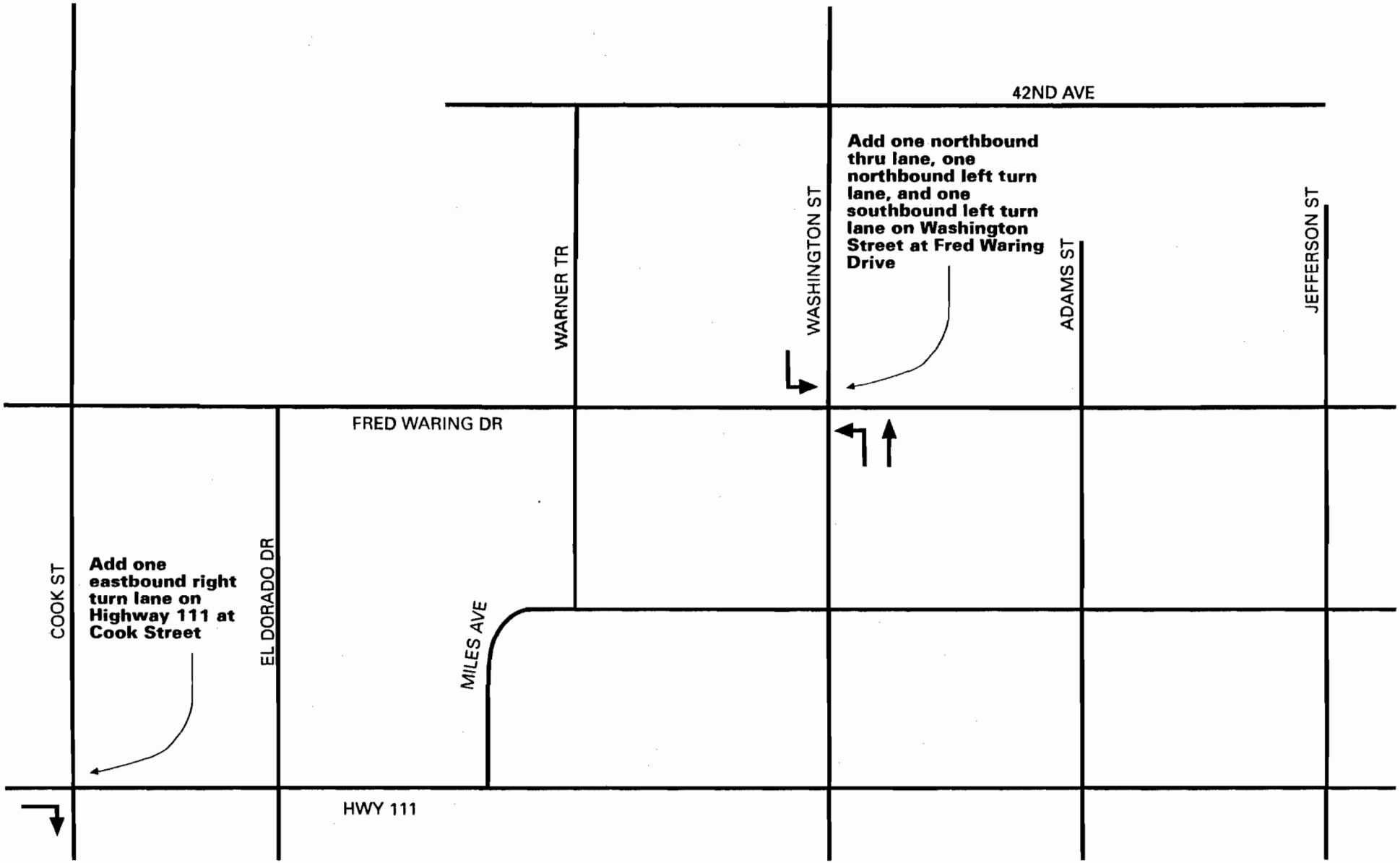
Mitigation Measure No. 3: **Fred Waring Drive/Washington Street** - fair share payment of CVAG traffic mitigation fees for an addition northbound left turn lane on Washington Street, an addition southbound left turn lane on Washington Street, and an additional northbound through lane on Washington Street for existing plus phase 1 project plus cumulative conditions (see Exhibit 33).

The Highway 111/Cook Street intersection is forecast to operate deficiently with the addition of project and cumulative traffic growth for Existing Plus Phase 1 Project Plus Cumulative Conditions. As such, the project applicant shall pay a fair share of the costs of the Highway 111/Cook Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Phase 1 Project Plus Cumulative Conditions:

Mitigation Measure No. 4: **Highway 111/Cook Street** - fair share payment of CVAG traffic mitigation fees for the addition of an eastbound right turn lane on Highway 111 at Cook Street due to existing plus phase 1 project plus cumulative conditions (see Exhibit 33).

Existing Plus Project Buildout Conditions

Existing Plus Project Buildout Conditions assume improvement of the Fred Waring Drive/Washington Street intersection for Existing Conditions and Existing Plus Phase 1 Plus Cumulative Conditions as discussed above. As such, the project applicant shall pay a fair share of the costs of the Fred Waring Drive/Washington Street intersection



Not to Scale

Recommended Mitigation to Address Existing + Phase 1 Project + Cumulative Traffic Impacts

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JN 301524-5437

Exhibit 33

improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Project Plus Buildout Conditions:

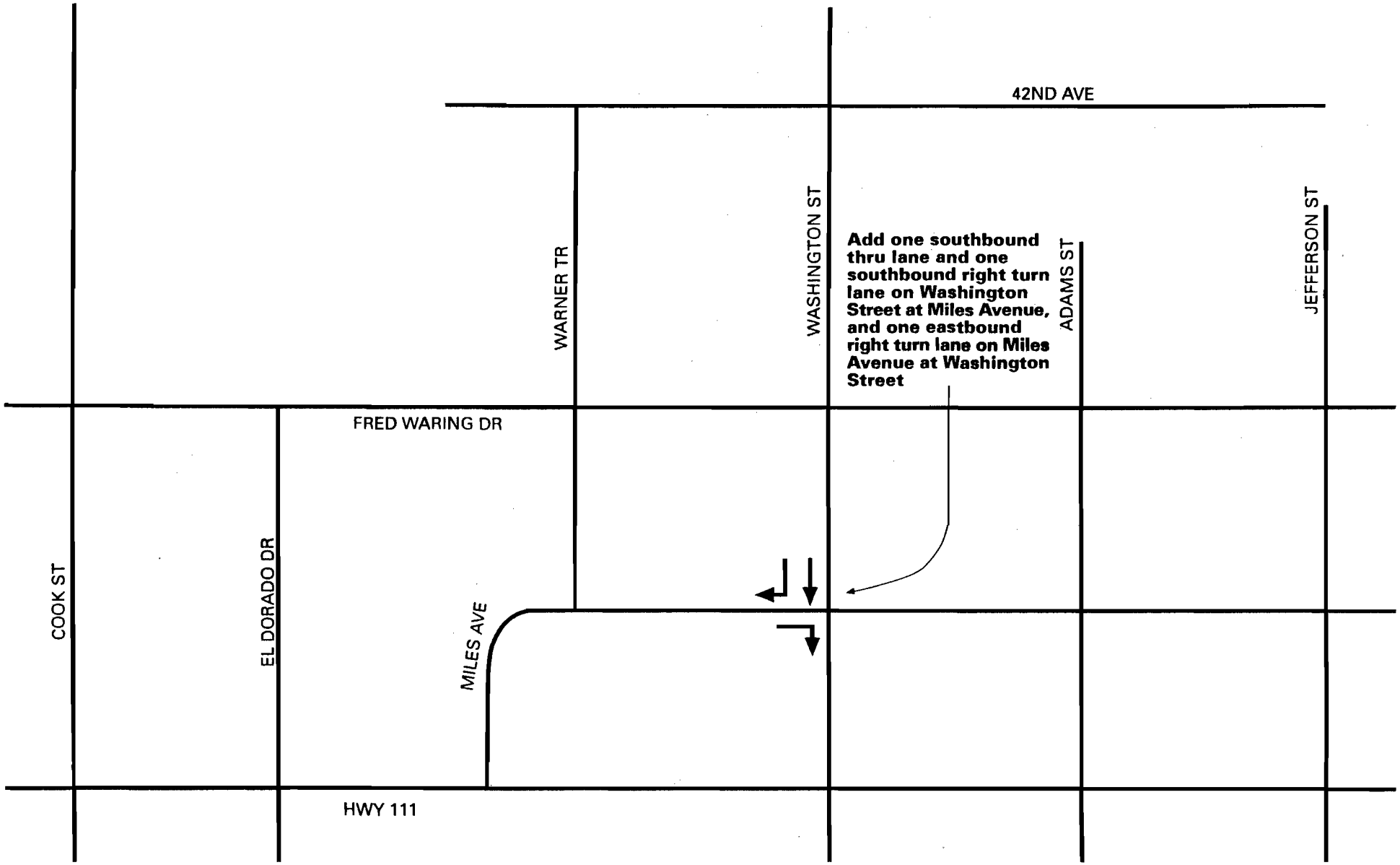
Mitigation Measure No. 5: **Fred Waring Drive/Washington Street** - fair share payment of CVAG traffic mitigation fees for two additional southbound through lanes on Washington Street, two additional northbound through lanes on Washington Street, an addition northbound left turn lane on Washington Street, and an additional southbound left turn lane on Washington Street for existing plus project buildout conditions.

Existing Plus Project Buildout Conditions assume improvement of the Highway 111/Cook Street intersection recommended for Existing Plus Phase 1 Plus Cumulative Conditions as discussed above. As such, the project applicant shall pay a fair share of the costs of the Highway 111/Cook Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Project Plus Buildout Conditions:

Mitigation Measure No. 6: **Highway 111/Cook Street** - fair share payment of CVAG traffic mitigation fees for the addition of an eastbound right turn lane on Highway 111 at Cook Street due for existing plus project buildout conditions.

The Miles Avenue/Washington Street intersection is forecast to operate deficiently for Existing Plus Project Buildout Conditions. As such, the project applicant shall pay a fair share of the costs of the Miles Avenue/Washington Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Project Buildout Conditions:

Mitigation Measure No. 7: **Miles Avenue/Washington Street** - fair share payment of CVAG traffic mitigation fees for the addition of an southbound through lane and a southbound right turn lane on Washington Street at Miles Avenue, and an eastbound right turn lane on Miles Avenue at Washington Street, for existing plus project buildout conditions (see Exhibit 34).



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Recommended Mitigation to Address Existing + Project Buildout Traffic Impacts

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Exhibit 34

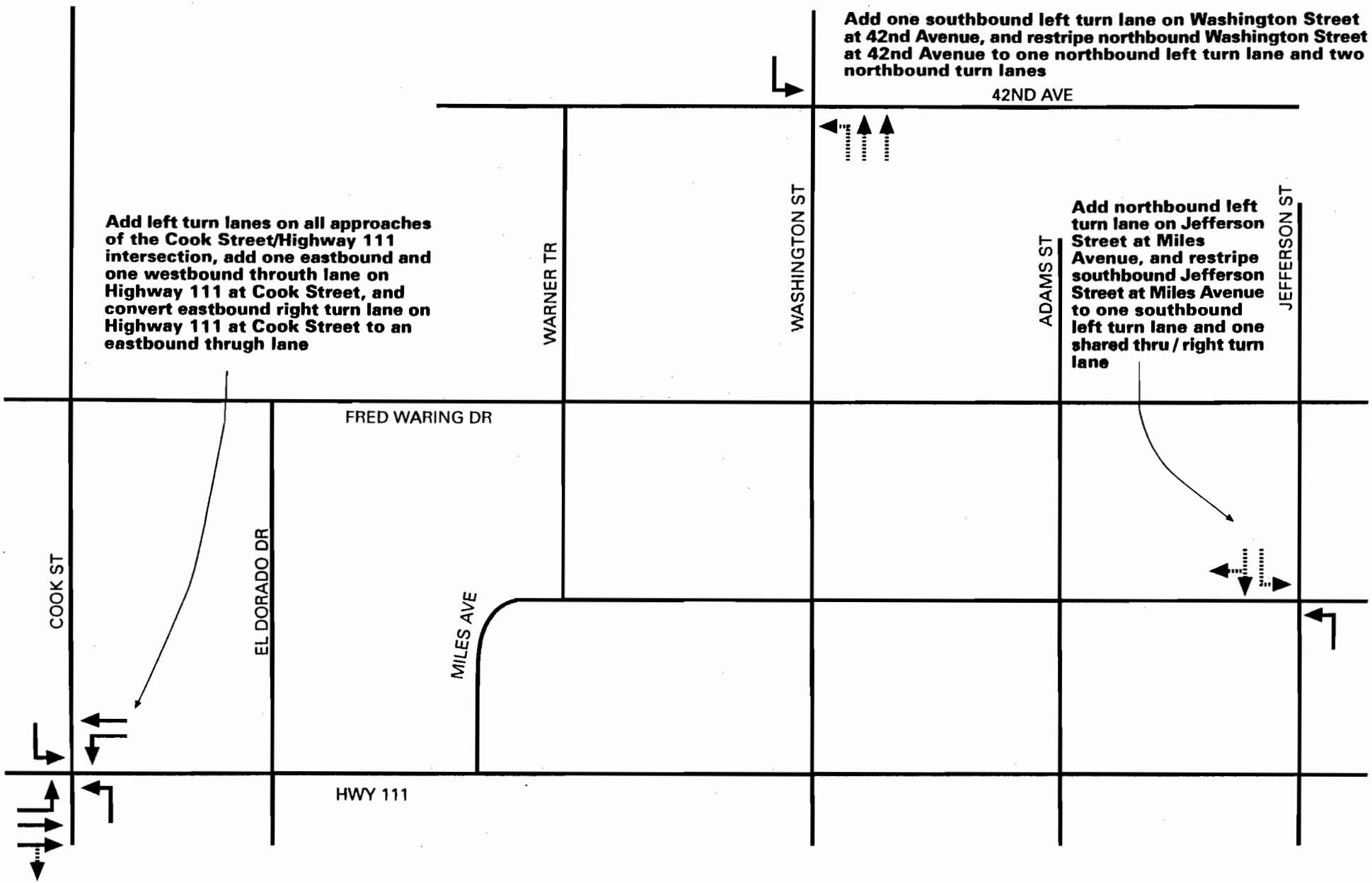
Existing Plus Project Buildout Plus Cumulative Conditions

Existing Plus Project Buildout Plus Cumulative Conditions assume improvement of the Fred Waring Drive/Washington Street intersection recommended for Existing Conditions and for Existing Plus Phase 1 Plus Cumulative Conditions as discussed above. As such, the project applicant shall pay a fair share of the costs of the Fred Waring Drive/Washington Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Project Plus Buildout Plus Cumulative Conditions:

Mitigation Measure No. 8: **Fred Waring Drive/Washington Street** - fair share payment of CVAG traffic mitigation fees for two additional southbound through lanes on Washington Street, two additional northbound through lanes on Washington Street, an addition northbound left turn lane on Washington Street, and an additional southbound left turn lane on Washington Street for existing plus project buildout plus cumulative conditions.

Existing Plus Project Buildout Plus Cumulative Conditions result in a forecast deficiency at the Highway 111/Cook Street intersection. As such, the project applicant shall pay a fair share of the costs of the Highway 111/Cook Street intersection improvement through payment of CVAG traffic impact mitigation fees for Existing Plus Project Plus Buildout Plus Cumulative Conditions:

Mitigation Measure No. 9: **Highway 111/Cook Street** - fair share payment of CVAG traffic mitigation fees for conversion of the eastbound right turn lane added on Highway 111 at Cook Street for existing plus phase 1 project plus cumulative conditions to an eastbound through lane. Additionally, fair share payment of CVAG traffic mitigation fees for an additional northbound left turn lane on Cook Street, an additional southbound left turn lane on Cook Street, an additional eastbound left turn lane on Highway 111, an additional westbound left turn lane on Highway 111, an additional eastbound through lane on Highway 111, and an additional westbound through lane on Highway 111 (see Exhibit 35).



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Recommended Mitigation to Address Existing + Project Buildout + Cumulative Traffic Impacts

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Exhibit 35

The 42nd Avenue/Highway 111 intersection is forecast to operate deficiently for Existing Plus Project Buildout Plus Cumulative Conditions. The project applicant shall pay a fair share of the costs of an additional southbound left turn lane on Washington Street at 42nd Avenue, and restriping of northbound Washington Street at 42nd Avenue to one northbound left turn lane and two northbound through lanes, through payment of CVAG traffic impact mitigation fees for Existing Plus Project Buildout Plus Cumulative Conditions:

Mitigation Measure No. 10: **42nd Avenue/Washington Street** - fair share payment of CVAG traffic mitigation fees for the additional southbound left turn lane on Washington Street at 42nd Avenue, and restriping of northbound Washington Street at 42nd Avenue to one left turn lane and two through lanes, for existing plus project buildout plus cumulative conditions (see Exhibit 35).

The Miles Avenue/Jefferson Street intersection is forecast to operate deficiently for Existing Plus Project Buildout Plus Cumulative Conditions. The project applicant shall pay a fair share of the costs of an additional northbound left turn lane on Jefferson Street at Miles Avenue, and restriping of southbound Jefferson Street at Miles Avenue to one southbound left turn lane and one southbound through/right turn lane, through payment of CVAG traffic impact mitigation fees for Existing Plus Project Buildout Plus Cumulative Conditions:

Mitigation Measure No. 11: **Miles Avenue/Jefferson Street** - fair share payment of CVAG traffic mitigation fees for the additional northbound left turn lane on Jefferson Street at Miles Avenue, and restriping of southbound Jefferson Street at Miles Avenue to one left turn lane and one through/right turn lane, for existing plus project buildout plus cumulative conditions (see Exhibit 35).

Existing Plus Phase 1 Project Annual Tennis Event Conditions

Mitigation Measure No. 12: "Special Event" coordinating mitigation between the project applicant and the affected agencies is recommended (such as directional signage and shuttle service) to address forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado

intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the p.m. peak hour, and the Miles Avenue/Washington Street intersection in the p.m. peak hour.

Existing Plus Phase 1 Project Annual Tennis Event Plus Cumulative Conditions

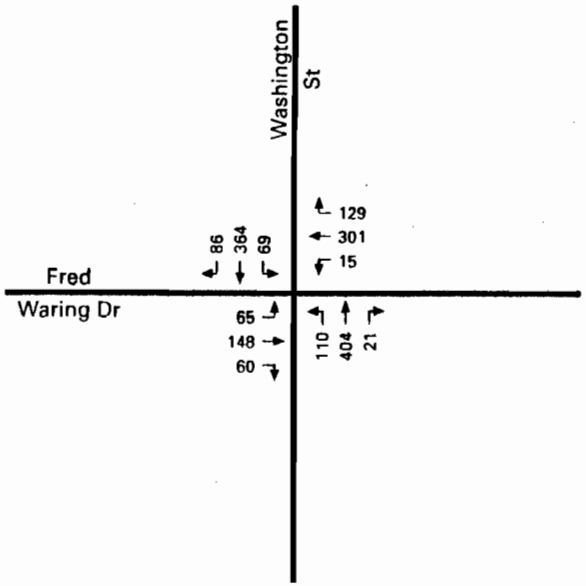
Mitigation Measure No. 13: "Special Event" coordinating mitigation between the project applicant and the affected agencies is recommended (such as directional signage and shuttle service) to address forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the p.m. peak hour, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the a.m. and p.m. peak hours, the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the 42nd Avenue/Washington Street intersection in the p.m. peak hour.

Existing Plus Project Buildout Annual Tennis Event Conditions

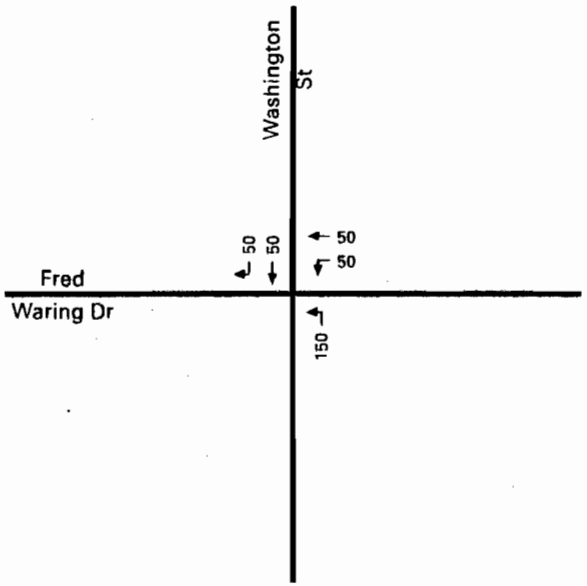
Mitigation Measure No. 14: "Special Event" coordinating mitigation between the project applicant and the affected agencies is recommended (such as directional signage and shuttle service) to address forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the p.m. peak hour, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the a.m. and p.m. peak hours, the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the Miles Avenue/Jefferson Street intersection in the a.m. and p.m. peak hours.

Existing Plus Project Buildout Annual Tennis Event Plus Cumulative Conditions

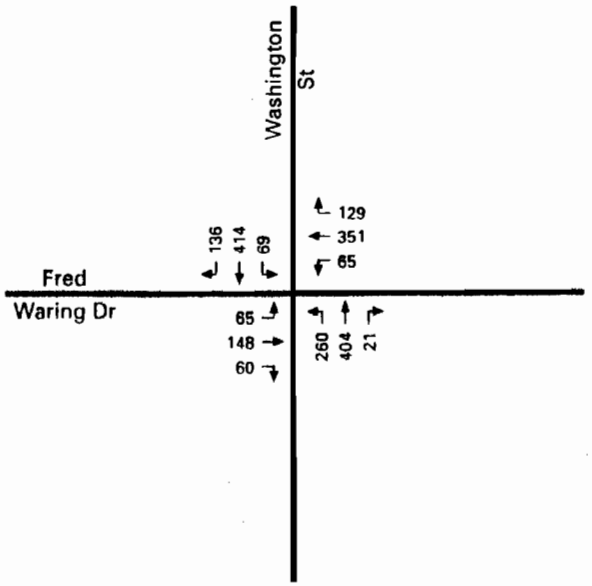
Mitigation Measure No. 15: "Special Event" coordinating mitigation between the project applicant and the affected agencies is recommended (such as directional signage and shuttle service) to address forecast deficiencies at the Highway 111/Cook Street intersection in the p.m. peak hour, the Highway 111/Eldorado intersection in the a.m. and p.m. peak hours, the Highway 111/Miles Avenue intersection in the p.m. peak hour, the Fred Waring Drive/Cook Street intersection in the p.m. peak hour, the Fred Waring Drive/Washington Street intersection in the a.m. and p.m. peak hours, the Miles Avenue/Washington Street intersection in the a.m. and p.m. peak hours, and the Miles Avenue/Jefferson Street intersection in the p.m. peak hour.



Existing Sunday Morning Volumes



Sunday Morning Church Volumes



Existing Sunday Morning with Church Volumes

Not to Scale

Existing Sunday Morning with Church Volumes

BEIN, WILLIAM FROST & ASSOCIATES
JN 301524-5437

Exhibit 36

11.3 Drainage Calculations

TENTATIVE PARCEL MAP NO. 28833

GARDEN OF CHAMPIONS

PRELIMINARY HYDROLOGY REPORT

APRIL 28, 1998

PREPARED BY:

ROBERT BEIN, WILLIAM FROST & ASSOCIATES

74-410 HIGHWAY 111

PALM DESERT, CA 92260

**PRELIMINARY HYDROLOGY REPORT FOR
TENTATIVE PARCEL MAP NO. 28833
GARDEN OF CHAMPIONS**

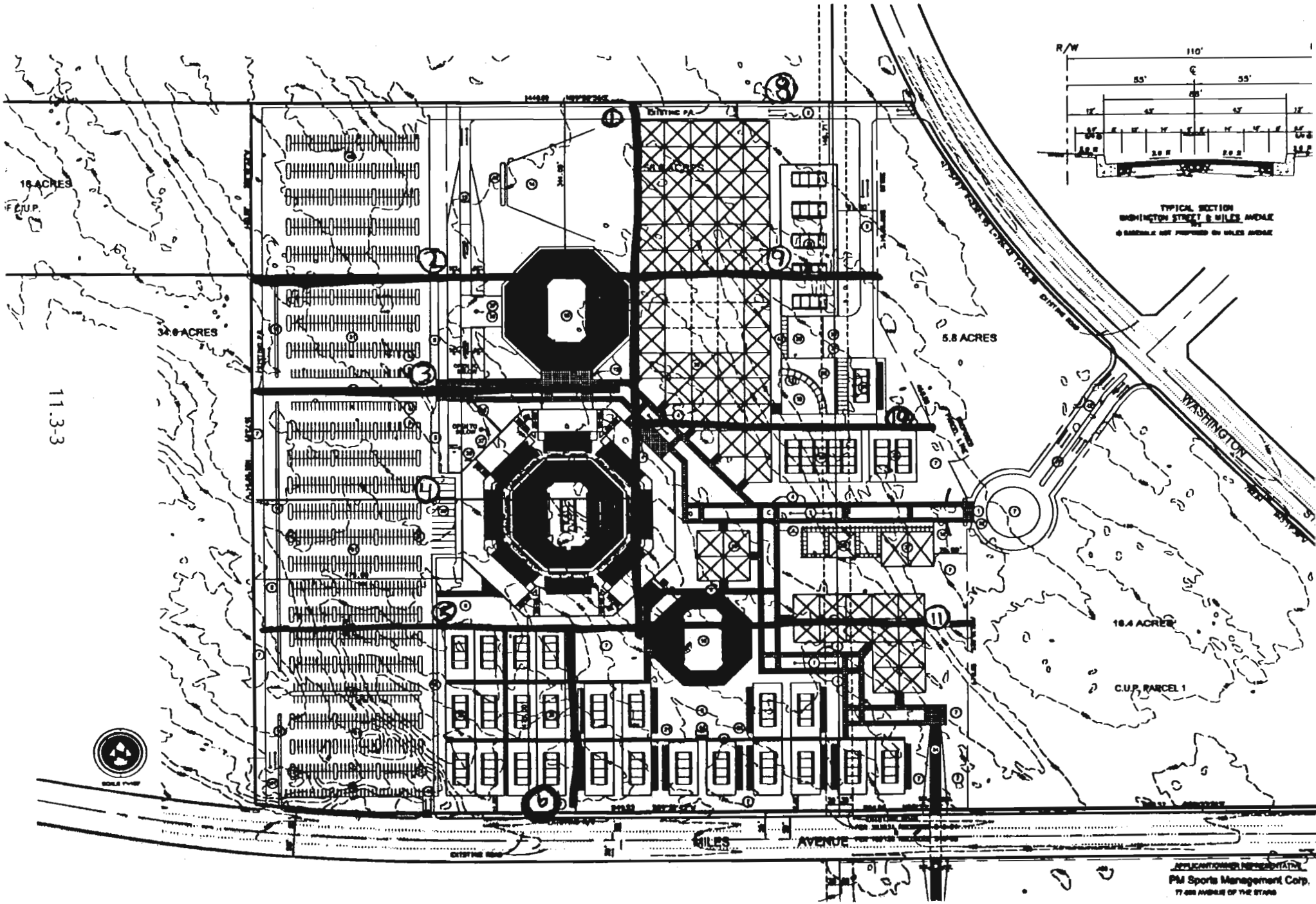
PARCELS 1, 3, 4 & 5 - HOTEL & COMMERCIAL SITES

	25 YEAR EVENT CFS	100 YEAR EVENT CFS	AREA-ACRES
UNDEVELOPED	28	41	38.2
DEVELOPED	67	90	38.2

PARCELS 2 & 6 TENNIS COMPLEX AND PARKING AREA

	25 YEAR EVENT CFS	100 YEAR EVENT CFS	AREA-ACRES
UNDEVELOPED	113	164	122.4
DEVELOPED	152	201	122.4

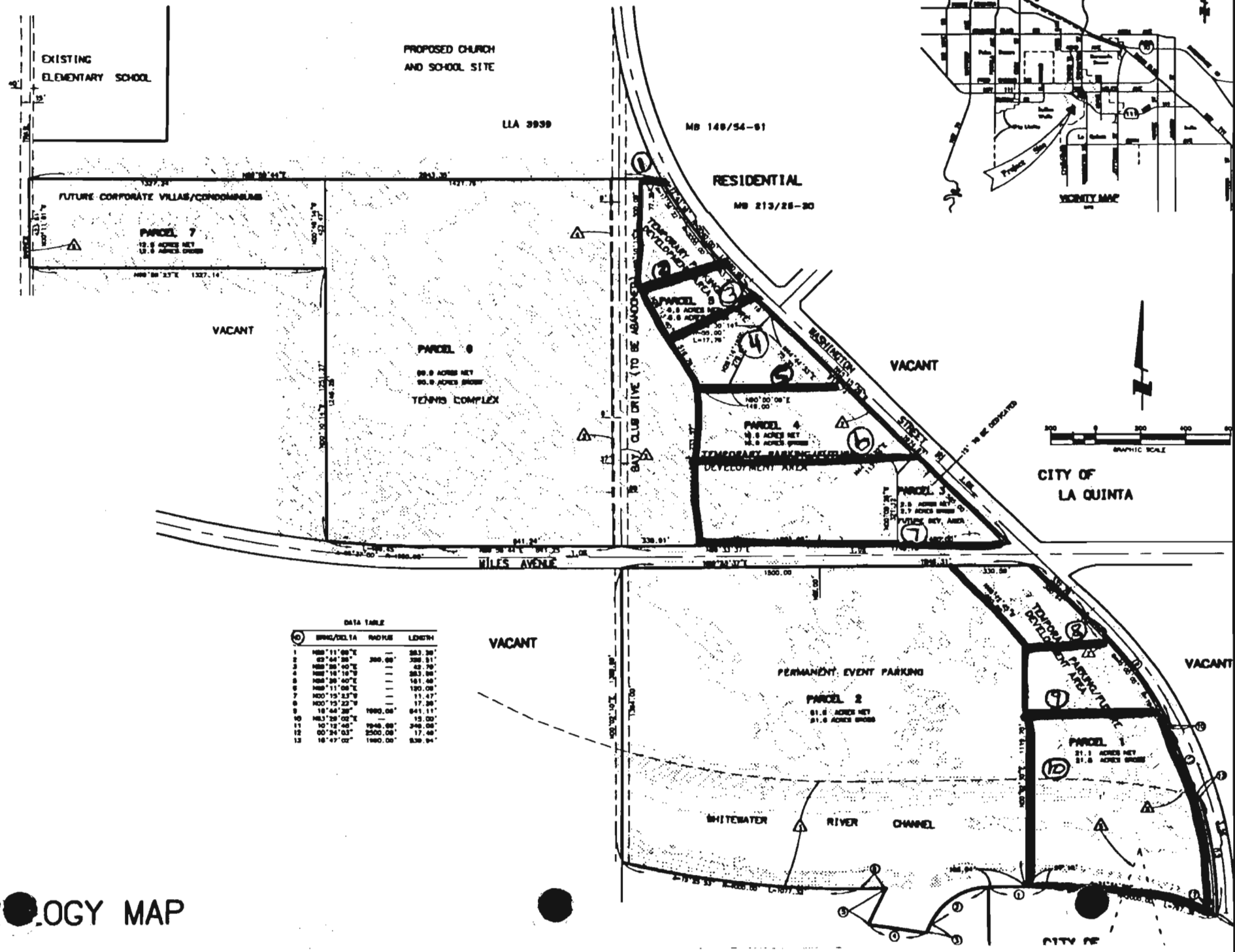
HYDROLOGY MAP



IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF RIVERSIDE, CALIFORNIA

TENTATIVE PARCEL MAP NO. 28833

BEING A DIVISION OF A PORTION OF SECTION 24 T.5S.,R.6E.
AND A PORTION OF SECTION 19 T.5S.,R.7E. SBM



DATA TABLE

	BRNG/DELTA	RADIUS	LENGTH
1	N89°11'00"E	—	353.30'
2	63°44'30"	300.00'	335.51'
3	N89°30'40"E	—	42.70'
4	N89°10'10"E	—	353.00'
5	N89°30'40"E	—	161.40'
6	N89°11'00"E	—	120.00'
7	N00°15'23"W	—	11.47'
8	N00°15'23"W	—	17.30'
9	19°44'30"	1900.00'	641.11'
10	N83°29'02"E	—	15.00'
11	10°12'40"	1940.00'	346.00'
12	00°24'03"	2500.00'	17.40'
13	18°47'02"	1900.00'	630.94'

HYDROLOGY MAP

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
       (c) Copyright 1982-96 Advanced Engineering Software (aes)
           Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                      Analysis prepared by:

              Robert Bein, William Frost & Associates
                        74-410 Highway 111
                      Palm Desert, Ca. 92260
                (619) 346-7481 : Fax (619) 346-8315

 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALCS FOR PARCELS 1,3,4,&5 UNDEVELOPED                            *
* 100 YEARS EVENT                                                          *
*                                                                          *
 ****************************************************************************

  FILE NAME: PMSPORT1.DAT
  TIME/DATE OF STUDY: 11:33   4/27/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE =  .5796
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =  6310.00
  UPSTREAM ELEVATION =    135.00
  DOWNSTREAM ELEVATION =     85.00
  ELEVATION DIFFERENCE =     50.00
  TC =  .533*[( 6310.00**3)/(    50.00)]**.2 =   46.411
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.857
  SOIL CLASSIFICATION IS "B"
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5754
  SUBAREA RUNOFF(CFS) =     40.81
```

```
TOTAL AREA(ACRES) =     38.20   TOTAL RUNOFF(CFS) =     40.81
****************************************************************************
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =     40.81   Tc(MIN.) =   46.41
TOTAL AREA(ACRES) =     38.20
****************************************************************************
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
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           Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                      Analysis prepared by:

              Robert Bein, William Frost & Associates
                        74-410 Highway 111
                      Palm Desert, Ca. 92260
                (619) 346-7481 : Fax (619) 346-8315

 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALCS FOR PARCELS 1,3,4,&5 UNDEVELOPED                            *
* 25 YEARS ENENT                                                           *
*                                                                          *
 ****************************************************************************

  FILE NAME: PMSPORT1.DAT
  TIME/DATE OF STUDY: 11:32   4/27/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) = 1.2145
  SLOPE OF INTENSITY DURATION CURVE =  .5804
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =  6310.00
  UPSTREAM ELEVATION =    135.00
  DOWNSTREAM ELEVATION =     85.00
  ELEVATION DIFFERENCE =     50.00
  TC =  .533*[( 6310.00**3)/(    50.00)]**.2 =   46.411
  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.410
  SOIL CLASSIFICATION IS "B"
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5163
  SUBAREA RUNOFF(CFS) =     27.81
```

```
TOTAL AREA(ACRES) =     38.20   TOTAL RUNOFF(CFS) =     27.81
****************************************************************************
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =     27.81   Tc(MIN.) =   46.41
TOTAL AREA(ACRES) =     38.20
****************************************************************************
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
     (c) Copyright 1982-96 Advanced Engineering Software (aes)
         Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                    Analysis prepared by:

             Robert Bein, William Frost & Associates
                      74-410 Highway 111
                     Palm Desert, Ca. 92260
               (619) 346-7481 : Fax (619) 346-8315

 ************************** DESCRIPTION OF STUDY **************************
* runoff calcs for parcels 1,3,4,&5  DEVELOPED                             *
* 25 year storm                                                            *
*                                                                          *
 ****************************************************************************

  FILE NAME: PMSPORTS.DAT
  TIME/DATE OF STUDY: 10:20   4/22/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  [illegible]YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  [illegible]YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) = 1.2145
  SLOPE OF INTENSITY DURATION CURVE =  .5804
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   420.00
  UPSTREAM ELEVATION =    130.00
  DOWNSTREAM ELEVATION =    128.30
  ELEVATION DIFFERENCE =      1.70
  TC =  .303*[(  420.00**3)/(     1.70)]**.2 =   10.220
  [illegible]5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.393
  USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA RUNOFF(CFS) =      6.87
```

```
TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      6.87


****************************************************************************
FLOW PROCESS FROM NODE     2.00 TO NODE     3.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    128.30   DOWNSTREAM ELEVATION =    127.20
STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   10.04
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .60
      HALFSTREET FLOODWIDTH(FEET) =   22.18
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.97
      PRODUCT OF DEPTH&VELOCITY =    1.18
STREETFLOW TRAVELTIME(MIN) =   3.38   TC(MIN) =  13.60

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.875
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    2.40   SUBAREA RUNOFF(CFS) =    6.35
SUMMED AREA(ACRES) =    4.60   TOTAL RUNOFF(CFS) =     13.21
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .65   HALFSTREET FLOODWIDTH(FEET) = 24.74
FLOW VELOCITY(FEET/SEC.) =  2.10   DEPTH*VELOCITY =   1.37


****************************************************************************
FLOW PROCESS FROM NODE     3.00 TO NODE     4.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    127.20   DOWNSTREAM ELEVATION =    126.50
STREET LENGTH(FEET) =   440.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   15.71
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
```

```
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =    .75
        HALFSTREET FLOODWIDTH(FEET) =   29.87
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.73
        PRODUCT OF DEPTH&VELOCITY =    1.30
  STREETFLOW TRAVELTIME(MIN) =   4.24   TC(MIN) =  17.84

   25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.455
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =    4.97
  SUMMED AREA(ACRES) =    6.80   TOTAL RUNOFF(CFS) =     18.18
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .78   HALFSTREET FLOODWIDTH(FEET) = 31.15
  FLOW VELOCITY(FEET/SEC.) =  1.84   DEPTH*VELOCITY =   1.44


****************************************************************************
  FLOW PROCESS FROM NODE     4.00 TO NODE     5.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    126.50   DOWNSTREAM ELEVATION =    124.50
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 43.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   20.51
    STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =    .68
        HALFSTREET FLOODWIDTH(FEET) =   26.02
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.95
        PRODUCT OF DEPTH&VELOCITY =    2.00
  STREETFLOW TRAVELTIME(MIN) =   2.14   TC(MIN) =  19.99

   25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.299
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =    4.65
  SUMMED AREA(ACRES) =    9.00   TOTAL RUNOFF(CFS) =     22.84
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .70   HALFSTREET FLOODWIDTH(FEET) = 27.30
  FLOW VELOCITY(FEET/SEC.) =  2.99   DEPTH*VELOCITY =   2.10


****************************************************************************
  FLOW PROCESS FROM NODE     5.00 TO NODE     6.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    124.50   DOWNSTREAM ELEVATION =    122.40
```

```
STREET LENGTH(FEET) =  1000.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   29.39
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .87
      HALFSTREET FLOODWIDTH(FEET) =   35.63
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
      PRODUCT OF DEPTH&VELOCITY =    1.98
STREETFLOW TRAVELTIME(MIN) =   7.30   TC(MIN) =  27.28

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.919
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    7.40   SUBAREA RUNOFF(CFS) =   13.06
SUMMED AREA(ACRES) =   16.40   TOTAL RUNOFF(CFS) =     35.90
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .92   HALFSTREET FLOODWIDTH(FEET) = 38.20
FLOW VELOCITY(FEET/SEC.) =  2.43   DEPTH*VELOCITY =   2.24


****************************************************************************
FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    122.40  DOWNSTREAM ELEVATION =    120.00
STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   43.25
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =  1.01
      HALFSTREET FLOODWIDTH(FEET) =   42.68
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.35
      PRODUCT OF DEPTH&VELOCITY =    2.38
STREETFLOW TRAVELTIME(MIN) =   9.99   TC(MIN) =  37.27

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.601
*USER SPECIFIED(SUBAREA):
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COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =   10.00   SUBAREA RUNOFF(CFS) =   14.73
SUMMED AREA(ACRES) =   26.40   TOTAL RUNOFF(CFS) =     50.63
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = 1.02   HALFSTREET FLOODWIDTH(FEET) = 43.00
FLOW VELOCITY(FEET/SEC.) =  2.32   DEPTH*VELOCITY =   2.36


****************************************************************************
FLOW PROCESS FROM NODE     7.00 TO NODE     8.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    120.00   DOWNSTREAM ELEVATION =    110.00
STREET LENGTH(FEET) =   760.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   52.76
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .78
      HALFSTREET FLOODWIDTH(FEET) =   31.15
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.34
      PRODUCT OF DEPTH&VELOCITY =    4.16
STREETFLOW TRAVELTIME(MIN) =   2.37   TC(MIN) =  39.64

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.545
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    4.26
SUMMED AREA(ACRES) =   29.40   TOTAL RUNOFF(CFS) =     54.90
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .79   HALFSTREET FLOODWIDTH(FEET) = 31.79
FLOW VELOCITY(FEET/SEC.) =  5.34   DEPTH*VELOCITY =   4.23


****************************************************************************
FLOW PROCESS FROM NODE     8.00 TO NODE     9.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    110.00   DOWNSTREAM ELEVATION =     95.00
STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
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      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   57.40
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .74
      HALFSTREET FLOODWIDTH(FEET) =   29.23
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.59
      PRODUCT OF DEPTH&VELOCITY =    4.88
 STREETFLOW TRAVELTIME(MIN) =   1.64   TC(MIN) =  41.29

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.509
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
 SUBAREA AREA(ACRES) =    3.60   SUBAREA RUNOFF(CFS) =    5.00
 SUMMED AREA(ACRES) =   33.00   TOTAL RUNOFF(CFS) =     59.89
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .75   HALFSTREET FLOODWIDTH(FEET) = 29.87
 FLOW VELOCITY(FEET/SEC.) =  6.59   DEPTH*VELOCITY =   4.96


****************************************************************************
 FLOW PROCESS FROM NODE     9.00 TO NODE    10.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =     95.00   DOWNSTREAM ELEVATION =     85.00
 STREET LENGTH(FEET) =   850.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 43.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   63.37
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .84
      HALFSTREET FLOODWIDTH(FEET) =   34.35
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
      PRODUCT OF DEPTH&VELOCITY =    4.46
 STREETFLOW TRAVELTIME(MIN) =   2.68   TC(MIN) =  43.96

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.455
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
 SUBAREA AREA(ACRES) =    5.20   SUBAREA RUNOFF(CFS) =    6.96
 SUMMED AREA(ACRES) =   38.20   TOTAL RUNOFF(CFS) =     66.85
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .86   HALFSTREET FLOODWIDTH(FEET) = 34.99
 FLOW VELOCITY(FEET/SEC.) =  5.38   DEPTH*VELOCITY =   4.61
============================================================================
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =     66.85   Tc(MIN.) =   43.96
```

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****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
       (c) Copyright 1982-96 Advanced Engineering Software (aes)
           Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                      Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* runoff calcs for parcels 1,3,4,&5 DEVELOPED                              *
*  100 YEAR EVENT                                                          *
*                                                                          *
 ****************************************************************************

  FILE NAME: PMSPORTS.DAT
  TIME/DATE OF STUDY: 10:10   4/21/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE =  .5796
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   420.00
  UPSTREAM ELEVATION =    130.00
  DOWNSTREAM ELEVATION =    128.30
  ELEVATION DIFFERENCE =      1.70
  TC =  .303*[(  420.00**3)/(     1.70)]**.2 =   10.220
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.463
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA RUNOFF(CFS) =      9.03
```

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TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      9.03


****************************************************************************
FLOW PROCESS FROM NODE     2.00 TO NODE     3.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    128.30   DOWNSTREAM ELEVATION =    127.20
STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   13.25
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .65
      HALFSTREET FLOODWIDTH(FEET) =   24.74
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.11
      PRODUCT OF DEPTH&VELOCITY =    1.37
STREETFLOW TRAVELTIME(MIN) =   3.17   TC(MIN) =  13.39

[illegible]0 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.817
[illegible]ER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    2.40   SUBAREA RUNOFF(CFS) =    8.43
SUMMED AREA(ACRES) =    4.60   TOTAL RUNOFF(CFS) =     17.46
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .72   HALFSTREET FLOODWIDTH(FEET) = 27.95
FLOW VELOCITY(FEET/SEC.) =  2.19   DEPTH*VELOCITY =   1.56


****************************************************************************
FLOW PROCESS FROM NODE     3.00 TO NODE     4.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    127.20   DOWNSTREAM ELEVATION =    126.50
STREET LENGTH(FEET) =   440.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   20.79
  [illegible]TREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
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        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .82
        HALFSTREET FLOODWIDTH(FEET) =   33.07
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.87
        PRODUCT OF DEPTH&VELOCITY =    1.53
  STREETFLOW TRAVELTIME(MIN) =   3.92   TC(MIN) =  17.30

   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.289
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =    6.66
  SUMMED AREA(ACRES) =    6.80   TOTAL RUNOFF(CFS) =     24.12
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .86   HALFSTREET FLOODWIDTH(FEET) = 34.99
  FLOW VELOCITY(FEET/SEC.) =  1.94   DEPTH*VELOCITY =   1.66


****************************************************************************
  FLOW PROCESS FROM NODE     4.00 TO NODE     5.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    126.50   DOWNSTREAM ELEVATION =    124.50
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 43.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   27.25
    STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .74
        HALFSTREET FLOODWIDTH(FEET) =   29.23
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.13
        PRODUCT OF DEPTH&VELOCITY =    2.32
  STREETFLOW TRAVELTIME(MIN) =   2.03   TC(MIN) =  19.33

   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.085
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =    6.24
  SUMMED AREA(ACRES) =    9.00   TOTAL RUNOFF(CFS) =     30.36
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .77   HALFSTREET FLOODWIDTH(FEET) = 30.51
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY =   2.46


****************************************************************************
  FLOW PROCESS FROM NODE     5.00 TO NODE     6.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    124.50   DOWNSTREAM ELEVATION =    122.40
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```
STREET LENGTH(FEET) =  1000.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   39.19
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .95
      HALFSTREET FLOODWIDTH(FEET) =   39.48
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.49
      PRODUCT OF DEPTH&VELOCITY =    2.35
STREETFLOW TRAVELTIME(MIN) =   6.70   TC(MIN) =  26.03

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.596
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    7.40   SUBAREA RUNOFF(CFS) =   17.68
SUMMED AREA(ACRES) =   16.40   TOTAL RUNOFF(CFS) =     48.04
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = 1.01   HALFSTREET FLOODWIDTH(FEET) = 42.68
FLOW VELOCITY(FEET/SEC.) =  2.61   DEPTH*VELOCITY =   2.64

****************************************************************************
FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    122.40   DOWNSTREAM ELEVATION =    120.00
STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   57.91
***STREETFLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =    1.02   FLOODWIDTH(FEET) =   43.00
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.32
  SPLIT DEPTH(FEET) =     .73   SPLIT FLOODWIDTH(FEET) =   28.59
  SPLIT FLOW(CFS) =   14.56   SPLIT VELOCITY(FEET/SEC.) =    1.75
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =  1.02
      HALFSTREET FLOODWIDTH(FEET) =   43.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.32
```

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      PRODUCT OF DEPTH&VELOCITY =    2.36
STREETFLOW TRAVELTIME(MIN) =  10.12   TC(MIN) =  36.14

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.146
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =   10.00   SUBAREA RUNOFF(CFS) =   19.75
SUMMED AREA(ACRES) =   26.40   TOTAL RUNOFF(CFS) =     67.79
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = 1.02   HALFSTREET FLOODWIDTH(FEET) = 43.00
FLOW VELOCITY(FEET/SEC.) =  2.32   DEPTH*VELOCITY =   2.36


****************************************************************************
 FLOW PROCESS FROM NODE     7.00 TO NODE     8.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    120.00   DOWNSTREAM ELEVATION =    110.00
 STREET LENGTH(FEET) =   760.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 43.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   70.65
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .86
      HALFSTREET FLOODWIDTH(FEET) =   34.99
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
      PRODUCT OF DEPTH&VELOCITY =    4.87
 STREETFLOW TRAVELTIME(MIN) =   2.23   TC(MIN) =  38.37

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.073
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    5.72
SUMMED AREA(ACRES) =   29.40   TOTAL RUNOFF(CFS) =     73.51
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .87   HALFSTREET FLOODWIDTH(FEET) = 35.63
FLOW VELOCITY(FEET/SEC.) =  5.71   DEPTH*VELOCITY =   4.96


****************************************************************************
 FLOW PROCESS FROM NODE     8.00 TO NODE     9.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    110.00   DOWNSTREAM ELEVATION =     95.00
 STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 43.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
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INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   76.86
 STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .80
      HALFSTREET FLOODWIDTH(FEET) =   32.43
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.19
      PRODUCT OF DEPTH&VELOCITY =    5.79
STREETFLOW TRAVELTIME(MIN) =   1.51   TC(MIN) =  39.88

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.028
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    3.60   SUBAREA RUNOFF(CFS) =    6.72
SUMMED AREA(ACRES) =   33.00   TOTAL RUNOFF(CFS) =     80.22
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .82   HALFSTREET FLOODWIDTH(FEET) = 33.07
FLOW VELOCITY(FEET/SEC.) =  7.22   DEPTH*VELOCITY =   5.91


****************************************************************************
FLOW PROCESS FROM NODE     9.00 TO NODE    10.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =     95.00   DOWNSTREAM ELEVATION =     85.00
STREET LENGTH(FEET) =   850.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 43.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  41.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   84.90
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .92
      HALFSTREET FLOODWIDTH(FEET) =   38.20
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.75
      PRODUCT OF DEPTH&VELOCITY =    5.29
STREETFLOW TRAVELTIME(MIN) =   2.46   TC(MIN) =  42.34

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.958
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9200
SUBAREA AREA(ACRES) =    5.20   SUBAREA RUNOFF(CFS) =    9.37
SUMMED AREA(ACRES) =   38.20   TOTAL RUNOFF(CFS) =     89.59
END OF SUBAREA STREETFLOW HYDRAULICS:
```

```
DEPTH(FEET) =  .95   HALFSTREET FLOODWIDTH(FEET) = 39.48
FLOW VELOCITY(FEET/SEC.) =  5.69   DEPTH*VELOCITY =   5.38
============================================================================
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =     89.59   Tc(MIN.) =   42.34
TOTAL AREA(ACRES) =     38.20
============================================================================
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
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        Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                      Analysis prepared by:

              Robert Bein, William Frost & Associates
                        74-410 Highway 111
                      Palm Desert, Ca. 92260
                (619) 346-7481 : Fax (619) 346-8315

 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALC FOR PARCELS 2 & 6                                            *
* UNDEVELOPED                                                              *
* 100 YEARS EVENT                                                          *
 ****************************************************************************

  FILE NAME: PMSPORT2.DAT
  TIME/DATE OF STUDY: 13: 7   4/27/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE =  .5796
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =  3100.00
  UPSTREAM ELEVATION =    145.00
  DOWNSTREAM ELEVATION =    120.00
  ELEVATION DIFFERENCE =     25.00
  TC =  .533*[( 3100.00**3)/(    25.00)]**.2 =   34.804
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.194
  SOIL CLASSIFICATION IS "B"
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6091
  SUBAREA RUNOFF(CFS) =    163.57
```

```
****************************************************************************
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                      Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALC FOR PARCELS 2 & 6                                            *
* UNDEVELOPED                                                              *
* 25 YEARS EVENT                                                           *
 ****************************************************************************

  FILE NAME: PMSPORT2.DAT
  TIME/DATE OF STUDY: 13: 8   4/27/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  [illegible]-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  [illegible]-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) = 1.2145
  SLOPE OF INTENSITY DURATION CURVE =  .5804
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =  3100.00
  UPSTREAM ELEVATION =    145.00
  DOWNSTREAM ELEVATION =    120.00
  ELEVATION DIFFERENCE =     25.00
  TC =  .533*[( 3100.00**3)/(    25.00)]**.2 =   34.804
  [illegible] YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.666
  [illegible]L CLASSIFICATION IS "B"
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5526
  SUBAREA RUNOFF(CFS) =    112.68
```

```
TOTAL AREA(ACRES) =    122.40   TOTAL RUNOFF(CFS) =    112.68
**********************************************************************
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =    112.68   Tc(MIN.) =   34.80
TOTAL AREA(ACRES) =    122.40
**********************************************************************
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
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                        Analysis prepared by:

                 Robert Bein, William Frost & Associates
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                        Palm Desert, Ca. 92260
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 *************************** DESCRIPTION OF STUDY ***************************
* RUNOFF CALC FOR PARCEL 6                                                  *
* DEVELOPED                                                                 *
* 100 YEAR EVENT                                                            *
 ****************************************************************************

  FILE NAME: PMSPORT3.DAT
  TIME/DATE OF STUDY: 14:34   4/27/1998
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE =  .5796
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   675.00
  UPSTREAM ELEVATION =    137.00
  DOWNSTREAM ELEVATION =    135.20
  ELEVATION DIFFERENCE =      1.80
  TC =  .359*[(  675.00**3)/(     1.80)]**.2 =   15.917
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.453
  COEFFICIENT SPECIFIED(SUBAREA):
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .6000
  SUBAREA RUNOFF(CFS) =     20.05
```

```
  TOTAL AREA(ACRES) =      9.68   TOTAL RUNOFF(CFS) =     20.05


****************************************************************************
  FLOW PROCESS FROM NODE     2.00 TO NODE     3.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    135.00   DOWNSTREAM ELEVATION =    133.20
  STREET LENGTH(FEET) =   630.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   26.34
  ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .65
        HALFSTREET FLOODWIDTH(FEET) =   24.00
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.14
        PRODUCT OF DEPTH&VELOCITY =    1.38
  STREETFLOW TRAVELTIME(MIN) =   4.92   TC(MIN) =  20.83

   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.954
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7000
  SUBAREA AREA(ACRES) =    6.08   SUBAREA RUNOFF(CFS) =   12.57
  SUMMED AREA(ACRES) =   15.76   TOTAL RUNOFF(CFS) =     32.62
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .69   HALFSTREET FLOODWIDTH(FEET) = 24.00
  FLOW VELOCITY(FEET/SEC.) =  2.30   DEPTH*VELOCITY =   1.57


****************************************************************************
  FLOW PROCESS FROM NODE     3.00 TO NODE     4.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    133.20   DOWNSTREAM ELEVATION =    131.40
  STREET LENGTH(FEET) =     6.86   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   42.25
    STREETFLOW MODEL RESULTS:
        STREET FLOWDEPTH(FEET) =   .48
        HALFSTREET FLOODWIDTH(FEET) =   16.09
```

```
        AVERAGE FLOW VELOCITY(FEET/SEC.) =   15.30
        PRODUCT OF DEPTH&VELOCITY =    7.32
  STREETFLOW TRAVELTIME(MIN) =    .01   TC(MIN) =  20.84

   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.953
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
  SUBAREA AREA(ACRES) =    6.86   SUBAREA RUNOFF(CFS) =   19.25
  SUMMED AREA(ACRES) =   22.62   TOTAL RUNOFF(CFS) =     51.87
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 17.47
  FLOW VELOCITY(FEET/SEC.) = 16.10   DEPTH*VELOCITY =   8.14


****************************************************************************
  FLOW PROCESS FROM NODE     4.00 TO NODE     5.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    131.40   DOWNSTREAM ELEVATION =    129.60
  STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   59.84
        STREET FLOWING FULL***
        STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .82
        HALFSTREET FLOODWIDTH(FEET) =   24.00
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.88
        PRODUCT OF DEPTH&VELOCITY =    2.37
  STREETFLOW TRAVELTIME(MIN) =   3.76   TC(MIN) =  24.60

   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.683
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9600
  SUBAREA AREA(ACRES) =    6.20   SUBAREA RUNOFF(CFS) =   15.97
  SUMMED AREA(ACRES) =   28.82   TOTAL RUNOFF(CFS) =     67.84
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .84   HALFSTREET FLOODWIDTH(FEET) = 24.00
  FLOW VELOCITY(FEET/SEC.) =  3.13   DEPTH*VELOCITY =   2.63


****************************************************************************
  FLOW PROCESS FROM NODE     5.00 TO NODE     6.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM ELEVATION =    129.60   DOWNSTREAM ELEVATION =    126.80
  STREET LENGTH(FEET) =   980.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00
```

```
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   78.83
***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .88
      HALFSTREET FLOODWIDTH(FEET) =   24.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.34
      PRODUCT OF DEPTH&VELOCITY =    2.94
STREETFLOW TRAVELTIME(MIN) =   4.89   TC(MIN) =  29.49

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.415
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =    9.58   SUBAREA RUNOFF(CFS) =   21.98
SUMMED AREA(ACRES) =   38.40   TOTAL RUNOFF(CFS) =     89.82
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .94   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  3.40   DEPTH*VELOCITY =   3.20


****************************************************************************
FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    126.80   DOWNSTREAM ELEVATION =    125.00
STREET LENGTH(FEET) =   640.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   94.75
***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .96
      HALFSTREET FLOODWIDTH(FEET) =   24.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
      PRODUCT OF DEPTH&VELOCITY =    3.32
STREETFLOW TRAVELTIME(MIN) =   3.08   TC(MIN) =  32.56

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.280
*USER SPECIFIED(SUBAREA):
```

```
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =     4.55   SUBAREA RUNOFF(CFS) =     9.86
SUMMED AREA(ACRES) =   42.95   TOTAL RUNOFF(CFS) =     99.67
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .96   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  3.65   DEPTH*VELOCITY =   3.50

****************************************************************************
FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  32.56
RAINFALL INTENSITY(INCH/HR) =   2.28
TOTAL STREAM AREA(ACRES) =   42.95
PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.67


****************************************************************************
FLOW PROCESS FROM NODE     8.00 TO NODE     9.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   600.00
UPSTREAM ELEVATION =    137.00
DOWNSTREAM ELEVATION =    134.40
ELEVATION DIFFERENCE =      2.60
TC =  .303*[(  600.00**3)/(     2.60)]**.2 =   11.627
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.142
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8000
SUBAREA RUNOFF(CFS) =     15.41
TOTAL AREA(ACRES) =      4.65   TOTAL RUNOFF(CFS) =     15.41


****************************************************************************
FLOW PROCESS FROM NODE     9.00 TO NODE    10.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    134.40   DOWNSTREAM ELEVATION =    131.50
STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   21.75
***STREETFLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =     .64   FLOODWIDTH(FEET) =   24.00
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.57
```

```
  SPLIT DEPTH(FEET) =     .51   SPLIT FLOODWIDTH(FEET) =   17.47
  SPLIT FLOW(CFS) =    6.53   SPLIT VELOCITY(FEET/SEC.) =    2.03
  STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .64
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
       PRODUCT OF DEPTH&VELOCITY =    1.63
 STREETFLOW TRAVELTIME(MIN) =   4.22   TC(MIN) =  15.85

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.461
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
 SUBAREA AREA(ACRES) =    3.86   SUBAREA RUNOFF(CFS) =   12.69
 SUMMED AREA(ACRES) =    8.51   TOTAL RUNOFF(CFS) =     28.10
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .64   HALFSTREET FLOODWIDTH(FEET) = 24.00
 FLOW VELOCITY(FEET/SEC.) =  2.57   DEPTH*VELOCITY =   1.63


****************************************************************************
 FLOW PROCESS FROM NODE    10.00 TO NODE    11.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    131.50   DOWNSTREAM ELEVATION =    128.10
 STREET LENGTH(FEET) =   780.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

       **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   36.83
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .67
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.78
       PRODUCT OF DEPTH&VELOCITY =    1.85
 STREETFLOW TRAVELTIME(MIN) =   4.68   TC(MIN) =  20.53

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.979
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
 SUBAREA AREA(ACRES) =    6.14   SUBAREA RUNOFF(CFS) =   17.38
 SUMMED AREA(ACRES) =   14.65   TOTAL RUNOFF(CFS) =     45.48
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .70   HALFSTREET FLOODWIDTH(FEET) = 24.00
 FLOW VELOCITY(FEET/SEC.) =  3.00   DEPTH*VELOCITY =   2.12
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    11.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
 ==========================================================================
 UPSTREAM ELEVATION =    128.10   DOWNSTREAM ELEVATION =    125.00
 STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

       **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   49.54
 ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .72
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.08
       PRODUCT OF DEPTH&VELOCITY =    2.23
 STREETFLOW TRAVELTIME(MIN) =   3.79   TC(MIN) =  24.32

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.701
 USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
 SUBAREA AREA(ACRES) =    3.16   SUBAREA RUNOFF(CFS) =    8.11
 SUMMED AREA(ACRES) =   17.81   TOTAL RUNOFF(CFS) =     53.58
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .74   HALFSTREET FLOODWIDTH(FEET) = 24.00
 FLOW VELOCITY(FEET/SEC.) =  3.15   DEPTH*VELOCITY =   2.34


****************************************************************************
 FLOW PROCESS FROM NODE    11.00 TO NODE     7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 ==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  24.32
 RAINFALL INTENSITY(INCH/HR) =   2.70
 TOTAL STREAM AREA(ACRES) =   17.81
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.58

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        99.67    32.56      2.280         42.95
    2        53.58    24.32      2.701         17.81

 ***********************************WARNING***********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
```

ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	128.02	24.32	2.701
2	144.92	32.56	2.280

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 144.92 Tc(MIN.) = 32.56
TOTAL AREA(ACRES) = 60.76
==========
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) = 144.92 Tc(MIN.) = 32.56
TOTAL AREA(ACRES) = 60.76
==========
END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
      (c) Copyright 1982-96 Advanced Engineering Software (aes)
          Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                    Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALC FOR PARCEL 6                                                 *
* DEVELOPED                                                                *
* 25 YEARS EVENT                                                           *
 ***************************************************************************

  FILE NAME: PMSPORT3.DAT
  TIME/DATE OF STUDY: 14:34   4/27/1998
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) = 1.2145
  SLOPE OF INTENSITY DURATION CURVE =  .5804
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   675.00
  UPSTREAM ELEVATION =    137.00
  DOWNSTREAM ELEVATION =    135.20
  ELEVATION DIFFERENCE =      1.80
  TC =  .359*[(  675.00**3)/(     1.80)]**.2 =   15.917
  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.624
  USER SPECIFIED(SUBAREA):
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .6000
  SUBAREA RUNOFF(CFS) =     15.24
```

```
 TOTAL AREA(ACRES) =      9.68   TOTAL RUNOFF(CFS) =     15.24


****************************************************************************
 FLOW PROCESS FROM NODE     2.00 TO NODE     3.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    135.00   DOWNSTREAM ELEVATION =    133.20
 STREET LENGTH(FEET) =   630.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

       **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   19.99
 ***STREETFLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =     .64   FLOODWIDTH(FEET) =   24.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.05
   SPLIT DEPTH(FEET) =     .56   SPLIT FLOODWIDTH(FEET) =   20.22
   SPLIT FLOW(CFS) =    7.80   SPLIT VELOCITY(FEET/SEC.) =    1.83
   STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .64
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
       PRODUCT OF DEPTH&VELOCITY =    1.31
 STREETFLOW TRAVELTIME(MIN) =   5.11   TC(MIN) =  21.03

   25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.232
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7000
 SUBAREA AREA(ACRES) =    6.08   SUBAREA RUNOFF(CFS) =    9.50
 SUMMED AREA(ACRES) =   15.76   TOTAL RUNOFF(CFS) =    24.74
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .65   HALFSTREET FLOODWIDTH(FEET) = 24.00
 FLOW VELOCITY(FEET/SEC.) =  2.01   DEPTH*VELOCITY =   1.30


****************************************************************************
 FLOW PROCESS FROM NODE     3.00 TO NODE     4.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    133.20   DOWNSTREAM ELEVATION =    131.40
 STREET LENGTH(FEET) =     6.86   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
```

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      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   32.01
  STREETFLOW MODEL RESULTS:
      STREET FLOWDEPTH(FEET) =   .44
      HALFSTREET FLOODWIDTH(FEET) =   14.03
      AVERAGE FLOW VELOCITY(FEET/SEC.) =   14.96
      PRODUCT OF DEPTH&VELOCITY =    6.54
 STREETFLOW TRAVELTIME(MIN) =    .01   TC(MIN) =  21.04

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.232
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
 SUBAREA AREA(ACRES) =    6.86   SUBAREA RUNOFF(CFS) =   14.54
 SUMMED AREA(ACRES) =   22.62   TOTAL RUNOFF(CFS) =     39.28
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .46   HALFSTREET FLOODWIDTH(FEET) = 15.41
 FLOW VELOCITY(FEET/SEC.) = 15.44   DEPTH*VELOCITY =   7.17


****************************************************************************
 FLOW PROCESS FROM NODE     4.00 TO NODE     5.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    131.40   DOWNSTREAM ELEVATION =    129.60
 STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   45.27
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .74
      HALFSTREET FLOODWIDTH(FEET) =   24.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.66
      PRODUCT OF DEPTH&VELOCITY =    1.98
 STREETFLOW TRAVELTIME(MIN) =   4.07   TC(MIN) =  25.11

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.014
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9600
 SUBAREA AREA(ACRES) =    6.20   SUBAREA RUNOFF(CFS) =   11.99
 SUMMED AREA(ACRES) =   28.82   TOTAL RUNOFF(CFS) =     51.27
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .78   HALFSTREET FLOODWIDTH(FEET) = 24.00
 FLOW VELOCITY(FEET/SEC.) =  2.71   DEPTH*VELOCITY =   2.12


****************************************************************************
 FLOW PROCESS FROM NODE     5.00 TO NODE     6.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION =    129.60   DOWNSTREAM ELEVATION =    126.80
  STREET LENGTH(FEET) =   980.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   59.41
  ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .80
        HALFSTREET FLOODWIDTH(FEET) =   24.00
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.00
        PRODUCT OF DEPTH&VELOCITY =    2.40
  STREETFLOW TRAVELTIME(MIN) =   5.45   TC(MIN) =  30.56

    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.797
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
  SUBAREA AREA(ACRES) =    9.58   SUBAREA RUNOFF(CFS) =   16.35
  SUMMED AREA(ACRES) =   38.40   TOTAL RUNOFF(CFS) =     67.62
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .84   HALFSTREET FLOODWIDTH(FEET) = 24.00
  FLOW VELOCITY(FEET/SEC.) =  3.12   DEPTH*VELOCITY =   2.62


****************************************************************************
  FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  UPSTREAM ELEVATION =    126.80   DOWNSTREAM ELEVATION =    125.00
  STREET LENGTH(FEET) =   640.00   CURB HEIGHT(INCHES) = 6.
  STREET HALFWIDTH(FEET) = 24.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
  INTERIOR STREET CROSSFALL(DECIMAL) =   .020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

        **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   71.27
  ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS:
        NOTE: STREETFLOW EXCEEDS TOP OF CURB.
        THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
        STREET FLOWDEPTH(FEET) =   .86
        HALFSTREET FLOODWIDTH(FEET) =   24.00
        AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.15
        PRODUCT OF DEPTH&VELOCITY =    2.71
```

```
STREETFLOW TRAVELTIME(MIN) =   3.39   TC(MIN) =  33.95

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.690
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =    4.55   SUBAREA RUNOFF(CFS) =    7.31
TOTAL AREA(ACRES) =   42.95   TOTAL RUNOFF(CFS) =     74.93
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .88   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  3.18   DEPTH*VELOCITY =   2.80


****************************************************************************
FLOW PROCESS FROM NODE     6.00 TO NODE     7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  33.95
RAINFALL INTENSITY(INCH/HR) =   1.69
TOTAL STREAM AREA(ACRES) =   42.95
PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.93


****************************************************************************
FLOW PROCESS FROM NODE     8.00 TO NODE     9.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   600.00
UPSTREAM ELEVATION =    137.00
DOWNSTREAM ELEVATION =    134.40
ELEVATION DIFFERENCE =      2.60
TC =  .303*[(  600.00**3)/(     2.60)]**.2 =   11.627
  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.148
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8000
SUBAREA RUNOFF(CFS) =     11.71
TOTAL AREA(ACRES) =      4.65   TOTAL RUNOFF(CFS) =     11.71


****************************************************************************
FLOW PROCESS FROM NODE     9.00 TO NODE    10.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    134.40   DOWNSTREAM ELEVATION =    131.50
STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
```

```
      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   16.53
***STREETFLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =     .64   FLOODWIDTH(FEET) =   24.00
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.57
  SPLIT DEPTH(FEET) =     .33   SPLIT FLOODWIDTH(FEET) =    8.53
  SPLIT FLOW(CFS) =    1.31   SPLIT VELOCITY(FEET/SEC.) =    1.46
  STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .64
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
       PRODUCT OF DEPTH&VELOCITY =    1.63
STREETFLOW TRAVELTIME(MIN) =   4.22   TC(MIN) =  15.85

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.630
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =    3.86   SUBAREA RUNOFF(CFS) =    9.65
SUMMED AREA(ACRES) =    8.51   TOTAL RUNOFF(CFS) =    21.36
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .64   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  2.57   DEPTH*VELOCITY =   1.63


****************************************************************************
FLOW PROCESS FROM NODE    10.00 TO NODE    11.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    131.50   DOWNSTREAM ELEVATION =    128.10
STREET LENGTH(FEET) =   780.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   27.88
***STREETFLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =     .64   FLOODWIDTH(FEET) =   24.00
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.54
  SPLIT DEPTH(FEET) =     .60   SPLIT FLOODWIDTH(FEET) =   22.28
  SPLIT FLOW(CFS) =   12.83   SPLIT VELOCITY(FEET/SEC.) =    2.50
  STREETFLOW MODEL RESULTS:
       NOTE: STREETFLOW EXCEEDS TOP OF CURB.
       THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
       THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
       THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
       STREET FLOWDEPTH(FEET) =   .64
       HALFSTREET FLOODWIDTH(FEET) =   24.00
       AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.54
       PRODUCT OF DEPTH&VELOCITY =    1.61
STREETFLOW TRAVELTIME(MIN) =   5.12   TC(MIN) =  20.97

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.236
```

```
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =    6.14   SUBAREA RUNOFF(CFS) =   13.04
SUMMED AREA(ACRES) =   14.65   TOTAL RUNOFF(CFS) =     34.40
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .67   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  2.59   DEPTH*VELOCITY =   1.73


****************************************************************************
FLOW PROCESS FROM NODE    11.00 TO NODE     7.00 IS CODE =   6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    128.10   DOWNSTREAM ELEVATION =    125.00
STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 24.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  22.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .080

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

      **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   37.43
***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
      NOTE: STREETFLOW EXCEEDS TOP OF CURB.
      THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
      THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
      THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
      STREET FLOWDEPTH(FEET) =   .67
      HALFSTREET FLOODWIDTH(FEET) =   24.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.82
      PRODUCT OF DEPTH&VELOCITY =    1.88
STREETFLOW TRAVELTIME(MIN) =   4.14   TC(MIN) =  25.11

  25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.014
*USER SPECIFIED(SUBAREA):
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .9500
SUBAREA AREA(ACRES) =    3.16   SUBAREA RUNOFF(CFS) =    6.05
SUMMED AREA(ACRES) =   17.81   TOTAL RUNOFF(CFS) =     40.44
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .69   HALFSTREET FLOODWIDTH(FEET) = 24.00
FLOW VELOCITY(FEET/SEC.) =  2.85   DEPTH*VELOCITY =   1.95


****************************************************************************
FLOW PROCESS FROM NODE    11.00 TO NODE     7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  25.11
RAINFALL INTENSITY(INCH/HR) =   2.01
TOTAL STREAM AREA(ACRES) =   17.81
PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.44
```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	74.93	33.95	1.690	42.95
2	40.44	25.11	2.014	17.81

**********WARNING**********

IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.

****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	95.85	25.11	2.014
2	108.87	33.95	1.690

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 108.87 Tc(MIN.) = 33.95
TOTAL AREA(ACRES) = 60.76

==========

END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) = 108.87 Tc(MIN.) = 33.95
TOTAL AREA(ACRES) = 60.76

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
       (c) Copyright 1982-96 Advanced Engineering Software (aes)
           Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                      Analysis prepared by:

              Robert Bein, William Frost & Associates
                        74-410 Highway 111
                      Palm Desert, Ca. 92260
                (619) 346-7481 : Fax (619) 346-8315

 ************************** DESCRIPTION OF STUDY **************************
* RUNOFF CALCS FOR PARCEL 2                                               *
* DEVELOPED                                                               *
* 100 YEAR EVENT                                                          *
 ***************************************************************************

  FILE NAME: PMSPORT4.DAT
  TIME/DATE OF STUDY: 15:25   4/27/1998
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE =  .5796
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH GOOD COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =  2000.00
  UPSTREAM ELEVATION =    125.00
  DOWNSTREAM ELEVATION =    120.00
  ELEVATION DIFFERENCE =      5.00
  TC =  .937*[( 2000.00**3)/(     5.00)]**.2 =   64.975
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.528
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6000
  SUBAREA RUNOFF(CFS) =     56.47
```

```
 TOTAL AREA(ACRES) =     61.60   TOTAL RUNOFF(CFS) =     56.47
****************************************************************************
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =     56.47   Tc(MIN.) =   64.98
 TOTAL AREA(ACRES) =     61.60
****************************************************************************
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                (RCFC&WCD)  1978 HYDROLOGY MANUAL
      (c) Copyright 1982-96 Advanced Engineering Software (aes)
          Ver. 1.5A  Release Date: 01/01/96  License ID 1264

                    Analysis prepared by:

             Robert Bein, William Frost & Associates
                      74-410 Highway 111
                    Palm Desert, Ca. 92260
              (619) 346-7481 : Fax (619) 346-8315

************************* DESCRIPTION OF STUDY **************************
RUNOFF CALCS FOR PARCEL 2                                               *
DEVELOPED                                                               *
25 YEAR EVENT                                                           *
****************************************************************************

FILE NAME: PMSPORT4.DAT
TIME/DATE OF STUDY: 15:27   4/27/1998
----------------------------------------------------------------------------
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
USER SPECIFIED STORM EVENT(YEAR) =   25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .95
10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.830
10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  4.520
100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =   .5805893
SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =   .5796024
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) = 1.2145
SLOPE OF INTENSITY DURATION CURVE =  .5804
RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
      AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES


****************************************************************************
FLOW PROCESS FROM NODE     1.00 TO NODE     2.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS: UNDEVELOPED WITH GOOD COVER
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =  2000.00
UPSTREAM ELEVATION =    125.00
DOWNSTREAM ELEVATION =    120.00
ELEVATION DIFFERENCE =      5.00
TC = .937*[( 2000.00**3)/(     5.00)]**.2 =   64.975
10-YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.160
*USER SPECIFIED(SUBAREA):
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6000
SUBAREA RUNOFF(CFS) =     42.86
```

11.4 Geotechnical Feasibility Report

GEOTECHNICAL FEASIBILITY REPORT

GARDEN OF CHAMPIONS PROJECT

INDIAN WELLS AREA

RIVERSIDE COUNTY, CALIFORNIA

– Prepared By –

Sladden Engineering

39-725 GARAND LN., SUITE G
PALM DESERT, CA 92211
(760) 772-3893

Sladden Engineering

6782 Stanton Ave., Suite E, Buena Park, CA 90621 (310) 864-4121 (714) 523-0952 Fax (714) 523-1369
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April 15, 1998 Project No. 544-8023

PM Sports Management Corporation
44-650 Indian Wells Lane
Indian Wells, California 92210

Attention: Mr. Charles Pasarell, Jr.

Project: Garden of Champions at Indian Wells
Indian Wells Area
Riverside County, California

Subject: Geotechnical Feasibility Report

Presented herewith is the report of our Geotechnical Feasibility study conducted at the site of the proposed Garden of Champions tennis stadium complex and associated developments. The project site is located on the west side of Washington Street along Miles Avenue in the Indian Wells area of Riverside County, California. The geotechnical investigation summarized in this report was performed in order to provide important information regarding the site soils and geologic conditions as they may affect the proposed development. Tentative recommendations for site preparation and the preliminary design of structure foundations and the associated site improvements are also included.

This report presents the results of our field investigation and laboratory testing along with conclusions and recommendations for foundation design and site preparation. This report completes our initial scope of services as described in our proposal dated March 10, 1998.

We appreciate the opportunity to provide service to you on this project. If you have any questions regarding this report, please contact this office.

Respectfully submitted,
SLADDEN ENGINEERING

Brett L. Anderson
Principal Engineer

R. Layne Richins
Sr. Engineering Geologist

Copies: 4 - PM Sports Management Corporation
2 - Robert Bein, William Frost & Associates

INTRODUCTION

This report presents the results of a geotechnical feasibility study performed in order to provide information regarding the soils and geologic conditions that may impact the proposed development of the site. In addition, preliminary recommendations for the design and construction of the proposed facilities are included. The project site is located on the west side of Washington Street along Miles Avenue in the Indian Wells area of Riverside County, California.

The preliminary project plans indicate that the proposed tennis complex will include three stadium courts of varying capacity (up to 16,000 seats) along with numerous tournament and practice courts and various related facilities. The project will also include paved parking areas and roadway improvements. It is our understanding that future development of commercial and residential building sites on the property is also proposed.

The preliminary site plan indicates that the proposed tennis complex and related facilities will be located on the north side of Miles Avenue about midway between Washiington Street and Warner Trail. The site improvements associated with the tennis complex will include access roads/driveways and paved parking areas. The portion of the property on the south side of Miles Avenue will be used primarily for parking. Future commercial or hotel development may be considered along Washington Street. Future commercial development of the triangular portion of the property at the intersection of Washington Street and Miles Avenue is also proposed but not as a part of this project. Future residential development of the westernmost panhandle portion of the property is also being considered.

SCOPE OF WORK

The purpose of our investigation was to determine certain engineering characteristics of the near surface soils on the site in order to develop preliminary recommendations for foundation design and site preparation. In addition, existing literature and maps were reviewed pertaining to the geology and seismicity of the site as it may affect the proposed development.

Our investigation included field exploration, laboratory testing, literature review, engineering analysis and the preparation of this report. Evaluation of hazardous materials or other environmental concerns was not within the scope of services provided. Our investigation was performed in accordance with contemporary geotechnical engineering principles and practice. We make no other warranty, either express or implied.

PROJECT DESCRIPTION

The project site is located on the west side of Washington Street along Miles Avenue in the Indian Wells area of Riverside County, California. The project site occupies approximately 150 acres including approximately 50 acres south of Miles Avenue with the remainder north of Miles Avenue. The property also includes approximately 20 acres not planned for devepment within the Whitewater Channel. The proposed project will include a tennis complex with three stadium courts, several smaller spectator courts and numerous practice courts. Various related facilities including clubhouse areas, lockeroom areas, concessions areas and operations areas are also proposed. The associated improvements will include parking areas and driveways along with various underground utilities. The preliminary site plan indicates that the tennis facilities will be located north of Miles Avenue approximately midway between Washington Street and Warner Trail. Development to the south of Miles Avenue will consist primarily of parking areas. Future commercial development is proposed along Washington Street both north and south of Miles Avenue and future residential development will be limited to the westernmost portion of the site.

The nature of the stadium court construction is not known at this time. It is expected that the spectator courts will be constructed of reinforced concrete and/or sectional bleachers. Based upon the limited preliminary information provided regarding the stadium facilities, we assume that individual column loads will be less than 100 kips and wall loads will be less than 5.0 kips per linear foot. Conventional shallow spread footings should be expected to provide adequate support for structures with loading similar to these assumed values. If foundation loads become excessive, deep foundations may be considered.

It is our assumption that the proposed associated buildings within the tennis complex and the future commercial buildings will be of relatively lightweight wood frame, steel frame, reinforced masonry or concrete tilt-up construction. These buildings will be supported by conventional shallow spread footings and concrete slabs on grade. Based upon the limited preliminary information provided, we assume that individual column loads will be less than 50 kips and wall loads will be less than 3.0 kips per linear foot.

The future residential development is assumed to be limited to lightweight one or two-story woodframe structures. Residential structures can be supported by conventional shallow spread footings and concrete slabs on grade. Based upon the limited information provided, we assume that individual column loads will be less than 25 kips and wall loads will be less than 2.0 kips per linear foot.

The project site is presently vacant and the ground surface is covered with scattered desert brush, short grass and weeds. Several clusters of large tamarisk trees exist near the middle of the site. There are several visible trails/paths developed by off-road vehicles on the property. Topographically, the ground surface is undulating with large dunes present throughout much of the northern portion of the site. The dunes become more prominent to the west. The portion of the property south of Miles Avenue is fairly level except for the steep slope down to the Whitewater River Channel. Elevation differential of over 25 feet is estimated for the site.

Washington Street forms the east edge of the site, the Whitewater River Channel forms the south edge of the site, Warner Trail forms the extreme west edge of the the site and the vacant Southwest Community Church property forms the north edge of the site. Miles Avenue intersects the site in the east/west direction. There are underground and overhead utilities along the adjacent roadways. The majority of the properties adjacent to the site are presently vacant.

GEOLOGY AND SEISMICITY

The project site is located within the northern portion of the Salton Trough which is a structural depression resulting from movement along faults within the region. Generally, the trough is defined on the northeast by the San Andreas Fault zone and on the southwest by the San Jacinto Fault zone. The Salton Trough represents a northerly extension of the Gulf of California. The Salton Trough has experienced ongoing deposition of sediments (both marine and non-marine) since Miocene times. The site is underlain by alluvial/aeolian deposits consisting primarily of fine grained windblown sands.

Seismic activity along the nearby faults continues to affect the area and the Coachella Valley is considered one of the more seismically active regions in California. The San Andreas Fault system is the closest fault zone to the site. The San Andreas Fault is considered capable of generating a Maximum Credible Earthquake of magnitude 8.0 in the event of multiple segment ground rupture. The Mission Creek segment is considered capable of generating earthquakes of magnitude 7.5.

Based upon an estimated distance to the fault of approximately six miles, the maximum credible site acceleration is estimated to be 0.60g and the maximum probable site acceleration is estimated to be 0.40g. The site is located within Groundshaking Zone III as determined by the Riverside County Planning Department. The site is also located within an Active Blowsand area established by Riverside County.

Several significant seismic events have impacted the Coachella Valley during the past 50 years. The events include Desert Hot Springs - 1948 (6.5 Magnitude), Palm Springs - 1986 (5.9 Magnitude), Desert Hot Springs - 1992 (6.1 Magnitude), Landers - 1992 (7.5 Magnitude) and Big Bear - 1992 (6.6 Magnitude).

SUBSURFACE CONDITIONS

The site soils consist primarily of fine grained windblown sands with scattered silty sand and silty clay layers primarily on the southern portion of the site. The soil profiles observed within the borings were very uniform throughout the northern portion of the site. The soils were also quite uniform throughout the southern portion of the site with the notable difference being the presence of scattered thin silty clay layers.

The near surface sands were found to be somewhat loose but sampler penetration resistance indicates that density generally increases with depth. The site soils were dry throughout with measured moisture content varied from 0.5 to 3.2 percent.

Laboratory testing indicates that the surface soils consist primarily of fine grained windblown sands. Expansion testing indicates that the surface sands are non-expansive. The sands are classified as "very low" expansion category soils in accordance with Table 18-I-B of the 1994 Uniform Building Code.

Groundwater was not encountered within our borings. The depth to groundwater in the area is expected to be over 100 feet. The presence of groundwater should not impact the development of the site.

CONCLUSIONS AND RECOMMENDATIONS

Based upon our field investigation and laboratory testing, it is our opinion that the proposed development is feasible from a soil mechanic's standpoint provided that the recommendations included in this report are considered in building foundation design and site preparation. Due to the somewhat loose condition of the surface soils, remedial grading is recommended for the proposed building and foundation areas. We recommend that remedial grading within the proposed building areas include the recompaction of the bearing soils. Specific recommendations for site preparation are presented in the Site Grading section of this report.

Groundwater was not encountered within our borings. Due to the depth to groundwater, specific liquefaction analyses were deemed unnecessary. Based upon the depth to groundwater, it is our opinion that the potential for liquefaction affecting the site is negligible. In our opinion, liquefaction related mitigation measures in addition to the site grading and foundation design recommendations included in this report should not be necessary.

The site is located in one of the more seismically active areas in California. Design professionals should be aware of the site setting and the potential for earthquake activity during the anticipated life of the structures should be acknowledged. The accelerations that may be experienced on the site (as previously discussed) should be considered in design. The seismic provisions included in the Uniform Building Code for Seismic Zone 4 should be considered the minimum design criteria.

Caving did not occur within our borings but the potential for caving should be expected within deeper excavations. All excavations should be constructed in accordance with the normal CalOSHA excavation criteria. On the basis of our observations of the materials encountered, we anticipate that the surface silty sands will be classified by CalOSHA as Type C. Soil conditions should be verified in the field by a "Competent person" employed by the Contractor.

The surface soils encountered during our investigation were found to be non-expansive. Laboratory testing indicated an Expansion Index of 0 for the surface sands which corresponds with the "very low" expansion category in accordance with UBC Table 18-I-B.

The following recommendations present more detailed design criteria which have been developed on the basis of our field and laboratory investigation. The recommendations are based upon non-expansive soils criteria. These recommendations should be considered tentative until specific structure types and applications are known. Once specific building locations and types are known, additional exploratory work and/or engineering evaluation should be performed to verify the adequacy of these recommendations.

Foundation Design: The results of our investigation indicate that either conventional shallow continuous footings or isolated pad footings, that are supported upon properly compacted soils, may be expected to provide adequate support for the majority of the proposed structure foundations. Building area grading should be performed as described in the Site Grading section of this report to provide for uniform and firm bearing conditions for the structure foundations.

Footings should extend at least 12 inches beneath lowest adjacent grade. Isolated square or rectangular footings should be at least two feet square and continuous footings should be at least 12 inches wide. Continuous footings may be designed using an allowable bearing value of 1800 pounds per square foot (psf) and isolated pad footings may be designed using an allowable bearing pressure of 2000 psf. The allowable bearing pressures are applicable to dead and frequently applied live loads. The allowable bearing pressures may be increased by 1/3 to resist wind and seismic loading. Care should be taken to see that bearing or subgrade soils are not allowed to become saturated from the ponding of rain water or irrigation. Drainage from the building areas should be rapid and complete.

In the case of larger foundation loads, increases in the allowable bearing pressures may be possible. Any bearing pressure increases should be based upon specific settlement calculations for individual installations.

The recommendations provided in the preceding paragraphs are based on the assumption that all footings will be supported upon properly compacted engineered fill soils. All grading should be performed under the testing and inspection of the Soils Engineer or his representative. Prior to the placement of concrete, we recommend that the footing excavations be inspected in order to verify that they extend into compacted soil and are free of loose and disturbed materials.

Settlements: Settlements resulting from the anticipated foundation loads should be minimal provided that the recommendations included in this report are considered in foundation design and construction. The estimated ultimate settlements are calculated to be approximately one inch when using the recommended bearing values. As a practical matter, differential settlements between footings can be assumed as one-half of the total settlement.

Lateral Design: Resistance to lateral loads can be provided by a combination of friction acting at the base of the slabs or foundations and passive earth pressure along the sides of the foundations. A coefficient of friction of 0.45 between soil and concrete may be used with consideration to dead load forces only. A passive earth pressure of 275 pounds per square foot, per foot of depth, may be used for the sides of footings which are poured against properly compacted native or approved non-expansive import soils. Passive earth pressure should be ignored within the upper one foot except where confined (such as beneath a floor slab).

Retaining Walls: Retaining walls may be necessary to accomplish the proposed construction. Lateral pressures for use in retaining wall design can be estimated using an equivalent fluid weight of 35 pcf for level free-draining native backfill conditions. For walls that are to be restrained at the top, the equivalent fluid weight should be increased to 55 pcf for level free-draining native backfill conditions. Backdrains should be provided for the full height of the walls.

Expansive Soils: Due to the presence of "very low" expansion category soils throughout the site, expansion potential should not be a controlling factor in foundation or slab design.

Concrete Slabs-on-Grade: All surfaces to receive concrete slabs-on-grade should be underlain by a minimum compacted non-expansive fill thickness of 24 inches, placed as described in the Site Grading Section of this report. Where slabs are to receive moisture sensitive floor coverings or where dampness of the floor slab is not desired, we recommend the use of an appropriate vapor barrier or an adequate capillary break. Vapor barriers should be protected by sand in order to reduce the possibility of puncture and to aid in obtaining uniform concrete curing.

Reinforcement of slabs-on-grade in order to resist expansive soil pressures should not be necessary provided that non-expansive soils are used to construct the the building pads. However, reinforcement will have a beneficial effect in containing cracking due to concrete shrinkage. Temperature and shrinkage related cracking should be anticipated in all concrete slabs-on-grade. Slab reinforcement and the spacing of control joints should be determined by the Structural Engineer.

Soluble Sulfates: The soluble sulfate concentrations of the surface soils in the general area have been determined to be non-corrosive with respect to concrete. The use of Type V cement or specialized sulfate resistant concrete mix designs should not be necessary.

Tentative Pavement Design: All paving should be underlain by a minimum compacted fill thickness of 12 inches (excluding aggregate base). This may be performed as described in the Site Grading Section of this report. Although R-Value testing was not conducted during our investigation, based upon the surface soil conditions encountered, an R-Value of 50 appears appropriate for use in preliminary pavement design. Final design for asphalt pavement should be based upon R-Value testing performed after site grading. The following tentative pavement design section is based upon a preliminary design R-Value of 50 and should be acceptable for most on-site installations.. Additional pavement sections should be based upon the anticipated traffic use.

Driveways and parking areas limited to auto and light truck traffic
(Traffic Index = 5.0)
Use 3.0 inches of asphalt on 4.0 inches of Class 2 Base Material

Aggregate base material should conform to the requirements for Class 2 Aggregate base summarized in Section 26 of CalTrans Standard Specifications, January, 1992. Asphaltic concrete should conform with Section 39 of the CalTrans Standard Specifications. The recommended pavement sections should be provided with a uniformly compacted subgrade and precise control of thickness and elevations during placement. Drainage from paved areas should be rapid and complete. It should be noted that the pavement sections recommended above are minimum sections, if heavily loaded vehicles are expected to cross automobile parking and driving areas, thicker pavement sections may be desired at these locations.

Pavement and slab designs are tentative and should be confirmed at the completion of site grading when the subgrade soils are in-place. This will include sampling and testing of the actual subgrade soils and an analysis based upon the specific use.

Shrinkage and Subsidence: Volumetric shrinkage of the material which is excavated and replaced as controlled compacted fill should be anticipated. We estimate that this shrinkage should be between 15 and 20 percent dependent upon the area within the site. Subsidence of the surfaces which are scarified and compacted should be between 0.1 and 0.3 tenths of a foot. This will vary depending upon the type of equipment used, the moisture content of the soil at the time of grading and the actual degree of compaction attained. These values for shrinkage and subsidence are exclusive of losses which will occur due to the site clearing or the removal of deleterious materials.

General Site Grading: All grading should be performed in accordance with the grading ordinance of Riverside County, California. The following recommendations have been developed on the basis of our field and laboratory testing and are intended to provide a uniform compacted mat of soil beneath the building slabs and foundations.

1. Site Clearing: Proper site clearing will be very important. Any abandoned underground utilities or irrigation lines should be removed and the resulting excavations should be properly backfilled. Soils that are disturbed during site clearing should be removed and replaced as controlled compacted fill under the direction of the Soils Engineer. The roots associated with the existing tamarisk trees should be thoroughly removed.

2. Preparation of Building and Foundation Areas: In order to provide adequate and uniform bearing conditions, we recommend overexcavation throughout the building and foundation areas.

a) Tennis Stadiums - The foundation areas should be overexcavated to a depth of at least four feet below existing grade or four feet below the bottom of the footings whichever is deeper. The exposed soils should then be scarified to a depth of one foot, moisture conditioned and recompacted to at least 90 percent relative compaction. The excavated material should then be replaced as engineered fill material as recommended below.

b) Commercial Buildings - The commercial building areas should be overexcavated to a depth of at least three feet below existing grade or three feet below the bottom of the footings whichever is deeper. The exposed soils should then be scarified to a depth of one foot, moisture conditioned and recompacted to at least 90 percent relative compaction. The excavated material should then be replaced as engineered fill material as recommended below.

c) Residential Buildings - The residential building areas should be overexcavated to a depth of at least two feet feet below existing grade or two feet below the bottom of the footings whichever is deeper. The exposed soils should then be scarified to a depth of one foot, moisture conditioned and recompacted to at least 90 percent relative compaction. The excavated material should then be replaced as engineered fill material as recommended below.

Because the majority of the site soils are granular in nature. it is likely that compaction may be attained to a depth of three or feet by watering and compaction in-place. If the recommended depth of compaction can be attained in this manner, the recommended overeexacavtion may not be necessary.

3. Placement of Compacted Fill: Fill materials should be spread in thin lifts, at near optimum moisture content and compacted to a minimum of 90 percent relative compaction. Imported fill material shall have an Expansion Index not exceeding 20.

The contractor shall notify the Soils Engineer at least 48 hours in advance of importing soils in order to provide sufficient time for the evaluation of proposed import materials. The contractor shall be responsible for delivering material to the site which complies with the project specifications. Approval by the Soils Engineer will be based upon material delivered to the site and not the preliminary evaluation of import sources.

Our observations of the materials encountered during our investigation indicate that compaction within the native soils will be most readily obtained by means of heavy rubber tired equipment or vibratory compactors. A uniform and near optimum moisture content should be maintained during fill placement and compaction. Blending of the materials may be necessary to provide for uniform compaction conditions.

4. Preparation of Slab and Paving Areas: All surfaces to receive asphalt concrete paving or exterior concrete slabs-on-grade, should be underlain by a minimum compacted fill thickness of 12 inches. This may be accomplished by a combination of overexcavation, scarification and recompaction of the surface, and replacement of the excavated material as controlled compacted fill. Compaction of the slab and pavement areas should be to a minimum of 95 percent relative compaction.

5. Testing and Inspection: During grading, tests and observations should be performed by the Soils Engineer or his representative in order to verify that the grading is being performed in accordance with the project specifications. Field density testing shall be performed in accordance with applicable ASTM test standards.

The minimum acceptable degree of compaction shall be 90 percent of the maximum dry density as obtained by the ASTM D1557-91 test method. Where testing indicates insufficient density, additional compactive effort shall be applied until retesting indicates satisfactory compaction.

GENERAL

The findings and recommendations presented in this report are based upon an interpolation of the soil conditions between boring locations and extrapolation of these conditions throughout the project site. Should conditions encountered during grading appear different than those indicated in this report, this office should be notified. this report was prepared with limited information regarding the proposed structures. If the proposed structures vary significantly in design or construction from that assumed, the recommendations included in this report should be reevaluated.

This report is considered to be applicable for use by PM Sports Management Corporation and it's consultants for the specific site and project described herein. The use of this report by other parties or for other projects is not authorized. The recommendations of this report are contingent upon monitoring of the grading operations by a representative of Sladden Engineering. All recommendations are considered to be tentative pending our review of the grading operations and additional testing, if indicated. If others are employed to perform any soil testing, this office should be notified prior to such testing in order to coordinate any required site visits by our representative and to assure indemnification of Sladden Engineering.

APPENDIX A

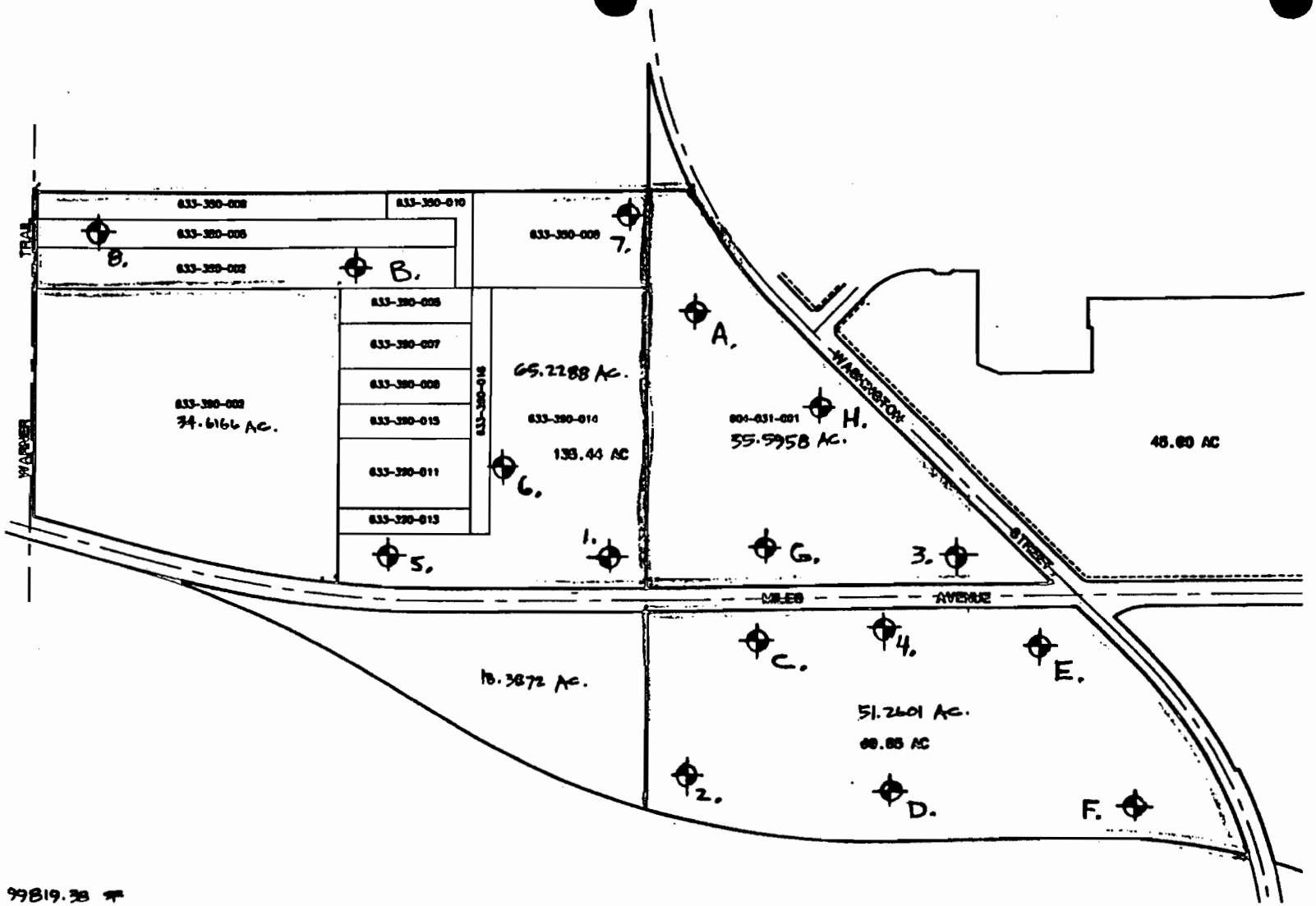
Field Exploration
Boring Logs
Site Plan

APPENDIX A

FIELD EXPLORATION

For our field investigation, eight exploratory borings were excavated on March 27, 1998 using a truck mounted hollow stem auger rig (Mobile B53) at the approximate locations indicated on the site plan included in this appendix. In addition, eight exploratory trenches were excavated on April 6, 1998 using a rubber-tire backhoe. Continuous logs of the materials encountered were made on the site by a representative of Sladden Engineering. Boring logs are included in this appendix.

Representative undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler (California split spoon sampler) or a Standard Penetration Test (SPT) sampler with a 140 pound hammer dropping approximately 30 inches (ASTM D1586). The number of blows required to drive the samplers 18 inches was recorded in six inch increments and blowcounts are indicated on the boring logs. The California samplers are 3.0 inches in diameter, carrying brass sample rings having inner diameters of 2.5 inches. The standard penetration samplers are 2.0 inches in diameter with an inner diameter of 1.5 inches. Undisturbed samples were removed from the sampler and placed in moisture sealed containers in order to preserve the natural soil moisture content. Bulk samples were also obtained from the auger cuttings. The bulk samples represent a mixture of the soils within the noted depths. Samples were then transported to our laboratory for further observations and testing.



99819.38 ac

NORTH

⊕ Approximate Boring & Trench Locations

Not to Scale

Boring & Trench Location Map	
Garden of Champions at Indian Wells Indian Wells Area Riverside County, California	
Date: 4/10/98	Job No.: 544-8023

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 1 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
5		■	4/4/6	" "	"	---	0.5	---	
10		■	5/10/16	" "	"	---	1.5	---	
15		■	8/10/13	" "	"	---	1.0	---	
20		■	13/17/20	" "	"	---	1.0	---	
25		■	15/25/34	" "	"	---	0.5	---	
30		■	8/10/14	" "	"	---	0.5	---	
35				■ Standard Penetration Sample					Total Depth = 31.5' No Bedrock No Groundwater
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 2 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Silty Sand: Brown, slightly silty to very silty	SM				Interbedded thin silty clay layers throughout
5			8/9/9	" "	"	---	0.5	---	
10			8/10/15	" "	"	---	3.2	---	
15			10/22/33	Sand: Gray brown, fine grained	SP	---	1.5	---	Widely scattered thin silty clay layers throughout
20			13/15/25	" "	"	---	2.6	---	
25			7/10/16	" "	"	---	0.5	---	Silty clay layer 6" thick
30				Standard Penetration Sample					Total Depth = 26.5' No Bedrock No Groundwater
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 3 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
5		■	6/10/11	" "	"	---	1.0	---	
10		■	6/9/12	" "	"	---	1.5	---	
15		■	9/12/12	" "	"	---	2.0	---	
20		■	9/10/14	" "	"	---	1.5	---	
25		■	16/20/27	" "	"	---	0.5	---	
30		■	19/21/25	" "	"	---	1.0	---	
35				■ Standard Penetration Sample					Total Depth = 31.5' No Bedrock No Groundwater
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 4 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
5			6/8/8	" "	"	---	2.5	---	
10			7/9/13	" "	"	---	2.0	---	
15			6/9/12	" "	"	---	1.0	---	
20			11/18/23	" "	"	---	1.5	---	
25			15/23/28	" "	"	---	0.5	---	
30			9/17/19	" "	"	---	1.0	---	
35				Standard Penetration Sample					Total Depth = 31.5' No Bedrock No Groundwater
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 5 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
									Dry throughout
5									
10									
15									
20									Total Depth = 20' No Bedrock No Groundwater
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 6 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
5		▮	10/11/16	" "	"	---	2.5	---	
10		▮	10/15/19	" "	"	---	1.5	---	
15		▮	10/18/20	" "	"	---	1.5	---	
20		▮	10/15/26	" "	"	---	1.5	---	
25		▮	17/17/22	" "	"	---	1.5	---	
30		▮	16/18/23	" "	"	---	1.0	---	
35				▮ Standard Penetration Sample					Total Depth = 31.5' No Bedrock No Groundwater
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 7 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				
5			7/9/12	" "	"	---	1.0	---	
10			5/7/16	" "	"	---	2.0	---	
15			9/15/16	" "	"	---	1.5	---	
20			14/18/22	" "	"	---	1.0	---	
25				Standard Penetration Sample					Total Depth = 21.5' No Bedrock No Groundwater
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 3-27-98 | Boring No. 8 | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				Loose on surface
5			4/4/6	" "	"	---	0.5	---	
10			5/10/16	" "	"	---	0.5	---	
15			8/10/13	" "	"	---	1.5	---	
20			13/17/20	" "	"	---	1.0	---	
25				Standard Penetration Sample					Total Depth = 21.5' No Bedrock No Groundwater
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench A | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench B | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench C | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, slightly silty, fine grained	SP/SM				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench D | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Silty Sand: Brown, fine grained	SM				
5				Sand: Brown, slightly silty, fine grained	SP/SM				
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench E | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Brown, slightly silty, fine grained	SP/SM				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench F | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Brown, slightly silty, fine grained	SP/SM				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench G | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

Garden of Champions at Indian Wells

Date: 4-6-98 | Trench H | Job No.: 544-8023

Depth (in feet)	Symbol	Core	Blows/ft.	DESCRIPTION	Soil Type	Unit Dry Wt. (pcf)	% Moisture	% Relative Compaction	REMARKS
0				Sand: Gray brown, fine grained	SP				
5									
10									Total Depth = 10' No Bedrock No Groundwater
15									
20									
25									
30									
35									
40									
45									
50									
55									Note: The statification lines represent the approximate boundaries between the soil types; the transitions may be gradual.

APPENDIX B

Laboratory Testing
Laboratory Test Results

APPENDIX B

LABORATORY TESTING

Representative bulk and relatively undisturbed soil samples were obtained in the field and returned to our laboratory for additional observations and testing. Laboratory testing was generally performed in two phases. The first phase consisted of testing in order to determine the compaction of the existing natural soil and the general engineering classifications of the soils underlying the site. This testing was performed in order to estimate the engineering characteristics of the soil and to serve as a basis for selecting samples for the second phase of testing. The second phase consisted of soil mechanics testing. This testing including consolidation, shear strength and expansion testing was performed in order to provide a means of developing specific design recommendations based on the mechanical properties of the soil.

CLASSIFICATION AND COMPACTION TESTING

Unit Weight and Moisture Content Determinations: Each undisturbed sample was weighed and measured in order to determine its unit weight. A small portion of each sample was then subjected to testing in order to determine its moisture content. This was used in order to determine the dry density of the soil in its natural condition. The results of this testing are shown on the Boring Logs.

Maximum Density-Optimum Moisture Determinations: Representative soil types were selected for maximum density determinations. This testing was performed in accordance with the ASTM Standard D1557-91 Test Method A. The results of this testing are presented graphically in this appendix. The maximum densities are compared to the field densities of the soil in order to determine the existing relative compaction to the soil. This is shown on the Boring Logs, and is useful in estimating the strength and compressibility of the soil.

Classification Testing: Several soil samples were selected for classification testing. This testing consists of mechanical grain size analyses and Atterberg Limits determinations. These provide information for developing classifications for the soil in accordance with the Unified Classification System. This classification system categorizes the soil into groups having similar engineering characteristics. The results of this testing are very useful in detecting variations in the soils and in selecting samples for further testing.

SOIL MECHANIC'S TESTING

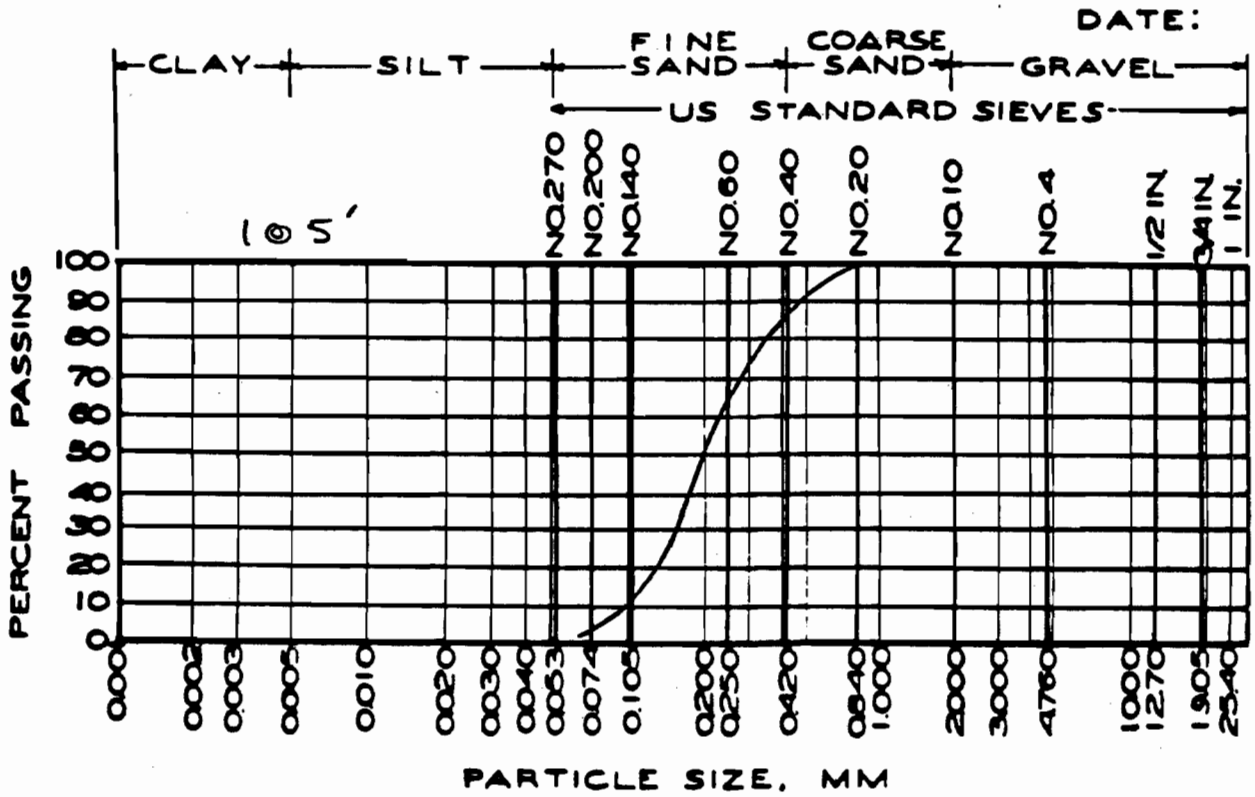
Direct Shear Testing: One sample was selected for Direct Shear Testing. This testing measures the shear strength of the soil under various normal pressures and is used in developing parameters for foundation design and lateral design. Testing was performed using recompacted test specimens which were saturated prior to testing. Testing was performed using a strain controlled test apparatus with normal pressures ranging from 800 to 2300 pounds per square foot.

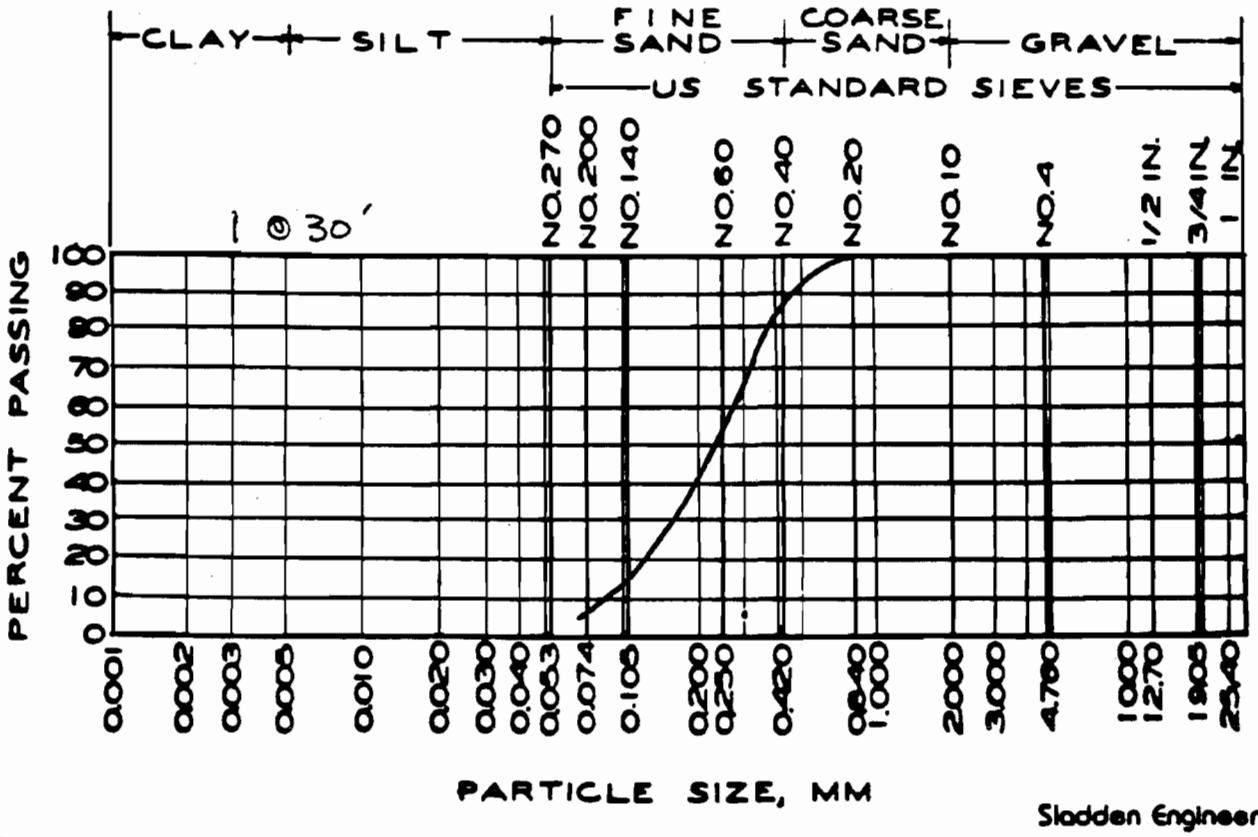
Expansion Testing: One sample was selected for Expansion testing. Expansion testing was performed in accordance with the UBC Standard 18-2. This testing consists of remolding 4-inch diameter by 1-inch thick test specimens to a moisture content and dry density corresponding to approximately 50 percent saturation. The samples are subjected to a surcharge of 144 pounds per square foot and allowed to reach equilibrium. At that point the specimens are inundated with distilled water. The linear expansion is then measured until complete.

544-8023

GRAIN SIZE, MM ACCUMULATION CURVE

DATE:



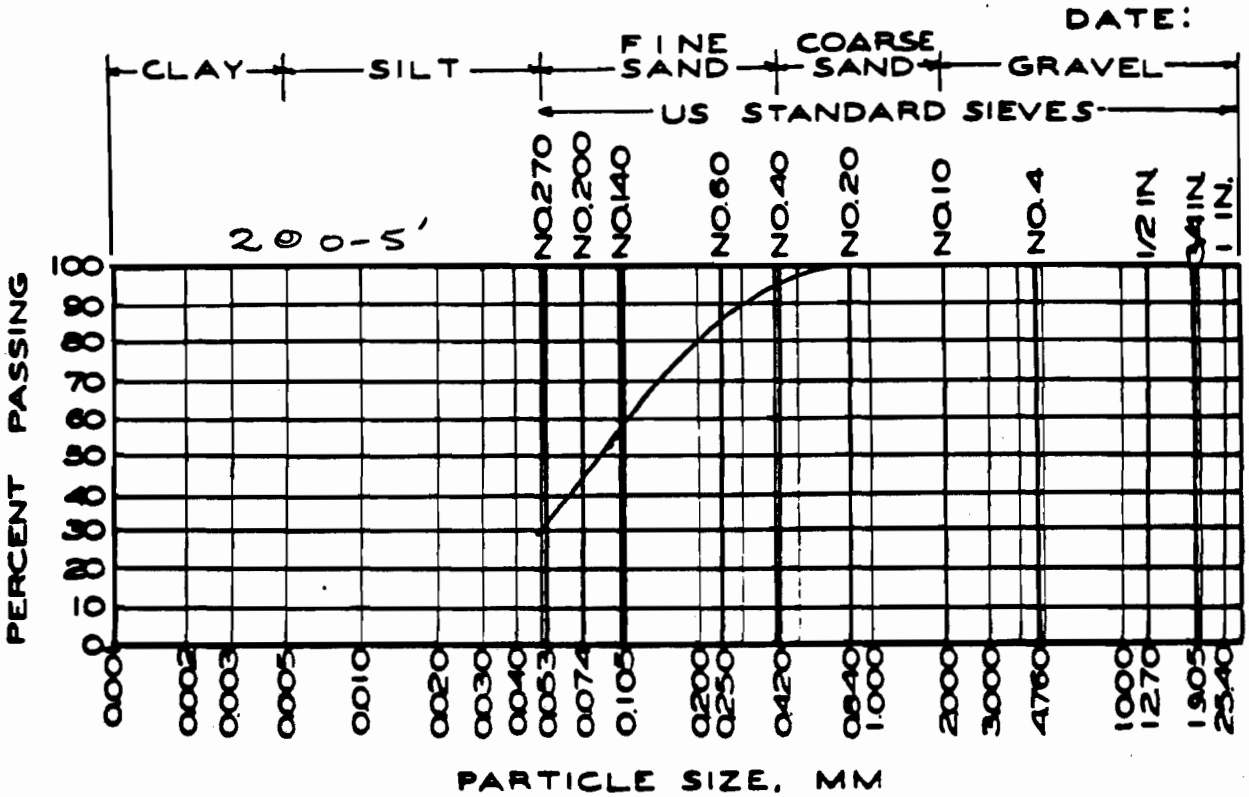


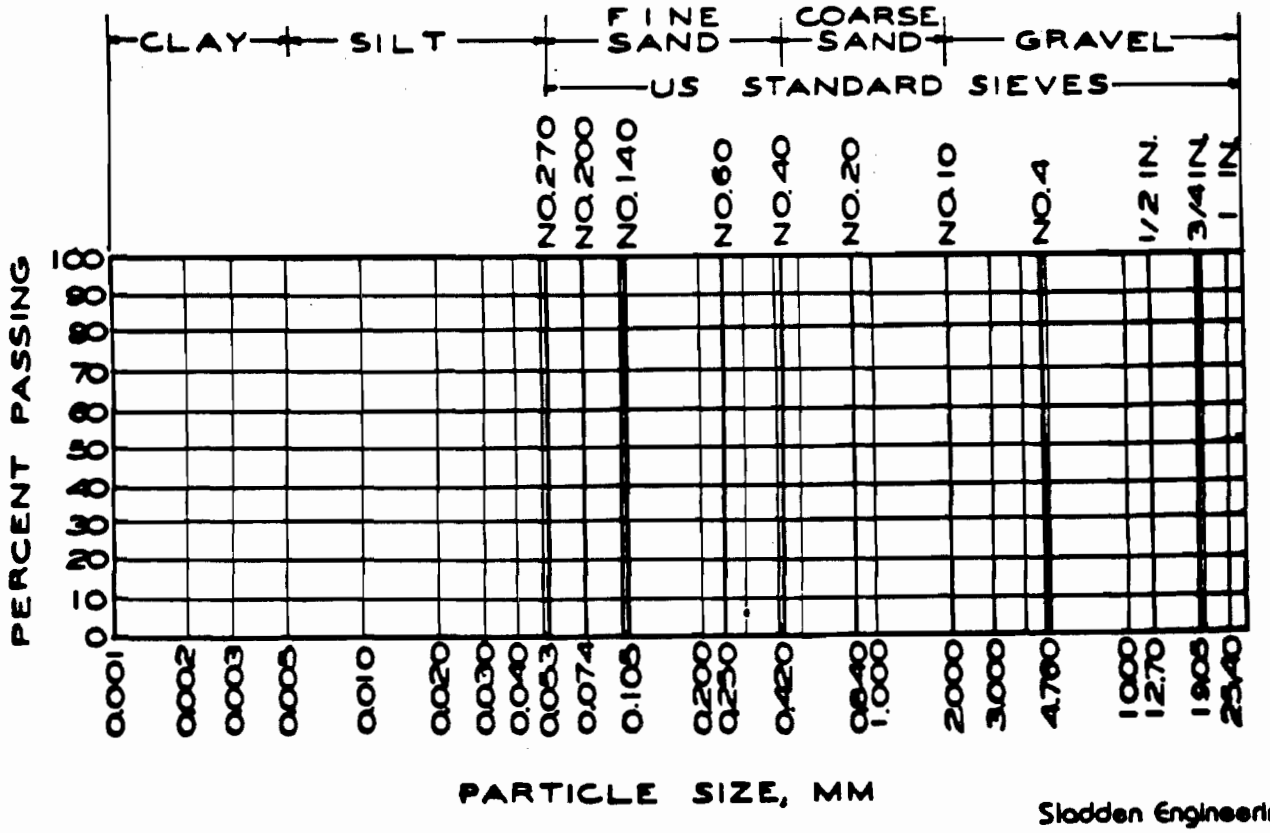
Sladden Engineering

544-8023

GRAIN SIZE, MM ACCUMULATION CURVE

DATE:





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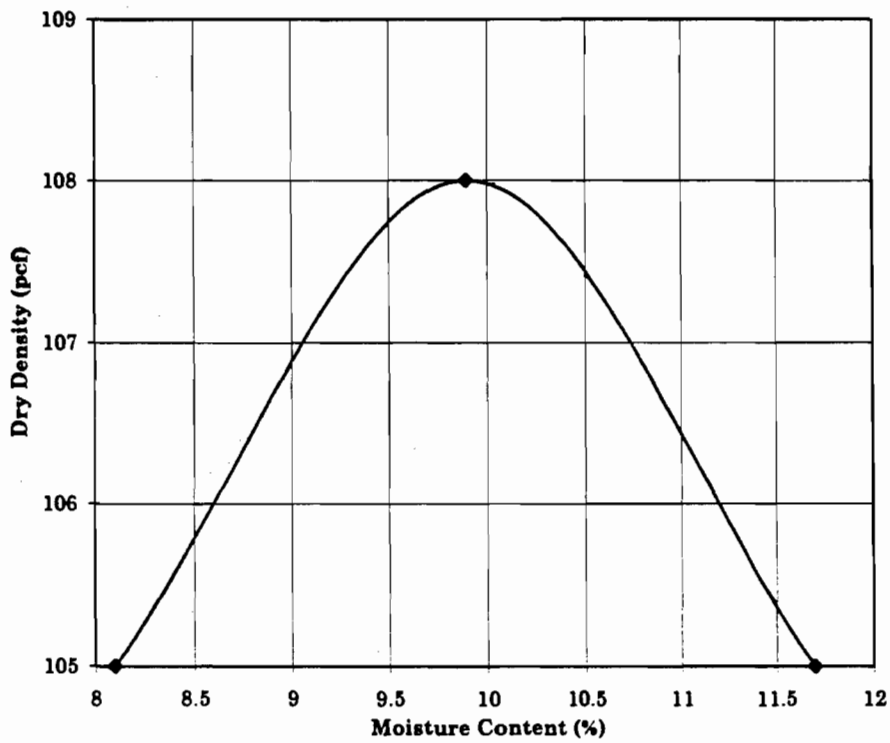
Job No.: 544-8023



METHOD OF COMPACTION

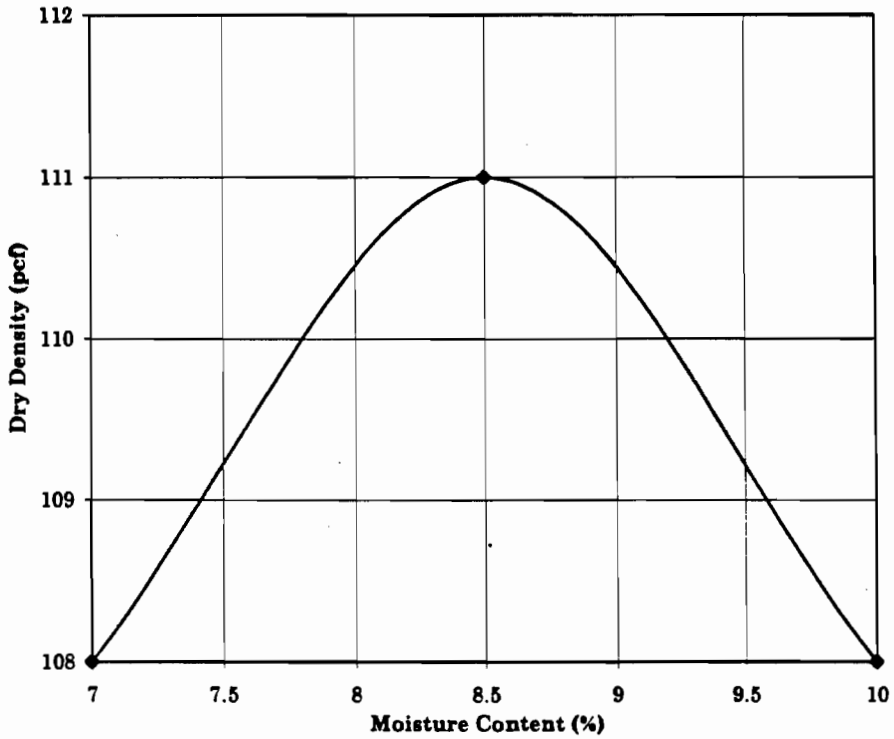
ASTM D-1557-91, METHOD A OR C

SAMPLE	MAXIMUM UNIT WEIGHT	OPTIMUM MOISTURE CONTENT
1	108.0	9.9

Boring 1 @ 0 - 5'

MAXIMUM DENSITY-OPTIMUM MOISTURE CURVE

Job No.: 544-8023



METHOD OF COMPACTION

ASTM D-1557-91, METHOD A OR C

SAMPLE	MAXIMUM UNIT WEIGHT	OPTIMUM MOISTURE CONTENT
2	111.0	8.5

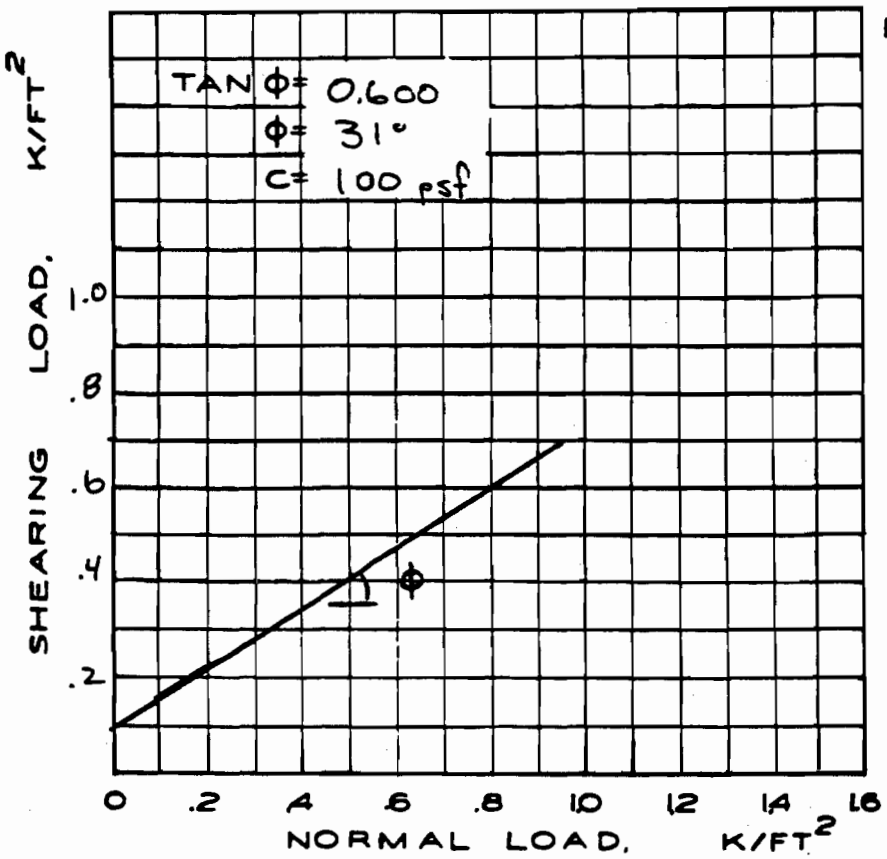
Boring 4 @ 0 - 5'

MAXIMUM DENSITY-OPTIMUM MOISTURE CURVE

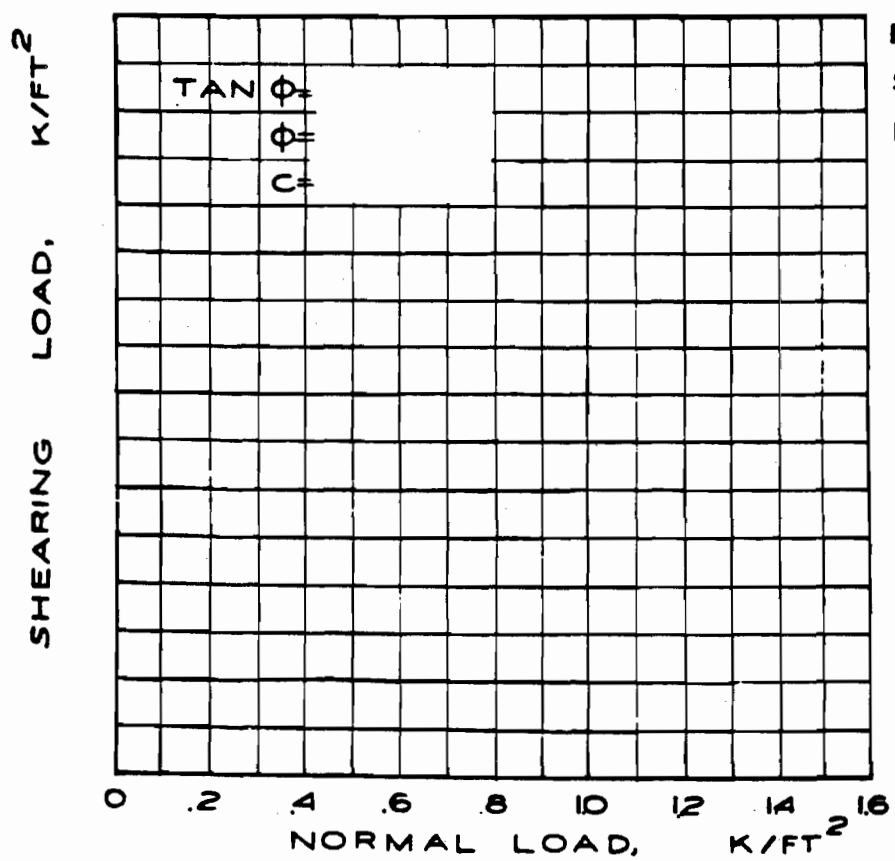
DIRECT SHEAR TESTS

544-8023

DATE: 4/15/98



BORING NO. 1
SAMPLE NO. Bulk
DEPTH 0-5'



BORING NO.
SAMPLE NO.
DEPTH

Slodden Engineering

ANAHEIM TEST LABORATORY

3008 S. ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO: SLADDEN ENGINEERING:
6782 STANTON AVE. SUITE E
BUENA PARK, CA.90621

ATTN: BRETT ANDERSON

PROJECT: # 544-8023

DATE: 3-31-98

P.O. No. VERBAL

Shipper No.

Lab. No. B 2992

Specification:

Material: SOIL

CHAMPIONS:
Hole-2
Bulk 0-5'

ANALYTICAL REPORT

SOLUBLE SULFATES
per CA. 417

123 ppm

RESPECTFULLY SUBMITTED

POPPY BRIDGER Chief Chemist

FORM #2

11.6 Air Quality Data

CONSTRUCTION VEHICLE EXHAUST EMISSIONS
(Based on 11-Hour-Days)

HYDROCARBONS (ROC)

			Rough Grading			Utility Corridor Grading			Sewer and Water			Total ROC Emissions (lbs/day)
Equipment Type	EPA EF (lbs/hr)	EPA EF (1) (lbs/hr)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	
Track-Type Tractor	0.121	1.331	2.000		2.662			0.000	1.000		1.331	
Wheeled Tractor	0.188	2.068	2.000		4.136	1.000		2.068			0.000	
Wheeled Dozer	0.000	0.000			0.000			0.000			0.000	
Scraper	0.282	3.102	12.000		37.224	2.000		6.204			0.000	
Motor Grader (Blade)	0.040	0.440	2.000		0.880	1.000		0.440			0.000	
Wheeled Loader	0.250	2.750	1.000		2.750			0.000	5.000		13.750	
Track-Type Loader	0.098	1.078			0.000			0.000			0.000	
Off-Highway Truck (2)	0.192	2.112	5.000		10.560	2.000		4.224			0.000	
Roller	0.067	0.737			0.000	1.000		0.737			0.000	
Miscellaneous	0.152	1.672	4.000		6.688	2.000		3.344	2.000		3.344	
TOTAL					**64.900**			**17.017**			**18.425**	**100.342**

(1) EPA lbs/hr EF multiplied by 11-hour days.
(2) The off-highway truck emission factor was used to calculate the CO, NOx and ROC emissions generated by the wheeled dozer. The wheeled dozer-generated emissions are included in the off-highway truck emission factor, as indicated in Table II-7.1 of Supplement A to the Compilation of Air Pollutant Emission Factors, EPA, vol. II, January 1991.

CONSTRUCTION VEHICLE EXHAUST EMISSIONS
(Based on 11-Hour-Days)

PARTICULATE MATTER (PM10)

			Rough Grading			Utility Corridor Grading			Sewer and Water			Total PM10 Emissions (lbs/day)
Equipment Type	EPA EF (lbs/hr)	EPA EF (1) (lbs/hr)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	
Track-Type Tractor	0.112	1.120	2.000		2.240			0.000	1.000		1.120	
Wheeled Tractor	0.136	1.360	2.000		2.720	1.000		1.360			0.000	
Wheeled Dozer	0.165	1.650			0.000			0.000			0.000	
Scraper	0.406	4.060	12.000		48.720	2.000		8.120			0.000	
Motor Grader (Blade)	0.061	0.610	2.00		1.220	1.000		0.610			0.000	
Wheeled Loader	0.172	1.720	1.000		1.720			0.000	5.000		8.600	
Track-Type Loader	0.058	0.580			0.000			0.000			0.000	
Off-Highway Truck (2)	0.256	2.560	5.000		12.800	2.000		5.120			0.000	
Roller	0.050	0.500			0.000	1.000		0.500			0.000	
Miscellaneous	0.139	4.000	4.000		5.560	2.000		2.780	2.000		2.780	
TOTAL					**74.980**			**18.490**			**12.500**	**105.**

(1) EPA lbs/hr EF multiplied by 11-hour days.
(2) The off-highway truck emission factor was used to calculate the CO, NOx and ROC emissions generated by the wheeled dozer. The wheeled dozer-generated emissions are included in the off-highway truck emission factor, as indicated in Table II-7.1 of Supplement A to the Compilation of Air Pollutant Emission Factors, EPA, vol. II, January 1991.

CONSTRUCTION VEHICLE EXHAUST EMISSIONS
(Based on 11-Hour-Days)

NITROGEN OXIDES (NOx)

			Rough Grading			Utility Corridor Grading			Sewer and Water			Total NOx Emissions (lbs/day)
Equipment Type	EPA EF (lbs/hr)	EPA EF (1) (lbs/hr)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	
Track-Type Tractor	1.260	12.600	2.00		25.200			0.000	1.000		12.600	
Wheeled Tractor	1.269	12.690	2.00		25.380	1.000		12.690				
Wheeled Dozer	0.000	0.000			0.000			0.000				
Scraper	3.840	38.400	12.00		460.800	2.000		76.800				
Motor Grader (Blade)	0.713	7.130	2.00		14.260	1.000		7.130				
Wheeled Loader	1.890	18.900	1.00		18.900			0.000	5.000		94.500	
Track-Type Loader	0.827	8.270			0.000			0.000				
Off-Highway Truck (2)	4.166	41.660	5.00		208.300	2.000		83.320				
Roller	0.862	8.620			0.000	1.000		8.620				
Miscellaneous	1.619	16.910	4.00		67.640	2.000		33.820	2.000		33.820	
TOTAL					**820.480**			**222.380**			**140.920**	**1183.78**

(1) EPA lbs/hr EF multiplied by 11-hour days.
(2) The off-highway truck emission factor was used to calculate the CO, NOx and ROC emissions generated by the wheeled dozer. The wheeled dozer-generated emissions are included in the off-highway truck emission factor, as indicated in Table II-7.1 of Supplement A to the Compilation of Air Pollutant Emission Factors, EPA, vol. II, January 1991.

CONSTRUCTION VEHICLE EXHAUST EMISSIONS
(Based on 11-Hour-Days)

CARBON MONOXIDE (CO)

			Rough Grading			Utility Corridor Grading			Sewer and Water			Total CO Emissions (lbs/day)
Equipment Type	EPA EF (lbs/hr)	EPA EF (1) (lbs/hr)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	Units	Days	Emissions (lbs/day)	
Track-Type Tractor	0.346	4.152	2.000		8.304			0.000	1.000		4.152	
Wheeled Tractor	3.590	43.080	2.000		86.160	1.000		43.080			0.000	
Wheeled Dozer	0.000	0.000			0.000			0.000			0.000	
Scraper	1.257	15.084	12.000		181.008	2.000		30.168			0.000	
Motor Grader (Blade)	0.151	1.812	2.000		3.624	1.000		1.812			0.000	
Wheeled Loader	0.572	6.864	1.000		6.864			0.000	5.000		34.320	
Track-Type Loader	0.201	2.412			0.000			0.000			0.000	
Off-Highway Truck (2)	1.794	21.528	5.000		107.640	2.000		43.056			0.000	
Roller	0.304	3.648			0.000	1.000		3.648			0.000	
Miscellaneous	0.675	8.100	4.000		32.400	2.000		16.200	2.000		54.672	
TOTAL					**426.000**			**137.964**				**618.**

(1) EPA lbs/hr EF multiplied by 11-hour days.
(2) The off-highway truck emission factor was used to calculate the CO, NOx and ROC emissions generated by the wheeled dozer. The wheeled dozer-generated emissions are included in the off-highway truck emission factor, as indicated in Table II-7.1 of Supplement A to the Compilation of Air Pollutant Emission Factors, EPA, vol. II, January 1991.

1ENV028F1.1 CALTRANS DIVISION OF RUN
DATES: ENV028F1.1 4/30/98
NEW TECHNOLOGY, MATERIALS AND RESEARCH
EMFAC7F1.1 4/30/98

EMFAC7F1.1 RATES AS OF 1/25/94
TIME RATE ADJUSTMENT BAGS 1 & 3 GOC winter

YEAR: 2004 DEWPOINT: 10 % COLD STARTS 52.6 % LDA 86.8
% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: WINTER % HOT STAB 0.1 % MCY 0.3

TABLE 1: ESTIMATED TRAVEL FRACTIONS

LIGHT DUTY AUTOS LIGHT DUTY TRUCKS MED DUTY TRUCKS URBAN BUS HEAVY DUTY TRUCKS MCY
NCAT CAT DIESEL NCAT CAT DIESEL NCAT CAT DIESEL NCAT CAT DIESEL ALL

% VMT 0.45 99.43 0.12 0.03 99.84 0.13 0.11 99.89 100.00 15.01 84.99 100.00 100.00
% TRIP 0.45 99.43 0.12 0.03 99.84 0.13 0.11 99.89 100.00 15.01 84.99 100.00 100.00
% VEH 0.97 98.79 0.24 0.06 99.66 0.28 0.29 99.71 100.00 21.99 78.01 100.00 100.00

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% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: WINTER % HOT STAB 0.1 % MCY 0.3

TABLE 2: COMPOSITE EMISSION FACTORS

POLLUTANT NAME: CARBON MONOXIDE IN GRAMS PER MILE

SPEED MPH	60
IDLE*	3.35
3	67.01
5	41.91
10	21.59
15	14.49
20	10.94
25	8.82
30	7.40
35	6.40
40	5.66
45	5.15
50	4.85
55	4.82
60	5.42
65	7.82

TEMPERATURE IN DEGREES FAHRENHEIT

*IDLE EMISSIONS IN GRAMS/MIN, DERIVED FROM 3 MPH RATES

1ENV028F1.1 CALTRANS DIVISION OF RUN
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NEW TECHNOLOGY, MATERIALS AND RESEARCH
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EMFAC7F1.1 RATES AS OF 1/25/94
TIME RATE ADJUSTMENT BAGS 1 & 3 GOC Summer

YEAR: 2004 DEWPOINT: 10 % COLD STARTS 52.6 % LDA 86.8
% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 1: ESTIMATED TRAVEL FRACTIONS

LIGHT DUTY AUTOS LIGHT DUTY TRUCKS MED DUTY TRUCKS URBAN BUS HEAVY DUTY TRUCKS MCY
NCAT CAT DIESEL NCAT CAT DIESEL NCAT CAT DIESEL NCAT CAT DIESEL ALL

% VMT 0.45 99.43 0.12 0.03 99.84 0.13 0.11 99.89 100.00 15.01 84.99 100.00 100.00
% TRIP 0.45 99.43 0.12 0.03 99.84 0.13 0.11 99.89 100.00 15.01 84.99 100.00 100.00
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YEAR: 2004 DEWPOINT: 10 % COLD STARTS 52.6 % LDA 86.8
% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 2: COMPOSITE EMISSION FACTORS

POLLUTANT NAME: TOTAL ORGANIC GASES IN GRAMS PER MILE
(EXHAUST PLUS RUNNING EVAP.)

SPEED MPH	TEMPERATURE IN DEGREES FAHRENHEIT 75	80	85	90	95	100
IDLE*	0.37	0.40	0.43	0.48	0.55	0.73
3	7.50	7.91	8.61	9.64	11.04	14.56
5	4.65	4.91	5.35	5.99	6.86	9.07
10	2.02	2.08	2.22	2.45	2.77	3.59
15	1.17	1.18	1.23	1.32	1.47	1.85
20	0.82	0.81	0.83	0.88	0.97	1.18
25	0.65	0.63	0.64	0.67	0.73	0.87
30	0.54	0.53	0.53	0.55	0.60	0.70
35	0.47	0.45	0.45	0.47	0.51	0.59
40	0.41	0.40	0.40	0.41	0.44	0.51
45	0.36	0.35	0.36	0.37	0.40	0.46
50	0.34	0.33	0.34	0.35	0.38	0.45
55	0.34	0.34	0.35	0.37	0.40	0.48
60	0.40	0.41	0.43	0.47	0.52	0.63
65	0.68	0.71	0.77	0.85	0.96	1.18

*IDLE EMISSIONS IN GRAMS/MIN, DERIVED FROM 3 MPH RATES
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NEW TECHNOLOGY, MATERIALS AND RESEARCH
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EMFAC7F1.1 RATES AS OF 1/25/94
TIME RATE ADJUSTMENT BAGS 1 & 3 GOC Summer

YEAR: 2004 DEWPOINT: 10 % COLD STARTS 52.6 % LDA 86.8
% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 2: COMPOSITE EMISSION FACTORS

POLLUTANT NAME: REACTIVE ORGANIC GASES IN GRAMS PER MILE
(EXHAUST PLUS RUNNING EVAP.)

SPEED MPH	75	80	85	90	95	100
	TEMPERATURE IN DEGREES FAHRENHEIT					
IDLE*	0.35	0.37	0.40	0.46	0.52	0.70
3	6.91	7.37	8.08	9.10	10.47	13.93
5	4.29	4.58	5.03	5.66	6.51	8.69
10	1.84	1.92	2.06	2.28	2.59	3.40
15	1.05	1.07	1.12	1.21	1.35	1.72
20	0.73	0.73	0.75	0.80	0.87	1.08
25	0.57	0.56	0.57	0.60	0.65	0.78
30	0.47	0.46	0.47	0.49	0.53	0.62
35	0.41	0.40	0.40	0.42	0.45	0.52
40	0.36	0.35	0.35	0.36	0.39	0.45
45	0.32	0.31	0.31	0.33	0.35	0.41
50	0.30	0.29	0.30	0.31	0.34	0.40
55	0.30	0.30	0.31	0.33	0.36	0.44
60	0.36	0.37	0.39	0.43	0.47	0.58
65	0.61	0.65	0.70	0.77	0.88	1.09

*IDLE EMISSIONS IN GRAMS/MIN, DERIVED FROM 3 MPH RATES

1ENV028F1.1 CALTRANS DIVISION OF RUN DATES: ENV028F1.1 4/30/98

NEW TECHNOLOGY, MATERIALS AND RESEARCH

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EMFAC7F1.1 RATES AS OF 1/25/94

TIME RATE ADJUSTMENT BAGS 1 & 3 GOC Summer

YEAR: 2004 DEWPOINT: 10 % COLD STARTS 52.6 % LDA 86.8
% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 2: COMPOSITE EMISSION FACTORS

POLLUTANT NAME: OXIDES OF NITROGEN IN GRAMS PER MILE

SPEED MPH	75	80	85	90	95	100
	TEMPERATURE IN DEGREES FAHRENHEIT					
IDLE*	0.18	0.18	0.18	0.18	0.19	0.20

3	3.65	3.55	3.51	3.56	3.70	3.96
5	2.38	2.32	2.30	2.33	2.42	2.59
10	1.36	1.33	1.32	1.34	1.39	1.49
15	0.98	0.96	0.95	0.97	1.01	1.07
20	0.77	0.76	0.75	0.76	0.79	0.85
25	0.65	0.63	0.63	0.64	0.66	0.71
30	0.57	0.56	0.56	0.57	0.59	0.63
35	0.54	0.53	0.53	0.53	0.56	0.59
40	0.54	0.53	0.52	0.53	0.55	0.59
45	0.56	0.55	0.55	0.56	0.58	0.62
50	0.62	0.60	0.60	0.61	0.64	0.68
55	0.70	0.69	0.68	0.70	0.73	0.77
60	0.80	0.79	0.79	0.81	0.84	0.89
65	0.94	0.92	0.92	0.94	0.98	1.04

*IDLE EMISSIONS IN GRAMS/MIN, DERIVED FROM 3 MPH RATES
1ENV028F1.1 CALTRANS DIVISION OF RUN
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INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 2: COMPOSITE EMISSION FACTORS

POLLUTANT NAME: EXHAUST PARTICULATES IN GRAMS PER MILE

SPEED	TEMPERATURE IN DEGREES FAHRENHEIT					
MPH	75	80	85	90	95	100
IDLE*	0.00	0.00	0.00	0.00	0.00	0.00
3	0.01	0.01	0.01	0.01	0.01	0.01
5	0.01	0.01	0.01	0.01	0.01	0.01
10	0.01	0.01	0.01	0.01	0.01	0.01

15	0.01	0.01	0.01	0.01	0.01	0.01
20	0.01	0.01	0.01	0.01	0.01	0.01
25	0.01	0.01	0.01	0.01	0.01	0.01
30	0.01	0.01	0.01	0.01	0.01	0.01
35	0.01	0.01	0.01	0.01	0.01	0.01
40	0.01	0.01	0.01	0.01	0.01	0.01
45	0.01	0.01	0.01	0.01	0.01	0.01
50	0.01	0.01	0.01	0.01	0.01	0.01
55	0.01	0.01	0.01	0.01	0.01	0.01
60	0.01	0.01	0.01	0.01	0.01	0.01
65	0.01	0.01	0.01	0.01	0.01	0.01

*IDLE EMISSIONS IN GRAMS/MIN, DERIVED FROM 3 MPH RATES
1ENV028F1.1 CALTRANS DIVISION OF RUN DATES: ENV028F1.1 4/30/98
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% LDT 12.8 % MDT 0.1
INSPECTION & MAINTENANCE: YES % HOT STARTS 47.3 % UBD 0.1
% HDG 0.0 % HDD 0.0
SEASON: SUMMER % HOT STAB 0.1 % MCY 0.3

TABLE 5: TRIP END HOT SOAK EMISSION RATES (TOG OR ROG) IN GRAMS PER TRIP

TEMPERATURE IN DEGREES FAHRENHEIT

75	80	85	90	95	100
0.33	0.34	0.36	0.40	0.45	0.54

TABLE 6: NON TRIP RELATED EMISSIONS

COMPOSITE MULTIDAY DIURNAL EMISSION RATE (TOG OR ROG): 0.57 GRAMS PER VEHICLE DAY

COMPOSITE SINGLE DAY DIURNAL EMISSION RATE (TOG OR ROG): 0.51 GRAMS PER HOUR

COMPOSITE MULTIDAY RESTING LOSS EMISSION RATE (TOG OR ROG): 0.24 GRAMS PER VEHICLE DAY

COMPOSITE SINGLE DAY RESTING LOSS EMISSION RATES (TOG OR ROG) IN GRAMS PER HOUR

TEMPERATURE IN DEGREES FAHRENHEIT

75	80	85	90	95	100
0.06	0.06	0.06	0.07	0.07	0.07

11.7 Biological Assessment

BonTerra *Consulting*

An Environmental Planning/Resource Management Corporation

RECEIVED
JUN 1 1998
ROBERT BEIN WILLIAM FROST

June 11, 1998

Kevin Thomas
Environmental Services Manager
Robert Bein William Frost & Associates
14725 Alton Parkway
Irvine, California 92718

SUBJECT: Findings of Supplemental Biological Resources Survey for the Garden of Champions Tennis Facility in Indian Wells, Riverside County

Dear Mr. Thomas:

This letter report summarizes the findings of a survey to evaluate the biological resources present in the Whitewater River adjacent to the proposed Garden of Champions Tennis Facility project site in the City of Indian Wells. This report supplements the BonTerra Consulting's "Biological Impact Report, Garden of Champions Tennis Facility, Indian Wells, California" (BonTerra Consulting, April 21, 1998).

The Whitewater River was visited on June 10, 1998 by BonTerra Consulting's Senior Ecologist Brian E. Daniels. The survey was conducted to describe the vegetation and wildlife species present and to evaluate the potential for the existing habitat to support any special status plant and wildlife species. The survey area extended from the project site south to the approximate centerline of the Whitewater River.

Findings

As the largest river within the Coachella Valley, the Whitewater River provides significant biological resources for this desert region. However, in the developed parts of the Coachella Valley such as Indian Wells, the Whitewater River is maintained as a flood control channel that supports minimal biological resources. Adjacent to the proposed Garden of Champions Tennis Facility project site (hereafter referred to as the project site), the Whitewater River is an earthen channel that is regularly cleared of vegetation to maintain maximum flood capacity.

Vegetation on the floor of the Whitewater River consists of ruderal (weedy) species that are mostly less than three feet in height. Typical species present include smartweed (*Polygonum* sp.), goosefoot (*Chenopodium* sp.), tamarisk (*Tamarix* sp.), castor bean (*Ricinus communis*), sunflower (*Helianthus* sp.), Jimson weed (*Datura stramonium*), and cocklebur (*Xanthium* sp.). Present on the channel bank are the plant communities found on the project site: creosote bush scrub and fourwing saltbush scrub. The dominant species are creosote (*Larrea tridentata*) and fourwing saltbush (*Atriplex canescens*). One small clump of mesquite (*Prosopis glandulosa*) is present near the top of the channel bank.

Wildlife observed during the survey include two butterfly species, checkered white (*Pontia protodice*) and the eufala skipper (*Larodea eufala*); seventeen species of birds including American kestrel

151 Kalmus Drive, Suite E-200 Costa Mesa, CA 92626 (714) 444-9199 (714) 444-9599 FAX

(*Falco sparverius*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), greater roadrunner (*Geococcyx californianus*), Costa's hummingbird (*Calypte costae*), western kingbird (*Tyrannus verticalis*), cliff swallow (*Hirundo pyrrhonota*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), Abert's towhee (*Pipilo aberti*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*); and two species of mammals, desert cottontail (*Sylvilagus audubonii*) and black-tailed jackrabbit (*Lepus californica*). A common loon (*Gavia immer*) was observed flying overhead, a relatively rare occurrence in the desert. This water bird appeared to be following the path of the Whitewater River, and was quite likely attempting to migrate north from the Salton Sea.

No additional special status species, other than those discussed in the "Biological Impact Report, Garden of Champions Tennis Facility, Indian Wells, California," are expected to occur in the Whitewater River adjacent to the project site. The project-related flood control improvements in the Whitewater River may result in an incremental impact on those special status species that may occur on the project site. However, these incremental impacts are not considered significant.

Conclusion

No new or additional impacts considered substantial enough to warrant reconsideration of the conclusions in the "Biological Impact Report, Garden of Champions Tennis Facility, Indian Wells, California" are expected to result from the project-related channel improvements in the Whitewater River. However, project activities in the Whitewater River may be within the jurisdiction of the U.S. Army Corps of Engineers (ACOE), pursuant to Section 404 of the Clean Water Act.

Please call with any questions. We appreciate the opportunity to assist you on this interesting project.

Sincerely,

BONTERRA CONSULTING

Thomas E. Smith, Jr.

Thomas E. Smith, Jr., AICP
Principal

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BIOLOGICAL IMPACT REPORT
GARDEN OF CHAMPIONS TENNIS FACILITY
INDIAN WELLS, CALIFORNIA

Prepared for:

Kevin Thomas
Environmental Services Manager
Robert Bein William Frost & Associates
14725 Alton Parkway
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Prepared by:

BonTerra Consulting
20321 Birch Street, Suite 201
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Principal Investigators:
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(714) 475-9520

Project Applicant:

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77-900 Avenue of the States
Palm Desert, CA 92211
Richard R. Oliphant
(760) 345-2626

April 21, 1998

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B Site Photographs

PROJECT SUMMARY

The purpose of this report is to identify the potential impacts to biological resources from the development of the proposed Garden of Champions Tennis Facility, located in Indian Wells, California. Biological surveys on the site were conducted on April 3 and 15, 1998. The habitat on the site consists of approximately 115.8 acres of creosote bush/desert sand verbena series, 38.3 acres of fourwing saltbush series, and 3.8 acres of disturbed habitats. A total of 21 special interest plant and wildlife species are known to occur in the vicinity of the project site, several of which were observed on site or have the potential to occur on the site. Of the 21 special interest species, the Coachella Valley fringe-toed lizard (*Uma inornata*) is the only federally listed species expected to occur on the site. Directed surveys were conducted for the Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*), which is currently proposed for listing as federally endangered; however, this species was not observed on the project site.

The loss of creosote bush series and disturbed habitats onsite is considered adverse but not significant. The desert sand verbena series onsite is considered rare by state resource agencies and impacts to this habitat would be considered significant. However, implementation of the mitigation described below to offset potential impacts to the Coachella Valley fringe-toed lizard habitat would also reduce the impacts to the desert sand verbena series to a less than significant level.

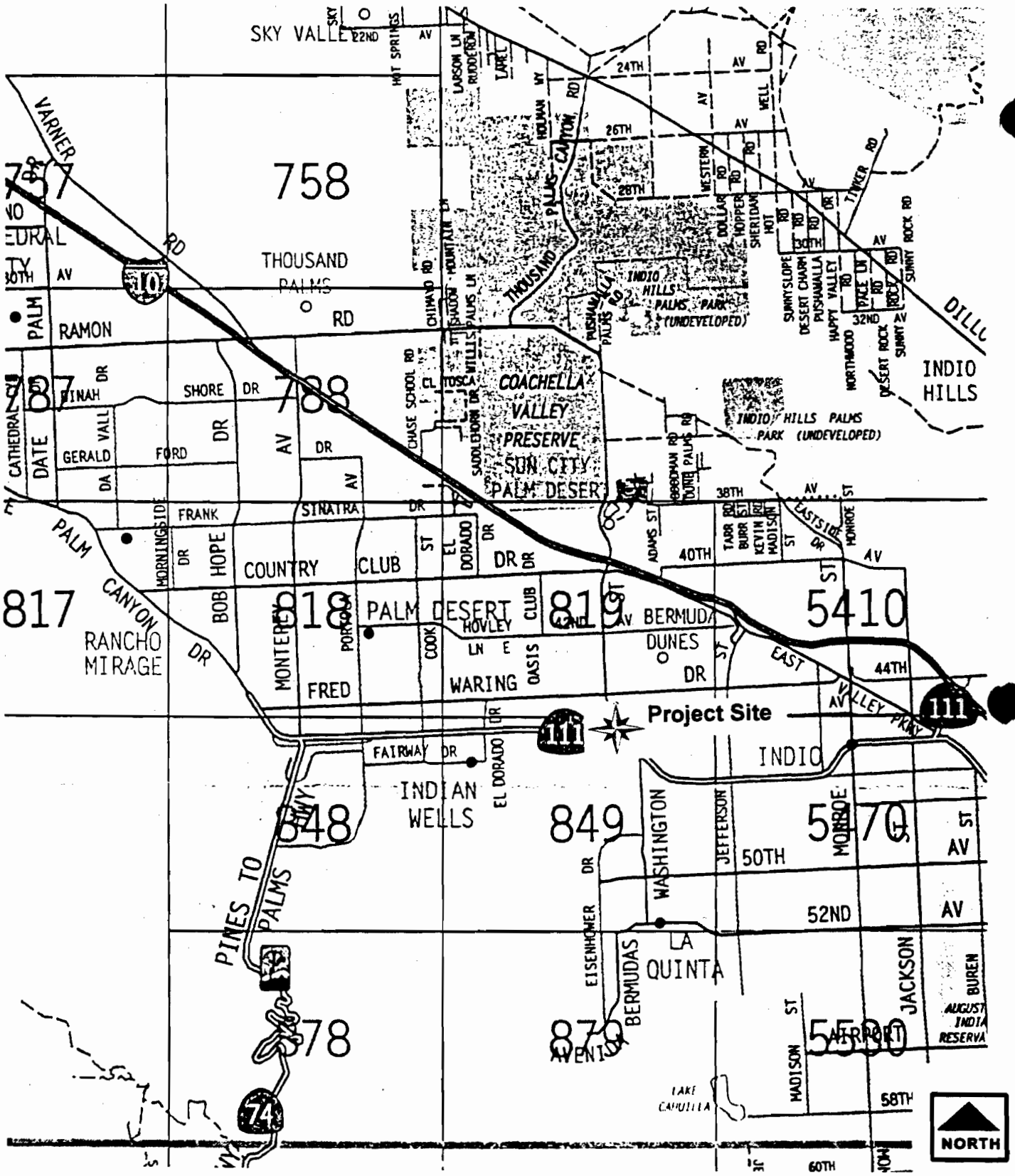
Construction on the project site would also result in the loss of approximately 153.7 acres of native habitats that provide nesting, foraging, and denning opportunities for a variety of wildlife species. These impacts are considered adverse but not significant.

When considered with the additional proposed development in the cities adjacent to Indian Wells, the proposed project would result in an overall increase in development and related loss of natural habitat and biological resources. These effects will have a cumulative impact on the area that is considered adverse, though not significant.

The project site is within areas covered by the Coachella Valley Habitat Conservation Plan (CVHCP). The CVHCP was developed in 1986 to afford protection to the Coachella Valley fringe-toed lizard and allow development to continue within the range of the species. Activities within the CVHCP that impact habitat, whether occupied or not by the lizard, requires a per acre fee of $600.00. The project's participation in the CVHCP reduces these impacts to a level of less than significant.

PROJECT DESCRIPTION

The Garden of the Champions Tennis Facility site consists of approximately 157.9 acres located west of Washington Street and north of State Route 111 in Indian Wells, Riverside County, California. The site is approximately 150 feet above sea level and is relatively flat, with low dunes on the western portion of the site. The Whitewater River is directly south of the site. The site contains Myoma fine sand soils and the average rainfall for the area is 5.6 inches, with an average temperature of 72 degrees Fahrenheit. The land uses in the area consist of residential, school, golf course, and commercial. The project site is located on the La Quinta U.S. Geological Survey quadrangle, within Township 5S, Range 6E, and Section 24 as shown on Exhibit 1.



PROJECT VICINITY MAP

EXHIBIT 4

GARDEN OF CHAMPIONS TENNIS FACILITY PROJECT

BonTerra Consulting

METHODOLOGY

BonTerra Consulting conducted a search of the literature to identify special status plants, wildlife, and habitats known to occur in the vicinity of the project site. The California Natural Diversity Data Base (CNDDB 1997), California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1998), and compendia of special status species published by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) were reviewed. Table 1 lists the special interest plant and wildlife species known to occur in the vicinity of the project with their status and probability of occurrence.

TABLE 1
SPECIAL INTEREST SPECIES

Species	Federal	State	CNPS	Potential Onsite
PLANTS				
Deep Canyon snapdragon *Antirrhinum cyathiferum*	None	None	2	No Suitable Habitat
Coachella Valley milk-vetch *Astragalus lentiginosus* var. *coachellae*	FPE	None	1B	Suitable Habitat
Flat-seeded spurge *Chamaesyce platysperma*	SOC	None	1B	Suitable Habitat
California ditaxis *Ditaxis californica*	SOC	None	1B	Suitable Habitat
Glandular ditaxis *Ditaxis clariana*	None	None	2	Suitable Habitat
Slender woolly-heads *Nemacaulis denudata* var. *gracilis*	None	None	2	Suitable Habitat
WILDLIFE				
Reptiles				
Coachella Valley fringe-toed lizard *Uma inornata*	FT	CE	--	Limited suitable habitat
Flat-tailed horned lizard *Phrynosoma mcallii*	None	SOC	--	Suitable habitat
Birds				
Northern harrier *Circus cyaneus*	None	SOC	--	Suitable habitat (foraging)
Sharp-shinned hawk *Accipiter striatus*	None	SOC	--	Suitable habitat (foraging)

TABLE 1 (continued)
SPECIAL INTEREST SPECIES

Species	Federal	State	CNPS	Potential Onsite
Cooper's hawk *Accipiter cooperii*	None	SOC	--	Suitable habitat (foraging)
Ferruginous Hawk *Buteo regalis*	C	None	--	Suitable habitat (foraging)
Golden eagle *Aquila chrysaetos*	None	SOC	--	Suitable habitat (foraging)
Prairie falcon *Falco mexicanus*	None	SOC	--	Suitable habitat (foraging)
Barn owl *Tyto alba*	None	SOC	--	Suitable habitat (foraging)
Black-tailed gnatcatcher *Polioptila melanura*	None	SA	--	Suitable habitat
Crissal thrasher *Toxostoma crissale*	None	SOC	--	Limited suitable habitat
Le Conte's thrasher *Toxostoma lecontei*	None	SOC	--	Suitable habitat
Loggerhead shrike *Lanius ludovicianus*	None	SOC	--	Suitable habitat
Mammals				
Palm Springs ground squirrel *Spermophilus tereticaudus chlorus*	None	SOC	--	Suitable habitat
Pallid San Diego pocket mouse *Chaetodipus fallax pallidus*	None	SOC	--	Suitable habitat
Palm Springs pocket mouse *Perognathus longimembris bangsi*	None	SOC	--	Suitable habitat

LEGEND

FEDERAL (USFWS)

FE	Federally Listed as Endangered
FT	Federally Listed as Threatened
FPE	Federally Proposed for Endangered
FPT	Federally Proposed for Threatened
C	Candidate Species
SOC	Species of Concern

STATE (CDFG)

SE	State Listed as Endangered
ST	State Listed as Threatened
SA	Special Animal
SOC	Species of Concern

TABLE 1 (continued)
SPECIAL INTEREST SPECIES

Species	Federal	State	CNPS	Potential Onsite
CNPS				
1A Plants Presumed Extinct in California				
1B Plants Rare, Threatened, or Endangered in California and Elsewhere				
2 Plants Rare, Threatened, or Endangered in California But More Common Elsewhere				
3 Plants About Which We Need More - A Review List				
4 Plants of Limited Distribution - A Watch List				

The site survey was conducted on April 3, 1998 by Brian E. Daniels and Sandra J. Leatherman, Senior biologists at BonTerra Consulting. The survey was conducted to describe the vegetation and wildlife species present and to evaluate the potential of the habitat to support special interest plant and wildlife species. All plant and wildlife species observed were recorded in field notes and are listed in Appendix A. Plant species were identified in the field or collected for later identification. Plants were identified using taxonomic keys in Hickman (1993), Munz 1974, and Abrams (1923). Taxonomy follows Hickman (1993) for scientific and common names. The vegetation on the site was classified into the associations developed by Sawyer and Keeler-Wolf (1994), with reference to Holland (1984). Three vegetation associations occur on the site as shown on Exhibit 2 and are discussed below.

Directed plant surveys for the Coachella Valley milk-vetch were conducted by Ms. Leatherman and Scott White of Scott White Biological Consulting on April 15, 1998. A reference site in the area was visited prior to the onsite surveys to determine the phenology of this species. The milk-vetch on the reference site was setting seed during the time of the surveys. The project site has milk-vetch habitat similar to the reference site but has a denser cover of non-native grass and annual species. All the habitat areas most closely resembling the reference site were systematically surveyed. The remaining portions of the site were walked in broad transects.

Surveys for amphibians, reptiles, birds, and mammals were conducted simultaneously with the plant surveys by Mr. Daniels. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Observations of common and sensitive amphibian and reptile species were documented in field notes.

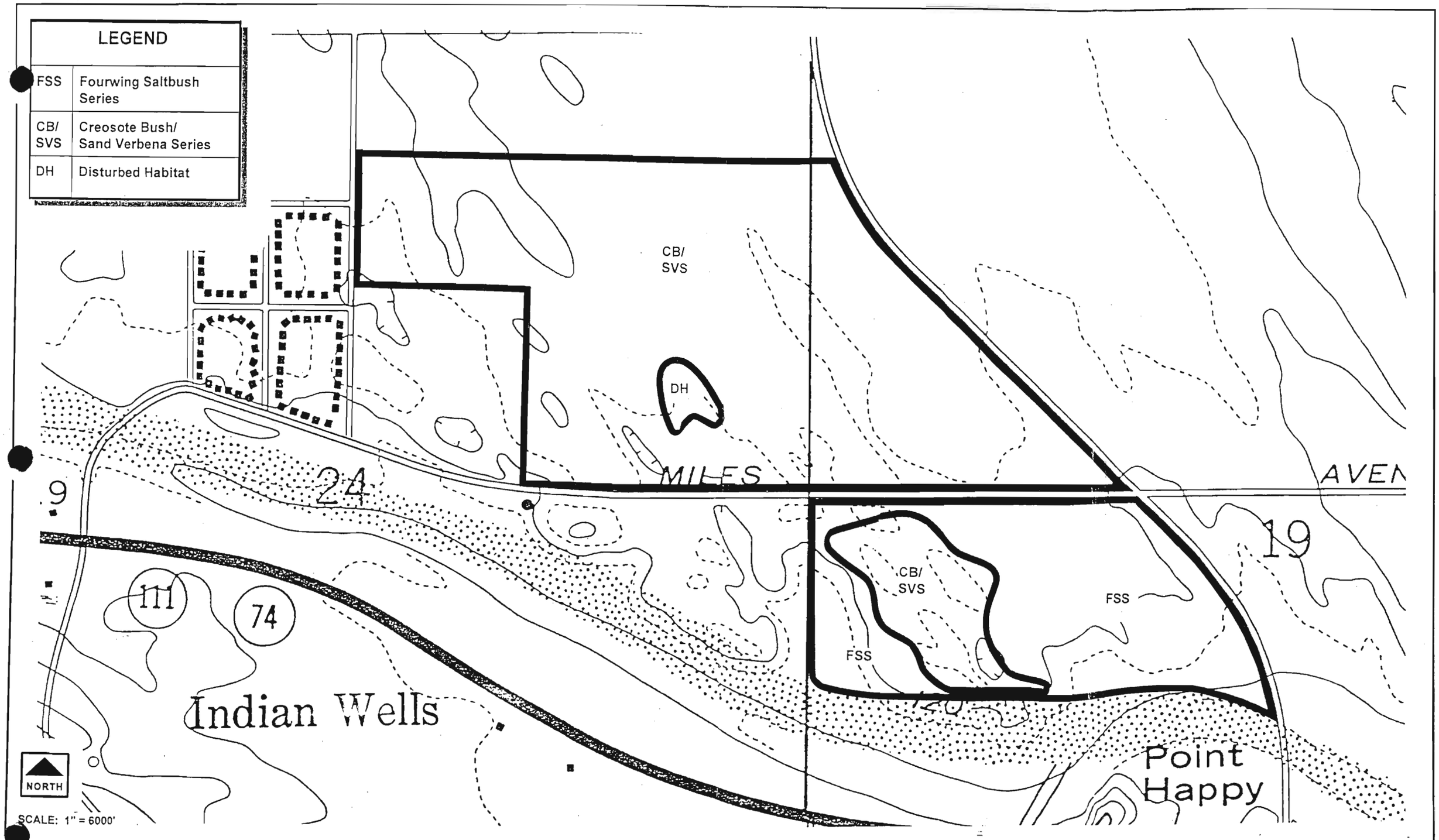
Birds were identified by visual and auditory recognition, and the abundances were noted for each species. The presence of nests or other evidence of breeding activity was also noted during these surveys.

Surveys for mammals were conducted by using active search methods including searching for and identifying diagnostic mammal sign (i.e., scat, footprints, scratch-outs, dust bowls, burrows, and trails). The project site was evaluated for its potential to support mammal species that include their home range in the project site. Mammal species observed during the course of the survey were documented in field notes.

RESULTS

Vegetation

Creosote bush (*Larrea tridentata*) is the dominant shrub occurring north and south of Miles Road and west of Washington Street. Creosote bush with its associated subshrubs and understory fit the description of the creosote bush series of Sawyer and Keeler-Wolf (1994) and stabilized and partially stabilized dunes of Holland (1984). The sand verbena series (Sawyer and Keeler-



BIOLOGICAL RESOURCES

GARDEN OF CHAMPIONS TENNIS FACILITY PROJECT

EXHIBIT 2

BonTerra Consulting

Wolf 1994) occurs as small patches within the creosote bush series resulting in a mosaic of these two series. These two series were therefore mapped as a single unit (see Exhibit 2) and comprise a total of 115.8 acres of the site (see Table 2). This habitat occurs on the low dunes on the western portion of the site and flat areas throughout the site. Other common plant species that occur in these series include mesquite (*Prosopis glandulosa*), desert primrose (*Oenothera deltoides*), woolly plantain (*Plantago ovata*), narrowleaf cryptantha (*Cryptantha angustifolia.)*, dye-plant (*Psorothamnus emoryi*), coldenia (*Tiquilia plicata*), Spanish needles (*Palafoxia arida*), and desert marigold (*Baileya pauciradiata*). The dunes on the western portion contain the same vegetation but have large open areas of sand between the plants.

Fourwing saltbush (*Atriplex canescens.*) is the dominant shrub occurring south of Miles Road and west of Washington Street. This vegetation matches the fourwing saltbush series of Sawyer and Keeler-Wolf (1994) and the chenopod scrub habitat of Holland (1984). Herbaceous cover in this vegetation series includes Mediterranean grass (*Schismus barbatus*) and woolly plantain. Few other native annuals were observed. This area of the site appears to have some type of past human disturbance and comprises approximately 3.8 acres.

The disturbed habitat north of Miles Road in the center of the site is dominated by tamarisk (*Tamarix aphylla)* surrounded by clippings of ornamental trees dumped on the site. The other disturbed habitat on the site occurs south of Miles Road in the western portion of the site. This area is a portion of a dune adjacent to a water tank. This area is dominated by Russian thistle (*Salsola tragus*) and non-native grasses.

TABLE 2
VEGETATION ACRES

Plant Community Type	Area Impacted (acres)
Fourwing Saltbush Series	38.3
Creosote Bush/Sand Verbena Series	115.4
Disturbed Habitat	3.8
Total	**157.9**

Wildlife

A total of twenty-one species of vertebrates were observed during the survey of the site. These species consisted of reptiles, birds, and mammals. Birds were the most numerous vertebrate group on the site with a total of seventeen species. All species of vertebrates observed, except for three bird species, are characteristic of dry desert scrub habitats such as that on the site. These vertebrate groups and the species observed during the survey are discussed below.

A total of two species of reptiles and two species of mammals were observed during the survey of the site. The reptiles observed included the western whiptail (*Cnemidophorus tigris*) and side-blotched lizard (*Uta stansburiana*). Only one western whiptail was observed and it was in the creosote bush series. Six side-blotched lizards were located in scattered locations on the site. The mammals observed included the black-tailed jackrabbit (*Lepus californica*) and desert cottontail (*Sylvilagus audubonii*). One desert cottontail was observed in a mesquite clump, and four black-tailed jackrabbits were observed in both the creosote bush and fourwing saltbush series on the site.

Resident bird species observed on the site that are characteristic of dry desert scrub habitats in the region include the American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), northern mockingbird (*Mimus polyglottos*), and house finch (*Carpodacus mexicanus*). Only one or two individuals were seen of each of these species, except for verdin, northern mockingbird, and house finch. The American kestrel was observed foraging over the site. This raptor species is more common in the region during the winter, but remains to breed where trees provide suitable nesting habitat. The open desert scrub on the site and the adjacent urban habitats with plentiful trees provides suitable breeding habitat for the American kestrel. A total of 8 verdins, 5 northern mockingbirds, and 15 house finches were observed on the site. Two other resident species were observed on or flying over the site that are not characteristic species of dry desert scrub habitats. These are the Brewer's blackbird (*Euphagus cyanocephalus*) and Abert's towhee (*Pipilo aberti*). Two Brewer's blackbirds were observed flying over the site and are a common resident of human habitats in the region. One Abert's towhee was observed in a tamarisk tree at the west edge of the site adjacent to the Whitewater River. The Abert's towhee typically occupies dense thickets of mesquite, cottonwoods (*Populus* sp.), willows (*Salix* sp.), and tamarisk. It is also found in thick shrubbery of human habitats adjacent to open desert scrub. The site does not provide a dense enough growth of mesquite or tamarisk to support the Abert's towhee.

Winter visitors observed during the survey that are often found in dry open desert scrub habitats in the region are the red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), yellow-rumped warbler (*Dendroica coronata*), Brewer's sparrow (*Spizella breweri*), and lesser goldfinch (*Carduelis psaltria*).

A total of three bird species that can be classified as summer visitors in the region were observed during the survey: two western kingbirds (*Tyrannus verticalis*), ten northern rough-winged swallows (*Stelgidopteryx serripennis*), and thirty cliff swallows (*Hirundo pyrrhonota*). All three species nest in the region and can be expected to forage over dry desert scrub habitats such as that on the site.

One osprey (*Pandion haliaetus*) was observed during the survey roosting on a large tamarisk tree on the site. Habitat for this raptor, whose diet consists largely of fish, includes rivers, lakes, streams, and the ocean. The osprey is a rare year round visitor to the desert region of southeastern California, most often seen in spring or fall migration.

Special Interest Habitats Species

Sensitive habitats are vegetation communities, associations, or series that support concentrations of sensitive plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife (CDFG 1995). Although sensitive habitats are not afforded legal protection unless they support protected species, potential impacts on them may increase concerns and mitigation suggestions by resources agencies.

Special Interest Plant and Wildlife Species

Plants or animals may be considered "special interest" due to declining populations, vulnerability to habitat change, or restricted distributions. The special interest species known to occur in the vicinity of the project and their potential to occur on the site were identified in Table 1.

A *federally endangered species* is one facing extinction throughout all or a significant portion of its geographic range. A *federally threatened species* is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federally threatened or endangered species in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm in this sense can include any disturbance to habitats used by the species during any portion of its life history.

Proposed species are those officially proposed by the USFWS for addition to the federal threatened and endangered species list. Because proposed species may soon be listed as threatened or endangered, these species could become listed prior to or during implementation of a proposed development project. If a federally proposed species occurs on a project site, a conference with the USFWS to minimize impacts should be initiated.

The State of California uses the following definitions: an *endangered species* is one whose prospects of survival and reproduction are in immediate jeopardy; a *threatened species* is one that is present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management; and a *rare species* is one that is present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. State rare, threatened and endangered species are fully protected against loss from development.

Species of Special Concern is an informal designation used by the CDFG for some declining wildlife species that are not state candidates. This designation does not provide legal protection but signifies that these species are recognized as sensitive by the CDFG.

Species that are *California fully protected* include those protected by special legislation for various reasons.

The CNPS is a local resource conservation organization that has developed an inventory of California's sensitive plant species (Skinner and Pavlik 1994a). This inventory is the summary of information on the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory is comprised of four lists. CNPS presumes that *List 1A* plant species are extinct in California because they have not been seen in the wild for many years. CNPS considers *List 1B* plants as rare, threatened, or endangered throughout their range. *List 2* plant species are considered rare, threatened, or endangered in California but more common in other states. Plant species for which CNPS needs additional information are included on *List 3*. *List 4* plant species are those of limited distribution in California whose susceptibility to threat appears low at this time.

Section 15380 of CEQA also grants protection for species that can be shown to meet the criteria for listing regardless if they are officially listed.

A list of each sensitive plant and wildlife species potentially occurring on the project site, including information on the status and known presence/potential habitat for that species onsite was previously shown in Table 1.

Five special interest plant species potentially occur on the project site. These species include: Coachella Valley milk-vetch, flat-seeded spurge, California ditaxis, glandular ditaxis, and slender

woolly-heads. No special interest plant species were observed during the focused surveys and are not expected to occur on the project site.

The site provides potentially suitable habitat for sixteen special interest wildlife species. This includes only one species, the Coachella Valley fringe-toed lizard, that is listed as federally threatened and state endangered. Directed surveys would need to be conducted between mid-March and November to determine the presence or absence of the Coachella Valley fringe-toed lizard on the site. However, the site is within the boundaries of the Habitat Conservation Plan (HCP) for the Coachella Valley fringe-toed lizard that was initiated in 1986. Permitted entities under this HCP include the County of Riverside and the City of Indian Wells. As a result, projects under these jurisdictions are not required to perform presence/absence surveys for the Coachella Valley fringe-toed lizard, but are required to participate in the mitigation provided by the HCP. This requires projects to minimize potential impacts, where possible, and payment of a $600.00 per acre fee to assist in the purchase of open space and habitat restoration/enhancement.

PROJECT IMPACTS

Impacts from the development of the Garden of Champions Tennis Facility would result in permanent losses to native plant habitat, wildlife habitat and special interest species and habitats. These impacts have been evaluated according to the definition of significance, outlined below, according to the California Environmental Quality Act (CEQA) guidelines.

Definition of Significance

Methods used to evaluate the significance level of potential impacts associated with the project are based on guidelines provided in Appendix G of the CEQA. Based on this Appendix, a finding of significance on biological resources is required if a project would:

- substantially affect a rare or endangered species of plant or animal or the habitat of that species;
- interfere substantially with the movement of any resident or migratory fish or wildlife species; or
- substantially diminish habitat for fish, wildlife or plants.

Evaluation of impacts using these criteria must consider the resource and its extent and distribution on a local and regional basis. For instance, the permanent loss of an important resource, such as a population of a rare plant, would be considered a substantial impact. Determining if this impact would be significant depends on whether or not this loss would be substantial with respect to the local or regional extent of this species.

Potential impacts on biological resources as a result of the project are defined as follows:

Significant: an impact that would result in an important or potentially important adverse change in any of the biological resources in the area affected by the proposed project.

Not Significant: an impact that is not anticipated to be substantial. This would include an impact considered locally important; that is, an impact that would results in an adverse, though not substantial, change to any of the biological resources in the area affected by the proposed project, but which may contribute to the decline of a resource on a local level. This could also

include an incremental effect on a special interest species or its habitat. A discussion of potential direct, indirect, and cumulative impacts associated with the project is provided below. A discussion of the level of significance of each impact following mitigation is provided in the mitigation section.

The determination of impacts in this analysis is based on onsite biological resources identified in the survey efforts discussed above. All construction activities, including staging and equipment areas, are assumed to be contained within the limits of grading. Both direct and indirect impacts on biological resource identified above have been evaluated. Direct impacts are those that involve the initial loss of habitats due to grading and construction. Indirect impacts have been identified as those related to disturbance from construction (such as dust and noise).

Biological impacts associated with the proposed project were evaluated with respect to the following sensitive biological issues:

- federally- or state-listed endangered or threatened or protected species of plant or wildlife;
- streambeds, wetlands, and their associated vegetation;
- habitats suitable to support a federally- or state-listed endangered or threatened species of plant or wildlife;
- plant species designated as former candidates for federal listing and California Species of Special Concern;

The actual occurrence of these resources within the project site was correlated with the significance criteria to determine whether the impacts of the proposed project on these resources would be considered significant.

Direct Impacts

Vegetation

Construction of the proposed project would result in the permanent removal of 115.4 acres of creosote bush/desert sand verbena series, 38.3 acres of fourwing saltbush series, and 3.8 acres of disturbed habitat made up of non-native vegetation. The creosote bush series is the dominant vegetation throughout much of the Mojave and Sonoran deserts, and the disturbed areas supporting non-native vegetation is not considered to have high biological value. The loss of these vegetation series therefore is considered adverse but not significant. The desert sand verbena series is usually associated with stabilized or partially stabilized dune habitat, which is becoming more uncommon as the Coachella Valley is developed. As such, this habitat is considered a threatened community by the CDFG (CNDDB 1998), and impacts to this habitat would be considered significant. However, implementation of the mitigation described below to offset impacts to potential to the Coachella Valley fringe-toed lizard habitat would also reduce the impacts to the desert sand verbena series to a less than significant level.

Wildlife

Construction on the project site would result in the loss of approximately 153.7 acres of native habitats that provide nesting, foraging, and denning opportunities for a variety of wildlife species. In addition, removing or altering habitats would result in the loss of small mammals, reptiles, amphibians, and other animals of slow mobility that live in the habitats within the impact area. More mobile wildlife species now using the area would be forced to move into remaining areas

of open space, consequently increasing competition for available resources in those areas. This situation would result in losing individuals of the wildlife population that cannot successfully compete. These impacts are considered adverse but not significant.

The Whitewater River adjacent to the southern boundary of the project site is expected to be a locally important wildlife movement corridor. A wildlife corridor generally defined as a relatively narrow strip of habitat that connects two or more larger areas or habitat. It is essentially free of any physical barriers such as freeways, fences, walls, housing tracts, or lakes. A typical wildlife corridor provides both refuge and ease of movement, as often provided by canyon bottoms and ridgelines.

Implementation of the project may result in indirect impacts on this corridor. These indirect impacts may consist in increased lighting, noise, and human traffic within the Whitewater River. However, immediately west of the project site the value of the Whitewater River as a wildlife movement corridor has been diminished by the presence of extensive urban habitats. In addition, a golf course has included the Whitewater River as part of its course and eliminated native habitats from the channel. As a result, the value of the Whitewater River as a wildlife movement corridor in the vicinity of the project site has been substantially reduced. Therefore, implementation of the project will result in indirect impacts on the Whitewater River that are considered adverse but not significant.

Special Interest Plant and Wildlife Species

No federally listed or proposed plant species were observed on the project site during the focused rare plant surveys. Therefore, no impacts to special interest plant species would result from project implementation.

A total of sixteen wildlife species that are considered as sensitive biological resources potentially occur within the project site. One of these sixteen, the *Coachella Valley fringe-toed lizard* is listed as federally threatened and state endangered, and the *ferruginous hawk* is a federal candidate for listing as threatened or endangered. Although the ferruginous hawk is a regular winter resident to the region, it is strongly associated with agricultural areas in the desert. The project site provides only marginal foraging habitat for this species. The loss of 157.9 acres of marginal foraging habitat for the ferruginous hawk contributes to an incremental decrease of foraging habitat that is adverse but not considered significant. Potentially suitable habitat is present on the project site for the Coachella Valley fringe-toed lizard. However, no focused surveys were conducted for this lizard because the project site is within areas covered by the Coachella Valley Habitat Conservation Plan (CVHCP). The CVHCP was developed in 1986 to afford protection to the Coachella Valley fringe-toed lizard and allow development to continue within the range of the species. Activities within the CVHCP that impact habitat, whether occupied or not by the lizard, requires a per acre fee of $600.00. If the Coachella Valley fringe-toed lizard is present on the project site, any impacts on this species would be considered significant. However, the project's participation in the CVHCP reduces these potential impacts to a level that is less than significant.

The project site supports only a limited amount of suitable habitat for the *crissal thrasher*, which is not listed or proposed as threatened or endangered. Therefore, project implementation will not result in any significant impacts on this species.

Six raptor species that are expected to use the project site for occasional foraging activities. As a result, the loss of occasional foraging habitat for the *northern harrier, sharp-shinned hawk,*

Cooper's hawk, golden eagle, prairie falcon, and *barn owl* contributes to an incremental decrease of foraging habitat that is adverse but not considered significant for these species.

Although the project site provides suitable habitat for the *flat-tailed horned lizard, black-tailed gnatcatcher, Le Conte's thrasher, loggerhead shrike, Palm Spring ground squirrel, pallid San Diego pocket mouse, and Palm Springs pocket mouse*, it is not expected to support substantial populations of these species. Therefore, the loss of 157.9 acres of suitable habitat is not expected to result in any significant impacts on these species. If any of these seven species are present on the project site, impacts on them would be considered adverse but not significant because of the low sensitivity of these species (not proposed or listed as threatened or endangered by state or federal agencies) and the limited amount of anticipated impacts on their respective habitats.

Wildlife Dispersal

Indirect Impacts

Indirect impacts are those related to disturbance by construction (such as dust and noise). Grading activities would disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs. This indirect effect of project construction on native vegetation in the immediate vicinity of the construction area is considered adverse, but not significant. In addition, potential urban runoff from the project may increase soil erosion into the Whitewater River and could have the potential to adversely affect water quality, and in turn affect habitats within the downstream potions of the Whitewater River. Additional indirect impacts may occur to adjacent vegetation due to increased human presence and potential for the introduction of non-native weedy species. These impacts are considered adverse but not significant.

CUMULATIVE EFFECTS

Proposed urban developments in the vicinity of the proposed project will convert existing native desert habitat and biological resources to urban uses. Within the City of Indian Wells, approximately 460 total dwelling units are currently proposed for development. The largest of the proposed developments includes The Reserve at Hidden Valley, encompassing 250 units and a golf course. The remaining seven projects within the City of Indian Wells range from a 97 dwelling unit single-family residence development to three office buildings on vacant pads.

To the east of Indian Wells, in the City of La Quinta, a total of 14,557 dwelling units are currently proposed for development. In addition, in the City of Palm Desert to the west, approximately 5,721 dwelling units are proposed for development throughout the City.

While these individual projects would contribute incrementally to growth in the area, considered collectively, the projects will create an overall change in the once rural and sparsely populated nature of this valley. The overall increase in dwelling units and related demands along neighborhood roads and for local services and utilities will have a cumulative impact on the area that may be considered adverse. In addition, the development of these projects in what was once a semi-rural but steadily developing area, could result in conversion of adjoining lands to similar uses, particularly rural and agricultural uses. Therefore, ultimate urbanization of the project vicinity could potentially, indirectly influence expansion throughout the area.

The loss of natural open space areas from implementation of the above projects, including the project site, will contribute on an incremental basis to cumulative impacts on biological resources

on a regional basis. Natural habitats provide important cover and foraging for several types of animals. These impacts are now occurring in the region as a result of past and planned development.

MITIGATION MEASURES

This section focuses on the development of mitigation measures for project-related impacts found to be significant. The recommended mitigation measures involve minimizing disturbance to adjacent habitat and vegetation, and habitat compensation. Implementation of these mitigation measures would reduce potential impacts to a level that is less than significant.

Construction of the proposed project would result in the permanent removal of 115.4 acres of creosote bush/desert sand verbena series. This impact in considered potentially significant because this vegetation series is considered rare and has the potential to support the Coachella Valley fringe-toed lizard. However, because the project site is within areas covered by the Coachella Valley Habitat Conservation Plan (CVHCP), these impacts can be mitigated to a level of less than significant through payment of a mitigation fee. As discussed above, the CVHCP was developed in 1986 to afford protection to the Coachella Valley fringe-toed lizard and allow development to continue within the range of the species. Activities within the CVHCP that impact habitat, whether occupied or not by the lizard, requires a per acre fee of $600.00. Avoiding and/or minimizing development of the natural habitats onsite would not achieve the project applicant's objective for the project. Therefore, mitigation to reduce the potentially significant impacts from development of the project site is limited to the financial contribution to the established conservation program for the Coachella Valley fringe-toed lizard.

BonTerra Consulting recommends staking sensitive dune habitat at the edges of the project site to minimize construction disturbance to adjacent habitat. Staking should be completed by the project surveyor and a qualified biologist.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of the recommended measures will mitigate biological impacts to a level that is considered less than significant.

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VOUCHERS

Voucher specimens for several plant species were collected by Scott White on site during the focused plant surveys. The voucher number for these species is listed in the plant compendium (see Appendix A).

CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: 4/21/98

Signed: Ann M. Johnston per Sandra J. Leatherman and Brian E. Daniels

APPENDIX A

Floral and Faunal Compendia

PLANT SPECIES

Common Name	Scientific Name	Abundance	Voucher
ASTER FAMILY	***ASTERACEAE***		
Burro bush	*Ambrosia dumosa*	Uncommon	
Desert marigold	*Baileya pauciradiata*	Occasional	6295
Pincushion	*Chaenactis stevioides*	Uncommon	
Desert dicoria	*Dicoria canescens*	Uncommon	
Brittlebush	*Encelia farinosa*	Uncommon	
Desert sunflower	*Geraea canescens*	Occasional	
Desert dandelion	*Malacothrix glabrata*	Occasional	
Spanish needles	*Palafoxia arida*	Common	
Wreath-plant	*Stephanomeria exigua*	Occasional	6296
BORAGE FAMILY	***BORAGINACEAE***		
Narrowleaf cryptantha	*Cryptantha angustifolia*	Common-abundant	6292
Comb-bur	*Pectocarya recurvata*	Occasional	6293
Plicate tiquilia	*Tiquilia plicata*	Occasional-common	
MUSTARD FAMILY	***BRASSICACEAE***		
Wild turnip	*Brassica tournefortii*	Common-abundant	
London rocket	*Sisymbrium irio*	Scarce	
CARNATION FAMILY	***CAROPHYLLACEAE***		
Onyx flower	*Achyronychia cooperi*	Occasional-common	
GOOSEFOOT FAMILY	***CHENOPODIACEAE***		
Four-wing saltbush	*Atriplex canescens*	Occasional-common	
Allscale	*Atriplex polycarpa*	Occasional-common	
Russian thistle	*Salsola tragus*	Common	
CUCUMBER FAMILY	***CUCURBITACEAE***		
Brandegea	*Brandegea bigelovii*	Uncommon	6287
SPURGE FAMILY	***EUPHORBIACEAE***		
Unid. annual spurge	*Chamaesyce* sp.	Occasional	6294
PEA FAMILY	***FABACEAE***		
Annual dalea	*Dalea mollis*	Occasional	
Strigose lotus	*Lotus strigosus*	Uncommon/roadside	
Mesquite	*Prosopis glandulosa*	Uncommon/hummocks	6284
Dye-plant	*Psorothamnus emoryi*	Occasional-common	
	LOASACEAE		
Unid. blazing-star	*Mentzelia* sp.	Occasional	6289

Common Name	Scientific Name	Abundance	Voucher
	MALVACEAE		
	Eremalche exilis	Occasional	
FOUR-O'CLOCK FAMILY	***NYCTAGINACEAE***		
Sand verbena	*Abronia villosa*	Common-abundant	
FUCHSIA FAMILY	***ONAGRACEAE***		
Brown-eyed eve. primrose	*Camissonia claviformis*	Common	
Dune evening primrose	*Oenothera deltoides*	Occasional-common	
PLANTAIN FAMILY	***PLANTAGINACEAE***		
Woolly plantain	*Plantago ovata*	Common	
BUCKWHEAT FAMILY	***POLYGONACEAE***		
Brittle spine-flower	*Chorizanthe brevicornu*	Uncommon	
Unid. annual buckwheat	*Eriogonum* sp.	Uncommon	6290
PURSLANE FAMILY	***PORTULACACEAE***		
Common calyptridium	*Calyptridium monandrum*	Occasional	6291
TAMARISK FAMILY	***TAMARICACEAE***		
Athel	*Tamarix aphylla*	Occasional (persisting plantings)	
CALTROP FAMILY	***ZYGOPHYLLACEAE***		
Creosote bush	*Larrea tridentata*	Common	
Puncture vine	*Tribulus terrestris*	Occasional/roadside	
GRASS FAMILY	***POACEAE***		
Schismus	*Schismus barbatus*	Abundant	

WILDLIFE SPECIES

Common Name	Scientific Name	Abundance
Invertebrates		
BUTTERFLIES		
giant swallowtail	*Papilo cresphontes*	Uncommon
checkered white	*Pontia protodice*	Common
spring white	*Pontia sisymbrii*	Uncommon
dainty sulphur	*Nathalis iole*	Uncommon
gray hairstreak	*Strymon melinus*	Common
western pygmy-blue	*Brephidium exile*	Common

Common Name	Scientific Name	Abundance
painted lady	*Vanessa cardui*	Abundant
monarch	*Danaus plexippus*	Uncommon
queen	*Danaus gilippus*	Uncommon
funereal duskywing	*Erynnis funeralis*	Common
common checkered-skipper	*Pyrgus communis*	Uncommon
Mohave sootywing	*Hesperopsis libya*	Uncommon
fiery skipper	*Hylephila phyleus*	Common

Vertebrates

REPTILES

western whiptail	*Cnemidophorus tigris*	Uncommon
side-blotched lizard	*Uta stansburiana*	Common

MAMMALS

black-tailed jackrabbit	*Lepus californica*	Common
desert cottontail	*Sylvilagus audubonii*	Uncommon

BIRDS

osprey	*Pandion haliaetus*	Rare migrant
red-tailed hawk	*Buteo jamaicensis*	Uncommon winter resident
American kestrel	*Falco sparverius*	Common winter resident
mourning dove	*Zenaida macroura*	Common resident
Anna's hummingbird	*Calypte anna*	Uncommon winter visitant
western kingbirds	*Tyrannus verticalis*	Common summer resident
northern rough-winged swallows	*Stelgidopteryx serripennis*	Common summer resident
cliff swallows	*Hirundo pyrrhonota*	Common summer resident
common raven	*Corvus corax*	Common year-round resident
verdin	*Auriparus flaviceps*	Common year-round resident
northern mockingbird	*Mimus polyglottos*	Common year-round resident
yellow-rumped warbler	*Dendroica coronata*	Common winter resident
Abert's towhee	*Pipilo aberti*	Common year-round resident
Brewer's sparrow	*Spizella breweri*	Uncommon winter resident
Brewer's blackbird	*Euphagus cyanocephalus*	Common year-round resident
house finch	*Carpodacus mexicanus*	Common year-round resident
lesser goldfinch	*Carduelis psaltria*	Uncommon winter resident

APPENDIX B

Site Photographs

Photo 3 Dune on Western Portion of Site - Looking Northwest

Photo 4 Disturbed Potion of Site - Looking North

Photo 1 Creosote Bush/Sand Verbena Series - Looking North

Photo 2 Fourwing Saltbush Series in Background - Looking Southeast

11.8 Lighting Study

Richard Wagner
Musco Sports Lighting, Inc.
Phone: 714/540-9335
800/659-0117 toll free
Fax: 909/794-2012
Pager: 909/514-8131
E-mail: richard.wagner@musco.com
3151 Airway Avenue, Bldg. G-1
Costa Mesa, CA 92626
Web site: http://www.musco.com

June 3, 1998

RECEIVED
JUN 0 5 1998
ROBERT BEIN, WM FROST

RBF & Associates
14725 Alton Parkway
Irvine, Ca. 92618-2069

Attention: Ms. Rhonda Tijerina

Reference: Garden Of Champions Tennis Complex Lighting Project- Project#14329857

Dear Ms. Tijerina:

Based on our conversation, this letter is to inform you that the Specifications/Submittals and light scans provided April 27,1998 for the Grand Champions Tennis Complex Lighting project comply with the County of Riverside Ordinance No. 655 Regulating Light Pollution. The Musco Total Light Control Visor has being utilized on this project.

If you have any questions regarding this information, please feel free to call me at 800 659-0117 or 909 314-4040 cell.

Sincerely,

Richard Wagner
Area Representative

MUSCO Lighting

Lighting Analysis and Evaluation

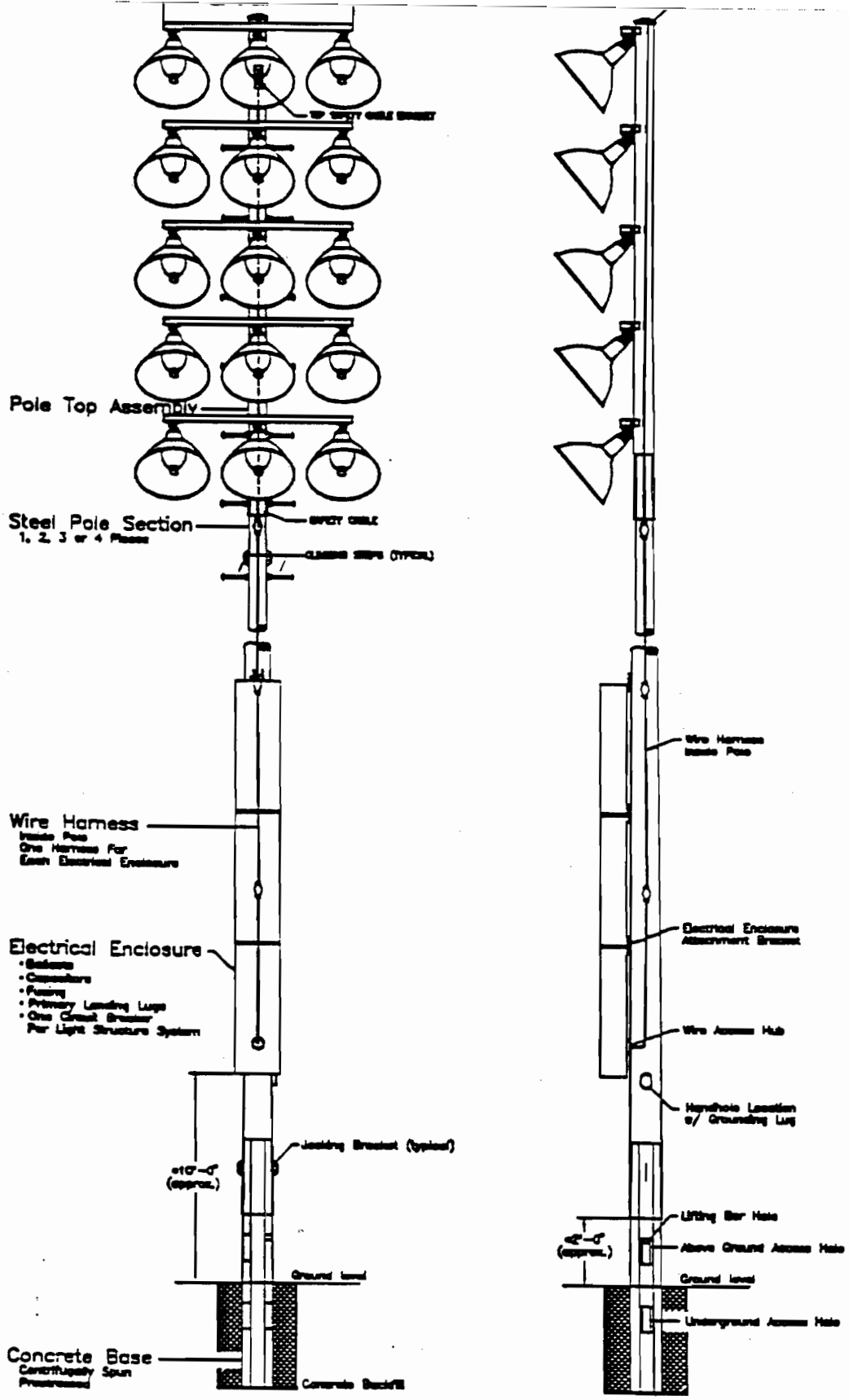
Introduction

The lighting systems for Stadiums 1, 2, and 3 will be designed to provide appropriate illumination levels to accommodate the anticipated usages of each stadium while minimizing the lighting spill and perceived glare in the surrounding areas. This lighting design will provide compliance with the County of Riverside Ordinance Number 655 Regulating Light Pollution within the Zone B influence area. A computer generated study has been conducted to simulate the design characteristics and provide the lighting levels resulting from this design. The industry standard representation of illumination levels are presented in horizontal Foot-candles at a height of 36 inches above the surface to be illuminated. Initial and maintained illumination levels are considered in the design process. The initial level is the illumination level attained immediately following fixture installation. After a period of time, lamp degradation, dirt and environmental components will decrease the initial lighting level to the maintained lighting level. The application of a maintenance factor is utilized to approximate the relationship of the initial lighting level to the maintained light level. The maintenance factor utilized in this study is 80% meaning that the maintained lighting levels will be 80% of the initial illumination levels. The maintained levels are provided to illustrate the long term illumination achieved at court level for each stadium. The initial illumination levels, representing the highest anticipated illumination values, are utilized to simulate the maximum values of lighting spill and perceived glare. Lighting spill and perceived glare are represented by the collective contribution of the lighting of Stadiums 1, 2 and 3. A description of the design parameters and analysis of the results of the computer simulations are provided below.

Court Level Lighting

The maintained lighting requirements for each stadium can be achieved with pole mounted luminaire arrays, similar to those shown in Figure A. Each array consists of 1500 Watt metal halide lighting fixtures with the number of fixtures per array determined by the lighting requirements and physical layout of each stadium. Each lighting fixture in the array includes a visor similar to that illustrated in Figure B. The visor provides compliance with the County of Riverside Ordinance Number 655 within the Zone B influence area by controlling the upward spill light from the luminaire and directing this light toward the tennis court area. This luminaire configuration has been successfully incorporated at the U.S. Open Tennis Facility in Flushing Meadows, New York, to provide quality lighting at the court level and minimize the glare seen by outsiders.

A maintained illumination level of 150 Foot-candles was calculated at court level in Stadium 1 to accommodate televised championship tennis matches. This maintained illumination level can be achieved with 4 pole-mounted lighting arrays consisting of 21 fixtures per array. The lighting arrays were calculated to be mounted at a height of 130 feet above court level or 100 feet as measured from the concourse level which would represent a typical installation. It is our understanding that the maximum pole height for this location will be



FRONT VIEW
FIELD SIDE

SIDE VIEW

Note:
Included with each project are the following:
(1) Installation lifting bar
(1) Offset installation level
(3) Installation wedges

Not To Scale

Note:
This dimension for reference only. Variances will occur depending on the following.
1. Steel pole tolerances
2. Concrete tolerances
3. Galvanizing thicknesses

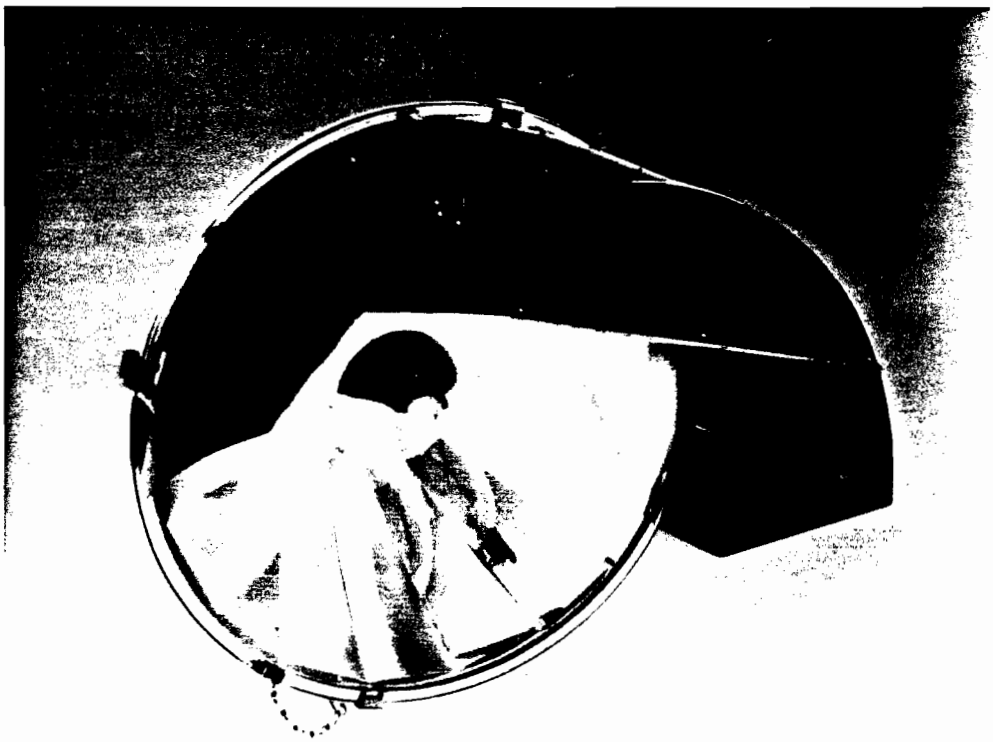
Based upon these, a variance may be seen. Additional variances will occur depending on the hole depth accuracy.

CFC0155
17-MAR-94

FIGURE B

Typical Luminaire Visor

Typical TLC reflector modification



The two-tiered visor is custom adjusted by a Musco technician for individual sites on the field.

"Not only did the system meet the specs, they exceeded it—we're very happy."

– Eric Sharf, Design Phase Coordinator, University of Arizona

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Manufacturing:
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Muscatine, Iowa 52761
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800/756-1205

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FTLC1

TLC™ is protected by one or more of the following U.S. patents: 4190881; 4374407; 4450507; 4725934; 4729077; 4816974; 4947303; 4994718; 5016150; 5075828; 5134557; 5161883; 5211473; 5229681; 5337221; 5343374; 5377611; 5398478; 5402327; 5519590; D337168; D353797; D353911. Canada Patents: 70479; 74939; 1114798; 1181380; 2009749. Mexico Patent: 175863. Other patents pending.

FIGURE C

Stadium 1
Court Level Illumination

100 feet above court level, which is not expected to significantly alter the results. The lighting configuration for Stadiums 2 and 3 will provide an average maintained illumination of 70 Foot-candles at the court level. For Stadium 2, the required illumination level can be achieved with 4 pole mounted lighting arrays consisting of 8 fixtures per array mounted 110 feet above court level or 80 feet measured from the concourse level. For Stadium 3, this illumination level can be achieved with 4 pole mounted lighting arrays consisting of 5 fixtures per array mounted 80 feet above court level or 50 feet measured from the concourse level. The resulting illumination at court level for Stadiums 1, 2, and 3 is presented in Figures C, D and E, respectively.

Lighting Spill and Perceived Glare

Lighting spill and perceived glare simulations are calculated to illustrate the combined effects of the lighting systems for Stadiums 1, 2, and 3 on the surrounding areas. These off-site components are illustrated at the property lines to the North, South and West, and the proposed parcel line to the East. The lighting for the tennis courts and parking lots located on the property has not been included in this analysis. However, we expect this lighting to have a minimal impact on the off-site lighting levels provided in this study.

The lighting spill is measured in horizontal Foot-candles and is provided in Figure F. The maximum anticipated level along the boundary is 0.04 Foot-candles. As a comparison, residential street lighting typically provides an average illumination of 0.3 Foot-candles. The maximum level represents a value of significantly less than typical street lighting values and, in our opinion, is not objectionable to the general public.

Perceived glare is the light level that would be seen by a person if they were to look directly at the light source. The glare simulation is provided in Figure G and provides calculated glare levels at the property lines and proposed parcel line. The maximum anticipated glare level is 0.24 Foot-candles, a rather low level, dropping to levels of 0.07 to 0.11 Foot-candles over most of the boundaries, which would be considered a very low level. The maximum value occurs at the southern property line which adjoins Miles Avenue. Usage for this area is expected to include primarily parking for the tennis facility and the impact of the 0.24 Foot-candles is expected to be minimal. The impact of glare on specific individuals is highly subjective, but the levels noted would not be considered objectionable by a large majority of people.

This study represents a preliminary analysis of calculated lighting levels required to accommodate typical tennis stadiums and provide compliance with County of Riverside Ordinance Number 655. The final determination of the illumination levels required inside the stadiums will be determined by the tennis association governing events at this facility. While these values could vary from those described in this report, we do not expect the calculated lighting spill and perceived glare at the boundaries to vary significantly from those presented in this study.

H:\GRP6\PDATA\301524\EIR1.WPD

FIGURE A

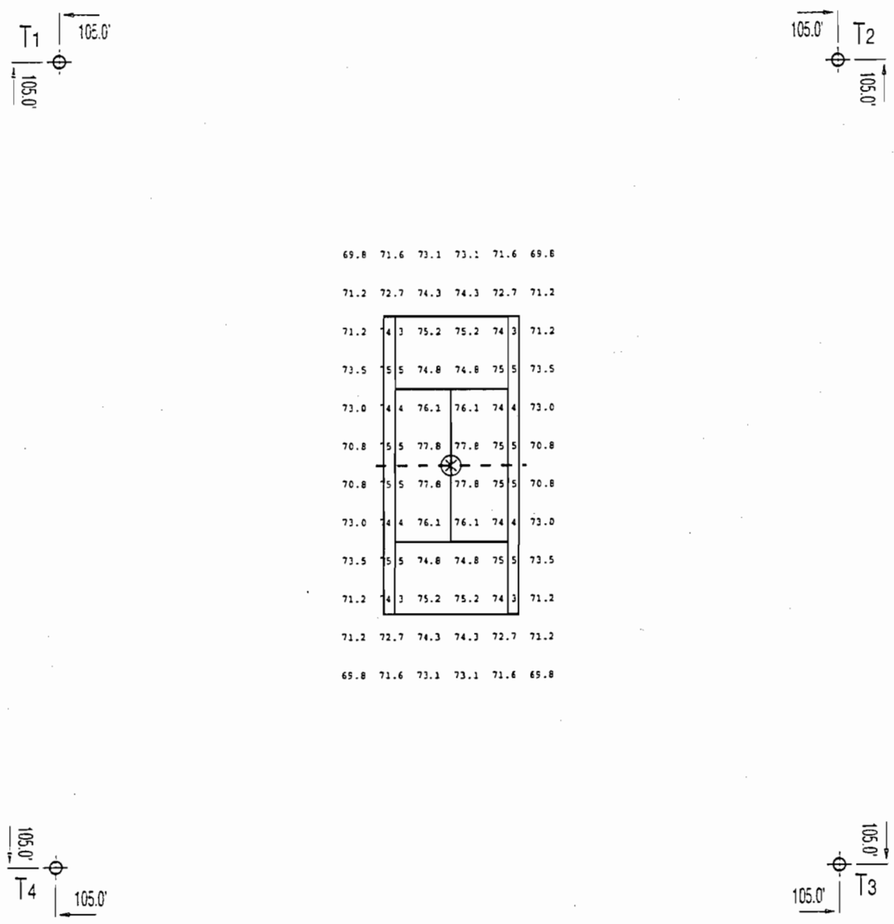
Typical Pole Mounted Luminaire Array

INDIAN WELLS, CA GARDEN OF CHAMPIONS
TENNIS COMPLEX

Fixture Type:	TLC MZ
Lamp Type:	1500w MZ
Lumens:	155000
File Number:	29857F1
Date:	27-Apr-1998

N

EQUIPMENT LISTING						
Pole count	Pole location	Mounting height	Pole size	Elev.	Fixt. /unit	Kilow /unit
4	T1-T4	110'	110'	0'	8	12.8



MUSCO®
GUARANTEED PERFORMANCE

MAINTAINED ILLUMINATION
TENNIS
HORIZONTAL FOOTCANDLES
ON PLANE AT Z= 3

Target Points:	72
Average:	73.60
Maximum:	77.76
Minimum:	69.82
Avg/Min:	1.054
Max/Min:	1.114

Number of Luminaires:	32
* KW Consumption:	51.20
Average Tilt Factor:	0.975
** Maintenance Factor:	x 0.800
***Light Loss Factor:	0.780

*Refer to amperage draw for electrical sizing.

**Maintenance factor = ambient temp. factor X voltage factor X ballast factor X lamp lumen depreciation X luminaire dirt depreciation(per IES Manual RP-6-88,p.92)

***Light Loss Factor(LLF)=average tilt factor X maintenance factor.

NOTE: Light level averages and uniformities are guaranteed by MUSCO. However, individual location measeurments may vary from computer predictions.

INSTALLATION REQUIREMENTS:
Results assume +-3% nominal voltage at load side of ballast box and poles located within 3 feet of design locations.

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⊕ = Pole Location

SCALE IN FEET
0 40 80

Pole location dimensions are relative to 0,0 reference point ⊗.

FIGURE D

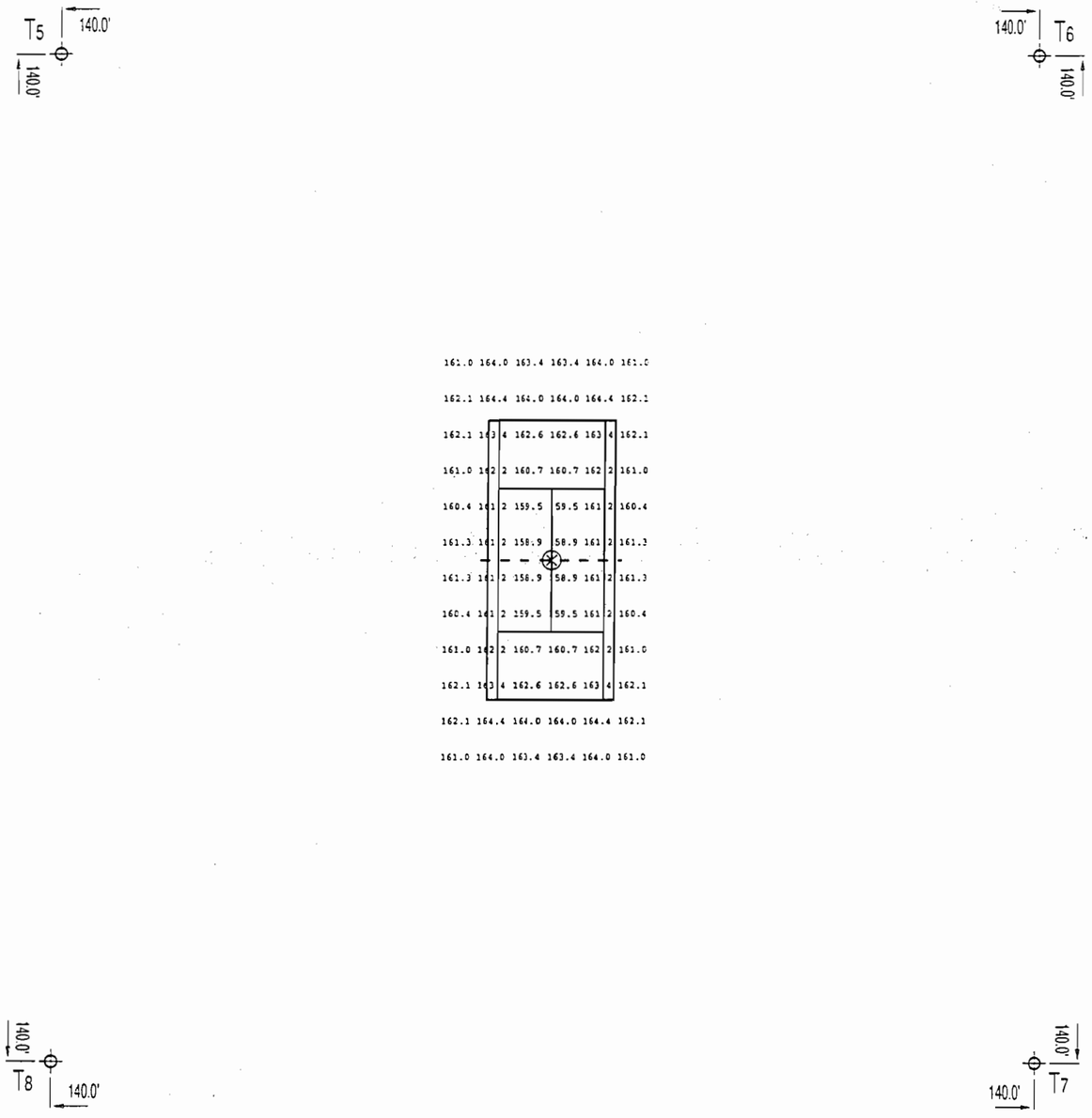
Stadium 2
Court Level Illumination

INDIAN WELLS, CA GARDEN OF CHAMPIONS
TENNIS COMPLEX

Fixture Type:	TLC MZ
Lamp Type:	1500w MZ
Lumens:	155000
File Number:	29857F2
Date:	27-Apr-1998

N

EQUIPMENT LISTING						
Pole count	Pole location	Mounting height	Pole size	Elev.	Fixt. /unit	Kilow /unit
4	T5-T8	130'	130'	0'	21	33.6



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GUARANTEED PERFORMANCE

MAINTAINED ILLUMINATION
TENNIS
HORIZONTAL FOOTCANDLES
ON PLANE AT Z= 3

Target Points:	72
Average:	161.86
Maximum:	164.39
Minimum:	158.90
Avg/Min:	1.019
Max/Min:	1.035

Number of Luminaires:	84
* KW Consumption:	134.40
Average Tilt Factor:	0.976
** Maintenance Factor:	x 0.800
***Light Loss Factor:	0.781

*Refer to amperage draw for electrical sizing.

**Maintenance factor = ambient temp. factor X voltage factor X ballast factor X lamp lumen depreciation X luminaire dirt depreciation(per IES Manual RP-6-88,p.92)

***Light Loss Factor(LLF)=average tilt factor X maintenance factor.

NOTE: Light level averages and uniformities are guaranteed by MUSCO. However, individual location measeurments may vary from computer predictions.

INSTALLATION REQUIREMENTS:
Results assume +-3% nominal voltage at load side of ballast box and poles located within 3 feet of design locations.

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⊕ = Pole Location

SCALE IN FEET
0 40 80

Pole location dimensions are relative to 0,0 reference point ⊗.

11.8-11

FIGURE E

Stadium 3
Court Level Illumination

INDIAN WELLS, CA GARDEN OF CHAMPIONS
TENNIS COMPLEX

Fixture Type:	TLC MZ
Lamp Type:	1500w MZ
Lumens:	155000
File Number:	29857F3
Date:	27-Apr-1998

N

EQUIPMENT LISTING

Pole count	Pole location	Mounting height	Pole size	Elev.	Fixt. /unit	Kilow /unit
4	T9-T12	80'	80'	0'	5	8

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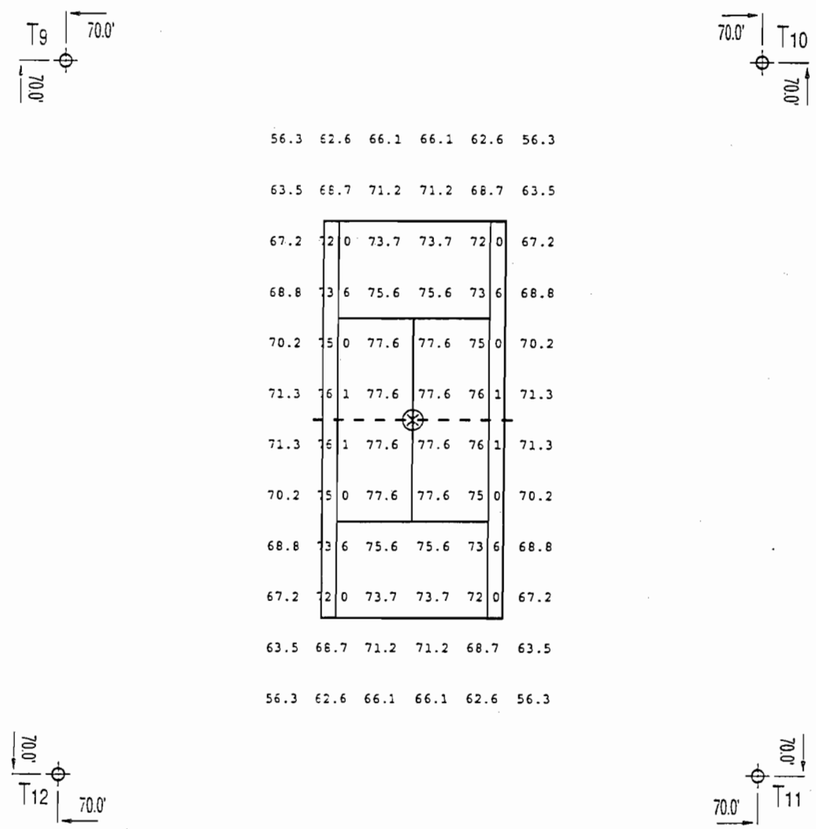

MAINTAINED ILLUMINATION
TENNIS
HORIZONTAL FOOTCANDLES
ON PLANE AT Z= 3

Target Points:	72
Average:	70.39
Maximum:	77.59
Minimum:	56.32
Avg/Min:	1.250
Max/Min:	1.378

Number of Luminaires:	20
* KW Consumption:	32.00
Average Tilt Factor:	0.972
** Maintenance Factor:	x 0.800
***Light Loss Factor:	0.778

*Refer to amperage draw for electrical sizing.

**Maintenance factor = ambient temp. factor X voltage factor X ballast factor X lamp lumen depreciation X luminaire dirt depreciation(per IES Manual RP-6-88,p.92)

***Light Loss Factor(LLF)=average tilt factor X maintenance factor.

NOTE: Light level averages and uniformities are guaranteed by MUSCO. However, individual location measeurments may vary from computer predictions.

INSTALLATION REQUIREMENTS:
Results assume +-3% nominal voltage at load side of ballast box and poles located within 3 feet of design locations.

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⊕ = Pole Location

SCALE IN FEET
0 30 60

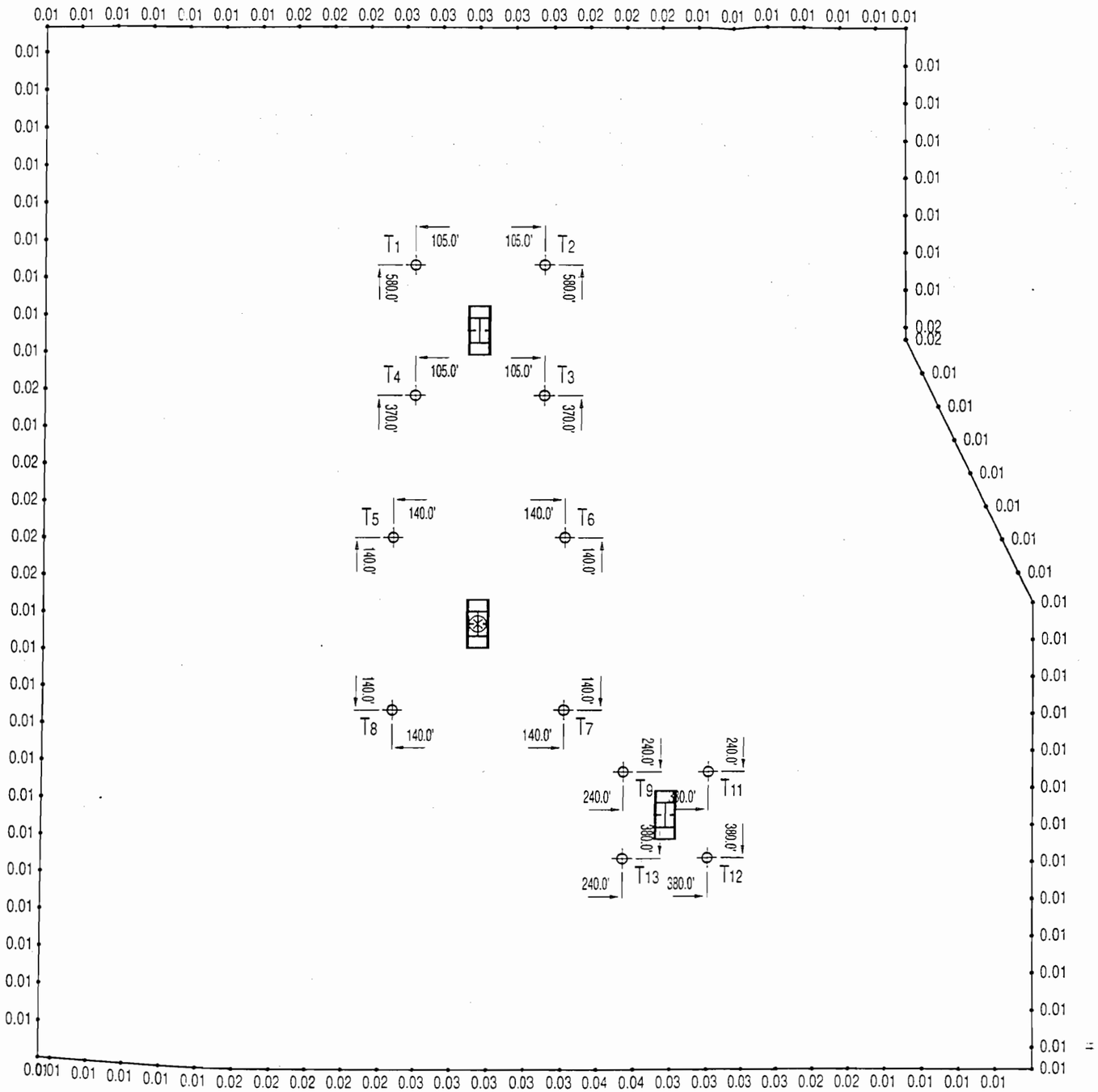
Pole location dimensions are relative to 0,0 reference point ⊗.

FIGURE F

Calculated Lighting Spill

INDIAN WELLS, CA GARDEN OF CHAMPIONS TENNIS COMPLEX

Fixture Type:	TLC MZ
Lamp Type:	1500w MZ
Lumens:	155000
File Number:	29857F1-3
Date:	27-Apr-1998



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INITIAL SPILL LIGHT
HORIZONTAL FOOTCANDLES

Target Points:	110
Average:	0.01
Maximum:	0.04
Minimum:	0.01
Avg/Min:	2.531
Max/Min:	6.146

Number of Luminaires:	136
* KW Consumption:	217.60
Average Tilt Factor:	0.975
** Maintenance Factor:	x 1.000
***Light Loss Factor:	0.975

*Refer to amperage draw for electrical sizing.

**Maintenance factor = ambient temp. factor X voltage factor X ballast factor X lamp lumen depreciation X luminaire dirt depreciation(per IES Manual RP-6-88,p.92)

***Light Loss Factor(LLF)=average tilt factor X maintenance factor.

NOTE: Light level averages and uniformities are guaranteed by MUSCO. However, individual location measeurments may vary from computer predictions.

INSTALLATION REQUIREMENTS:
Results assume +-3% nominal voltage at load side of ballast box and poles located within 3 feet of design locations.

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⊕ = Pole Location

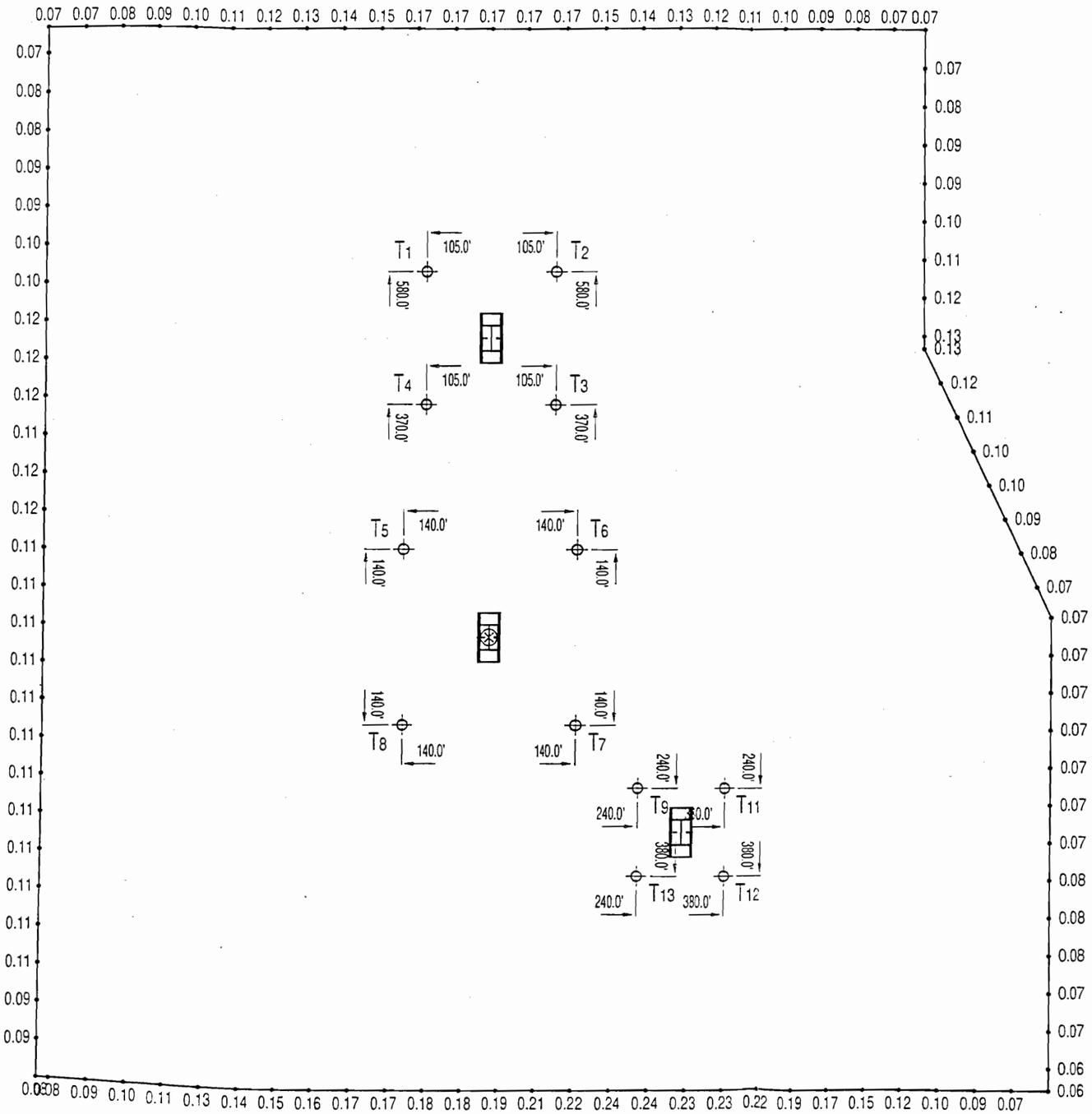
SCALE IN FEET
0 200 400

Pole location dimensions are relative to 0,0 reference point ⊗.

FIGURE G

Perceived Glare

INDIAN WELLS, CA GARDEN OF CHAMPIONS TENNIS COMPLEX



Pole location dimensions are relative to 0,0 reference point ⊗.

Fixture Type:	TLC MZ
Lamp Type:	1500w MZ
Lumens:	155000
File Number:	29857F1-3
Date:	27-Apr-1998

musco®
GUARANTEED PERFORMANCE

INITIAL SPILL LIGHT
MAXIMUM FOOTCANDLES

Target Points:	110
Average:	0.12
Maximum:	0.24
Minimum:	0.06
Avg/Min:	1.842
Max/Min:	3.822

Number of Luminaires:	136
* KW Consumption:	217.60
Average Tilt Factor:	0.975
** Maintenance Factor:	x 1.000
***Light Loss Factor:	0.975

*Refer to amperage draw for electrical sizing.

**Maintenance factor = ambient temp. factor X voltage factor X ballast factor X lamp lumen depreciation X luminaire dirt depreciation(per IES Manual RP-6-88,p.92)

***Light Loss Factor(LLF)=average tilt factor X maintenance factor.

NOTE: Light level averages and uniformities are guaranteed by MUSCO. However, individual location measeurments may vary from computer predictions.

INSTALLATION REQUIREMENTS:
Results assume +-3% nominal voltage at load side of ballast box and poles located within 3 feet of design locations.

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⊕ = Pole Location

SCALE IN FEET
0 200 400

11.9 Cultural Resource Reports

AUTHOR:	Joan C. Brown
DATE:	July 1998
TITLE:	An Exploratory Investigation Of CA-RIV-3005 and CA-RIV-5876, Located Near Indian Wells, Riverside County, California
SUBMITTED BY:	RMW Paleo Associates, Incorporated 23392 Madero, Suite L Mission Viejo, California 92691 (714) 770-8042 FAX (714) 458-9058
SUBMITTED TO:	Robert Bein, William Frost and Associates 14725 Alton Parkway Post Office Box 57057 Irvine, California 92618-2069
CONTRACT NUMBER:	RMW Project Number 98-1230
MAP:	USGS La Quinta, California 7.5 Minute Quadrangle 1959, Photorevised 1980
ACREAGE:	Approximately 50 acres
KEYWORDS:	Indian Wells, California, Township 5 South, Ranges 6 and 7 East, San Bernardino Base and Meridian; CA-RIV-3005, CA-RIV-3008, CA-RIV-5876

MANAGEMENT SUMMARY

Purpose and scope: Robert Bein, William Frost and Associates (RBF) is preparing an environmental impact report for the proposed Garden of Champions Tennis Facility. The primary purpose of this study, which took place 10 through 18 June 1998, was to conduct exploratory investigations at CA-RIV-3005 and CA-RIV-5876 to establish reasonable methods for use during Phase 2 archaeological evaluation of the two prehistoric sites. The project was limited in scope to a few of the areas of artifact concentration that were visible when the work was accomplished. It must be noted that significant differences in surface artifact distributions were noted between April 1998, when the reconnaissance of the property was performed, and June 1998, when the work described in this report was accomplished. In other words, the shifting sands cause major differences in visible artifact distributions over very short time scales.

A surface collection and subsurface examination of CA-RIV-3008 was accomplished during the current project, as was a reconnaissance of the Whitewater River Channel portion of the study area.

The study methodology was developed by RMW Paleo Associates and was presented at a meeting attended by RMW, RBF, and County of Riverside Planning Department personnel. RMW Paleo Associates contacted two local Native American representatives; the Cabazon Band of Mission Indians and the Agua Caliente Band of Cahuilla Indians to inform them of the work program, the schedule, and to invite them to visit the field crew. Contact was by both telephone and letter.

The investigation within CA-RIV-3005 consisted of a surface collection of prehistoric artifactual remains, the excavation of six one meter square hand excavated units, and five machine excavated trenches. The investigation at CA-RIV-5876 consisted of a surface collection, four hand excavated units, and three machine excavated trenches. The units were excavated to a depth of 50 to 60 cm. The trenches were excavated by backhoe and averaged a meter in width and two meters in depth.

A surface collection of visible artifacts was accomplished at CA-RIV-3008, previously recorded as a "pot drop". Four shovel test pits were excavated in the areas of CA-RIV-3008 considered most likely to yield sub-surface artifactual material.

A surface examination of the Whitewater River Channel, the southernmost extent of the project parcel, was accomplished by two archaeologists walking transects spaced approximately 10 meters apart.

Findings summary: During excavations at CA-RIV-3005 and CA-RIV-5876, the vast majority of cultural remains were found on the surface or within the 0 to 10 cm level beneath the surface. Archaeological excavation of prehistoric sites in the vicinity, including a test excavation of the western portion of CA-RIV-5876 (located on a five acre parcel to the immediate west), indicates a similar distribution of cultural remains. A comparison of the surface distribution of artifacts, as

mapped during the April 1998 survey and site recording of CA-RIV-3005 and CA-RIV-5876, and the artifact distribution, as mapped during this investigation in June 1998 (Figures 3-5), indicates that the wind blown sand uncovers and covers artifacts on very short time scales.

The 50+ acre project parcel contains two recorded prehistoric archaeological sites consisting of four currently visible principal areas containing artifact concentrations (primarily pottery sherds with some lithics), plus apparently isolated artifacts located among the concentrations. Given the limited scope of the current project, it is unknown if these artifacts represent the remains of a single large site scattered throughout the 50 acres; the remains of multiple campsites; a satellite of the large prehistoric village recorded to the south; or are related to the historic era village recorded northwest of the parcel.

Recommendations summary: It is recommended that a Phase 2 test evaluation (based on CEQA) be accomplished at CA-RIV-3005 and CA-RIV-5876. The purpose of this current investigation of CA-RIV-3005 and CA-RIV-5876 was to determine the most efficient method of completing a Phase 2 test evaluation of the two sites. Because of the paucity of subsurface cultural material, it was determined that information for a valid assessment of site importance can be most effectively obtained by the use of 0 to 10 cm deep surface scrapes placed judgementaly and randomly within the sites. It is also recommended that an attempt be made to move quantities of sand by the use of leaf blowers in an effort to discover features such as fire hearths, post holes relating to prehistoric structures, human coprolite remains, and/or possible midden deposits within the sand dunes. Additionally, it is recommended that the Phase 2 test include a geomorphologist to study dune formation and movement and how these actions influence the displacement of artifactual remains. This information would then be used to determine the areas most likely to yield artifactual remains. The geomorphology study would precede the Phase 2 test excavation.

It is recommended that the Phase 2 test evaluation (based on CEQA), to determine the sites' ability to provide research information and to determine the horizontal and vertical extent of CA-RIV-3005 and CA-RIV-5876, be accomplished far in advance of any planned ground disturbing activities within the area.

It is strongly recommended that the pottery sherds collected during this investigation be incorporated into an in depth ceramic analysis during the test phase. The 422 fragments collected to date represent a variety of color ranges, that could indicate if the clays were residual or sedimentary in origin. Sixteen of the sherds are rim fragments. An analysis of these fragments could determine vessel type and size. Additionally, six of the sherds possibly contain residue and, upon residue analysis, could represent prehistoric food remains. Two of the sherds appear to be decorated, uncommon in this area and one sherd has a ground edge. This artifact could be part of a lid or a tool.

No additional research is required at CA-RIV-3008, however, it is recommended that the site area be monitored by an archaeologist during ground disturbing activities. During a previous study (Brown 1998), no additional cultural material was observed in the study area north of Miles Avenue and the recommendation was that that area also be monitored during ground disturbing activities.

No cultural remains were observed within the Whitewater River Channel during a survey of the river bottom. No additional cultural resources investigation is warranted within that area.

Disposition of data: This report will be filed with the Eastern Information Center, University of California, Riverside; Robert Bein, William Frost and Associates; and RMW Paleo Associates, Inc. Field notes and records are on file at the office of RMW Paleo Associates, Inc.

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INTRODUCTION
CONTRACTING INFORMATION/INTRODUCTION

Undertaking: RMW Paleo Associates, Inc. was retained by Robert Bein, William Frost and Associates to conduct an exploratory archaeological investigation of CA-RIV-3005 and CA-RIV-5876 to determine the most feasible method for conduct of a Phase 2 archaeological evaluation of the two pre-historic sites. A previous Cultural Resources Study of the project area recommended that if avoidance of the cultural deposits was not possible, then the sites were to be evaluated to determine their importance (Brown 1998).

The current project consisted of a collection of surface artifacts, hand excavation of units, and the mechanical excavation of trenches in both sites. This report follows the format for *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (California Department of Parks and Recreation 1989).

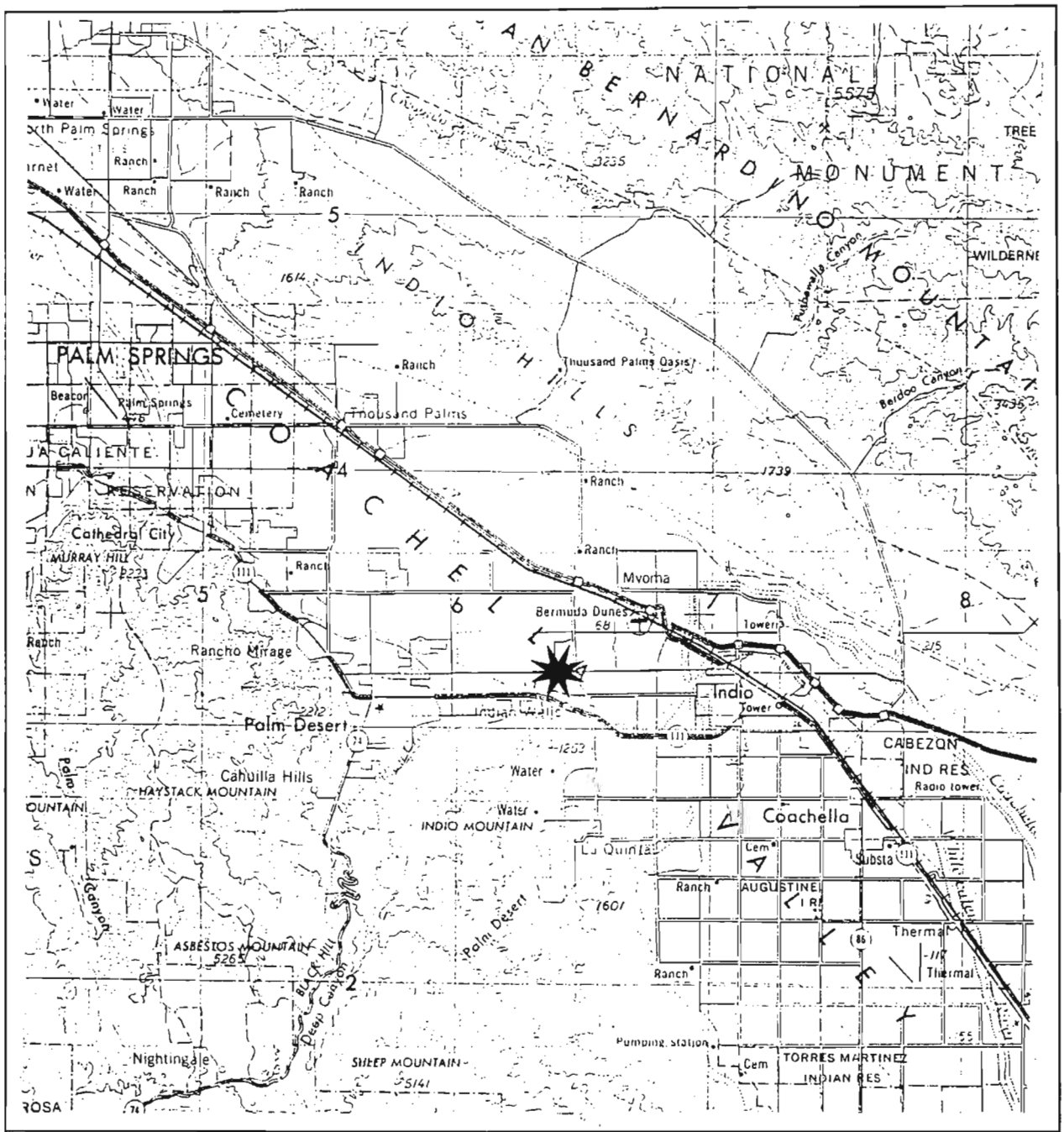
The 50+ acre parcel where the sites are located will be developed as parking facilities. The project area consists of approximately 50 acres located north of and including portions of the Whitewater River Channel, south of Miles Avenue, and west of Washington Street, near the community of Indian Wells, Riverside County, California. Figures 1 and 2 show the project location.

Personnel: Joan C. Brown and Ronald Bissell were Principal Investigators for the cultural study and conducted field work, research, and report writing. Tim Goddard and Carol Bissell assisted with the field and laboratory work. Resumes for the project personnel are contained in Appendix A.

NATURAL SETTING

The project area is located in the Coachella Valley, Riverside County, California. The Coachella Valley is in the northern portion of the Salton Trough and is separated from the Imperial Valley by the present day Salton Sea. The valley, which is considered part of the Colorado Desert, is bordered on the north and east by the Little San Bernardino, Cottonwood, and Orocopia Mountains; and on the west by the Santa Rosa, San Jacinto, and San Bernardino Mountains. The Santa Rosa and San Jacinto Mountains are the northernmost extension of the Peninsular Range. The mountains reach elevations from 6,000 to over 10,000 feet and have a pronounced rain shadow effect in the valley (Wilke 1978).

The climate of Coachella Valley is characterized by low humidity, very low precipitation, hot summers and mild winters. High summer temperatures can reach 125 degrees Fahrenheit and frost can occur in December and January. Winter precipitation from Pacific storms tends to fall on the western slopes of the Peninsular Range as rain and snow, but very little precipitation reaches the eastern slopes or the floor of the valley. Most precipitation occurs in the winter with an average annual rainfall of 3.2 inches recorded at Indio. Occasional summer tropical storms move north into the valley from the Gulf of Mexico, producing flash flooding (Wilke 1978).



Steatite Bird Effigy, Recovered by RMW Paleo, 1993

Paleontology
Archaeology
History

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Figure 1: Project Vicinity Map

Portion of USGS 1 by 2 degree Santa Ana California Quadrangle 1959, Revised 1979

Scale 1:250,000

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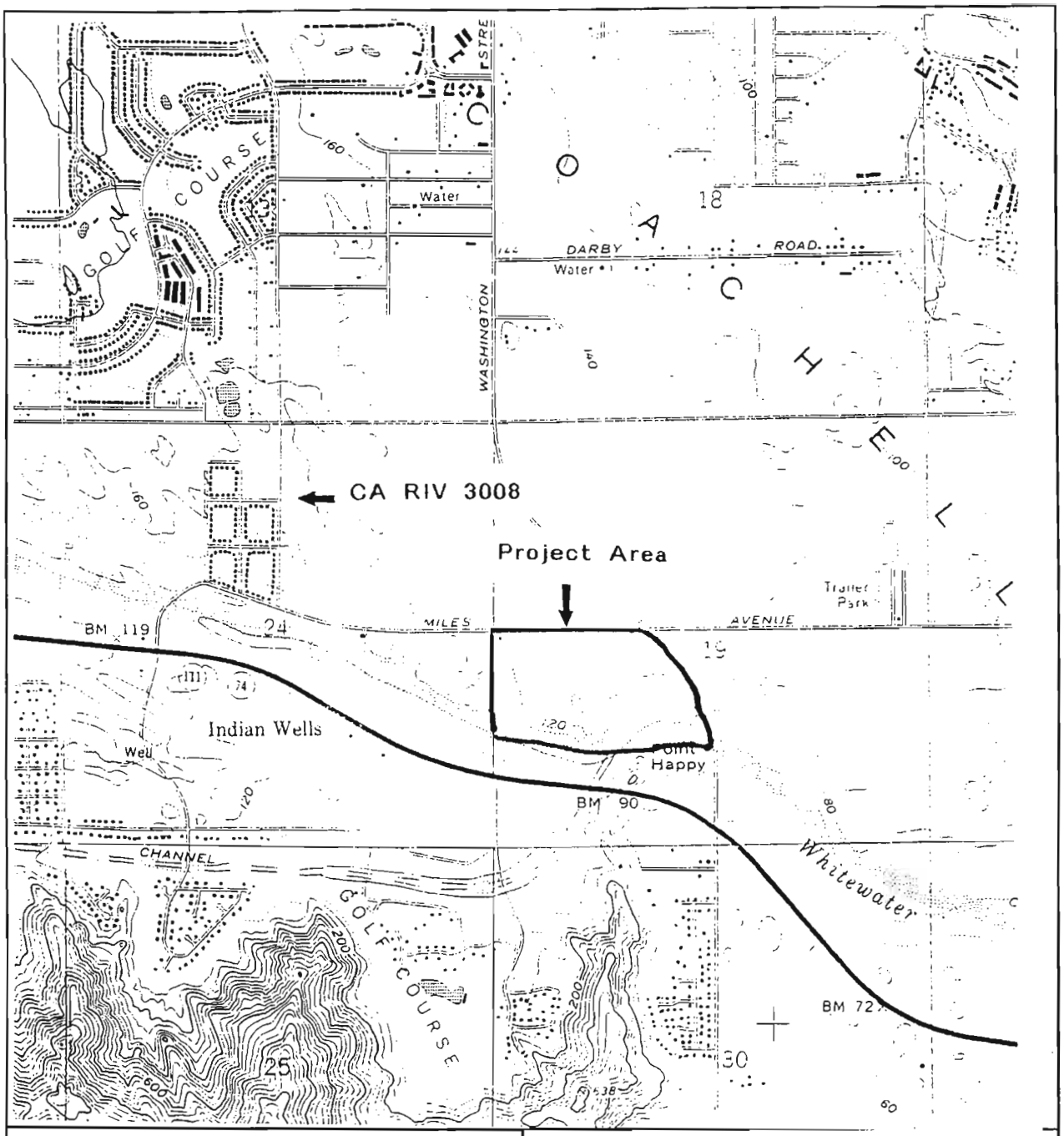

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Figure 2: Index Map

Portion of USGS La Quinta California 7.5 Minute Series Quadrangel, 1959 Photorevised 1980. San Bernardino Base and Meridian

Scale 1:24,000

N

The project area is located at an elevation of 120 feet to 160 feet above sea level within the Sonoran Desert Scrub plant community. Among those plants observed during the survey that would have been used by the prehistoric inhabitants were Mesquite (*Prosopis juliflora*), Creosote Bush (*Larrea divaricata*), Saltbush (*Atriplex californica*), and Desert Sage (*Salvia Dorrii*). Other plants found in the Sonoran Desert Scrub plant community that would have been utilized are Cholla (*Opuntia spp.*), Barrel Cactus (*Echinocactus acanthodes*), and Agave (*Agave spp.*).

Plants were used prehistorically for drinks, medicines, soap, dyes, construction materials, fuel, and tools; and plant fibers were used for thread, nets, and basketry (Bean 1972). Mesquite was among the most important of the desert plants. The mesquite blossoms, which are abundant in June, were roasted and could be dried; the pods (available in July and August) were either eaten fresh or ground into flour. Additionally, mesquite provided material for construction (Bean 1972:38). Creosote was used for treating ailments (Balls 1962:91). The roots of the saltbush were used as soap and the seeds were parched and ground for use in bread. The seeds of many plants, such as chia, cat's claw, palo verde, desert willow, and ironwood, were used as food. Sage was mixed with tobacco leaves for smoking (Balls 1962).

Numerous varieties of cactus, such as the cholla, were abundant and provided leaves, stalks, fruit and seeds for food (Balls 1962:25; Bean 1972:40-43). The indigo bush, (when steeped in water) created a yellow dye used for coloring deer skins and dyeing fibers for use in creating patterns in baskets (Balls 1962:77).

Among the animals observed or expected in the project area are various lizards, snakes, birds, rabbits, squirrels, kangaroo rats, mice, skunks and coyotes. Lizards, particularly the chuckwalla, were eaten. Rattlesnakes were caught by men experienced in handling snakes and were either boiled or roasted and used as food. Birds were not only used as a food resource but their bones were used as tools and their feathers for ceremonial regalia (Brown 1989).

Rabbits provided the largest amount of animal food and their fur was used for blankets and clothing. Rabbits were killed with bows and arrows or throwing sticks, netted, or caught in snares. Most of the small animals were entirely consumed including the bones which were crushed and eaten in soups and mushes. Coyotes were probably not eaten, but their skins were used to make ceremonial objects (Bean 1972:59-63).

CULTURAL SETTING

Archaeological investigations in the Colorado desert area have been infrequent and many gaps exist in our understanding of the area's prehistory. Humans have been present in the New World for at least 12,000 years B.P. (before present). The earliest portion of the archaeological sequence is identified as the Paleo-Indian Period (Chartkoff and Chartkoff 1984). There are no known Paleo-Indian sites in the Coachella Valley. The chronological framework frequently applied to the local area was established primarily on data collected in adjacent desert areas of California. Four temporal periods are generally accepted for the desert area: Pinto Period (5,000 - 2,000 B.C.), Gypsum Period (2,000 B.C.- A.D. 500), Saratoga Springs Period (A.D. 500-1200),

and Protohistoric or Late Prehistoric Period (A.D. 1,200-Historic) (Warren 1984:410-430).

Pinto Period sites are few in number and are usually identified by a particular type of projectile point. Pinto sites are usually found along dry water courses and lakes, indicating the sites were in use when wetter conditions prevailed. Pinto sites are usually limited to the surface and are very difficult to date. Consequently, there is some confusion regarding the true range of artifact types that can be associated with Pinto Period sites.

The Gypsum Period is characterized by the presence of Humbolt Concave Base, Gypsum Cave, Elko Eared, or Elko Corner Notched projectile points. Milling equipment is found at Gypsum age sites, and becomes more common as the period progresses. The mortar and pestle were introduced during the latter part of the period. In general, the artifact assemblage reveals an increasing reliance on vegetable resources with less emphasis on hunting.

The Saratoga Springs period was a period of regional development. Milling equipment is common and pottery is introduced from the Colorado River area.

The majority of the sites excavated in the Coachella Valley area date to the Late Prehistoric or Ethnohistoric Periods. Archaeological research has been conducted along the old shoreline of Lake Cahuilla in an attempt to study human adaptation to the lake environment. The first thorough analysis was based on data from four sites located along the northwest lake shore of the now desiccated lake. Desert Side-notched and Cottonwood Triangular projectile points were common in the sites. Colorado Buff Ware and Tizon Brown Ware were present in the ceramic assemblage. Quantities of shell beads made from both Gulf of California and Pacific coast shell species are present. Analysis of the material indicated dates from about A. D. 800 to A. D. 1500 (Wilke 1978).

Analysis of human coprolites and floral and faunal remains indicated that shellfish, fish, aquatic birds, freshwater marsh plants, and animals and plants from both the adjacent lowlands and uplands contributed to the subsistence base. Furthermore, the analysis established that some of the sites were occupied on a year around basis, while other sites were occupied on a seasonal basis, apparently when resources near the site were at a maximum (Wilke 1978).

These data, combined with evidence of a stable shoreline for a duration of several hundred years, led Wilke to postulate a large sedentary population living in villages along the northwest shore of the lake, relying heavily on lacustral resources, with lesser dependance on resources in outlying areas. Subsequent studies along the east and southwest shores contradict Wilke's model, and indicate that shoreline occupation there was limited to only short term use on a seasonal basis (Pallette 1993; Wilke 1978).

After periodic episodes of infilling and recession, Lake Cahuilla is believed to have receded for the last time around A.D. 1580. Populations followed the receding shoreline while continuing to exploit the dwindling resources. Archaeological excavations of fish traps, nearby associated houses and middens situated at the -95 feet elevation level produced an abundance of fish bone.

Fish bone is also reported from archaeological deposits at -103 feet and -120 feet near Thermal Airport (Wilke 1978:110). Finally, the water became too saline to support the usual flora and fauna, and human populations are believed to have then abandoned the desert floor.

The final desiccation of the lake certainly had an impact on the populations dependent on the lake. However, exactly what occurred at this time is not certain. If the typical settlement pattern prior to the final recession was one of sedentary villages and year round dependance on the lacustral resources, the impact would have been tremendous. As resources in the immediate vicinity were quickly depleted, populations would have moved westward into the Peninsular Ranges, displacing, at least temporarily, other groups who collected in that area. If the alternative model of seasonal occupation of the lake shore is correct, then the effect of the final recession would have been less pronounced, with populations merely shifting subsistence emphasis to other areas already exploited.

Evidence exists of a partial infilling of Lake Cahuilla to sea level sometime between A.D. 1158 and A.D. 1710. The possibility of partial infilling of the lake after its final recession in A.D. 1580 is further supported by the oral history of the Cahuilla Indians:

> When questioned about the shore-line and water marks of the ancient lake, the chief gave an account of a tradition they have of a *great water (agua grande)* which covered the whole valley and was filled with fine fish. There was also plenty of geese and ducks. Their fathers lived in the mountains and used to come down to the lake to fish and hunt. The water gradually subsided 'poco,' 'poco,' (little by little), and their villages were moved down from the mountains, into the valley it had left. *They also said that the waters once returned very suddenly and overwhelmed many of their people and drove the rest back to the mountains* [emphasis added] (Blake 1856:98 in Wilke and Lawton 1975:11-12).

The people occupying the current study area at the time of the arrival of the Spanish are known as the Cahuilla. It is believed the Cahuilla first traveled from the north to southern California about 2,000 to 3,000 years ago (Bean and Bourgeault 1989:13). They occupied a large geographic area extending from present day Riverside to the central part of the Salton Sea with a population as high as 6,000 to 10,000 individuals (Bean 1978). Two thirds of the Cahuilla territory was in the low desert (Bean and Bourgeault 1989).

The Cahuilla social structure was based on political units called sibs. Each sib had a defined territory with various sibs uniting for protection and ceremonial purposes. Each sib had villages that were occupied year around. Houses were commonly grouped around a spring in a two to three square mile area. Villages were situated to take maximum advantage of basic resources such as climate, food, water, and materials. Individuals or groups would leave the villages for hunting, gathering, visiting, or trading activities (Bean 1972).

The first recorded contact of the Cahuilla with European culture took place when the Anza

Expedition, enroute from Arizona to Mission San Gabriel, passed through Los Coyotes Canyon in 1776. By 1819, several mission asistencias were established near Cahuilla territory, and many of the Cahuilla began to learn European agriculture and cattle raising techniques (Bean 1972:17). A mail route was established in 1821 from Tucson through the San Gorgonio Pass and the Coachella Valley to coastal southern California. Indian runners who carried the mail followed the route known as the "Cocomaricopa Trail" (Wilke and Lawton 1975:22).

Jose Romero, looking for a new route to the Colorado River, made two expeditions to the Cahuilla area, the first in 1823 and the second in 1826. By that time, some of the Cahuilla could speak Spanish, and Mission San Gabriel was running cattle as far east as Palm Springs (Bean 1972:17). Jose Maria Estudillo, who accompanied Don Jose Romero in the winter of 1823-24, described in his diary the patches of corn, pumpkins, melons and watermelons he saw growing. This is the first known reference to Cahuilla agriculture (Wilke and Lawton 1975:23).

When David Prescott Barrows began his studies of the Cahuilla in 1891, the population had declined greatly. In 1770, there had been approximately 2,500 Cahuilla and by 1910 only 800 remained (Sleight 1971:6). A smallpox epidemic was responsible for the death of many of the people in 1862 and 1863 (Bean and Bourgeault 1989). Barrows described the Coachella Valley as being dotted with wells, many of them marking sites of homes long ago abandoned (1967:26-27). For generations the Cahuilla had been well diggers. Where the water table was from 10 to 30 feet below the surface, the Indians dug deep walk-in wells in the sand. The wells were great pits with terraced sidewalls leading down to a narrow hole at the bottom where the sand was banked around the well, creating small lakelets (Barrows 1967, Bean 1972). The wells were considered significant for survival in the desert and were typically surrounded by thick clumps of mesquite or other plants.

The Cahuilla houses were usually dome shaped, occasionally rectangular, the sides thatched with palm fronds, tule or whatever plant was available. The roofs were supported by forked branches with holes left open for the smoke to escape (Barrows 1967, Bean 1972). Barrows claimed that the most beautiful houses were those thatched with palm. The furnishings were simple. A metate or mortar could be seen on one side of the doorway, on the other side a water jar. The center of the room contained a hearth with cooking pots. Bunks constructed of poles were found along the wall, sometimes a bed consisting only of rawhide and a blanket was placed on the floor (Barrows 1967).

Among the Cahuilla, hunting was the activity of men, who also performed the skinning and butchering. Women were responsible for the gathering of vegetable foods and cooking. The diet of the Cahuilla was more diversified than most North American Indians, with over 300 plants being used. The most important of the seed foods was chia. Food supplies were kept in earthen ollas or in grass baskets (Barrows 1967).

ARCHIVAL RESEARCH /RESULTS

A record search was undertaken at the Eastern Information Center at the University of California, Riverside to determine if prehistoric or historic sites had been previously recorded within or near the project area. Information regarding archaeological sites and studies within the project area and information for archaeological studies within a one mile radius of the project area were compiled. In addition to the Archaeological Inventory records, a check was made of the files of historic maps, the National Register of Historic Places Index, the Office of Historic Preservation Archaeological Determinations of Eligibility Listings (through January 14, 1997), and the Office of Historic Preservation Directory of Properties in the Historic Property Data File.
Reports housed at the Eastern Information Center showed that two previous cultural resources studies had been conducted on portions of the current project area (Sutton 1985a) (McKenna 1990). The 1985 study included the current study area plus adjacent parcels. Two prehistoric archaeological sites, CA-RIV-3005 and CA-RIV-3008, were recorded within the current project boundaries as a result of that study (Sutton 1985a, 1985c and 1985e). The artifactual remains of CA-RIV-3005 were observed in a series of blowouts located within small sand dunes. The site area, 300 meters by 250 meter in size, contained a mano, Brownware and Buffware ceramics, obsidian, jasper, basalt, chert, and quartz debitage, a jasper Desert Side-notched point, and animal and fish bone fragments. CA-RIV-3008 consisted of "at least 12 Brownware sherds."

The 1990 study consisted of a portion of the current project and included the area located north of Miles Road. No cultural resources were observed during that survey, however, McKenna stated that a concentration of trees could be related to an early homesteading of the property. (McKenna 1990). An additional 78 cultural resource reports have been written for the area within a one mile radius of the project. Approximately 50% of the area within the one mile radius has been examined. Twenty nine archaeological sites are recorded within a one mile radius of the project and are listed in Table One.

A 1856 U.S. General Land Office plat map of Township 5S, Range 6E, surveyed by Henry Washington and John La Croze shows an Indian Ranchero in the northwestern quarter of Section 24 and a road apparently following along the north bank of the Whitewater River (Brock 1997, McKenna 1990). The same map also indicates the location of "Palma Seco Well" south of the current project area. Later maps, including the 1904 Indio 30' Quadrangle, the 1941 USGS Toro Peak 15' Quadrangle, and the 1959 USGS La Quinta 7.5' Quadrangle do not indicate any activity or structures within the project area.

Point Happy, located south of the river and the project area, is listed in the Historic Resources Inventory. The 134 acre Point Happy Ranch was purchased in 1922 by Chauncy and Marie Clarke who grew dates and raised Arabian horses (Carpenter 1982).

TABLE ONE: Archaeological Sites Recorded Within One Mile Of The Project Area

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-64	Camp Site: Cremations, magnesite and shell beads, potsherds, bone awl, manos, metates, clay objects, shaft smoothers, pendants, bone tools, clay pipes and olla. "Water hole at one time cut into lower level with steps leading to it." Partially destroyed in dredging storm channel.	Smith (1954) and Ruth Shepard (1963)
Supplement	Historic trash dumps, possible historic structures, potsherds, fire-affected rock, fired daub. Disturbed by Highway 111 and dumping	Hogan (1994)
CA-RIV-150	Sherds, bone, fire broken rock, shell and stone beads, arrow points, flakes, part of a clay pipe, gaming disks, metate, and manos.	(1933-35) recorded in files by Dorothy Cowper
Supplement	Village Site: Cremation area, pottery, bone, shell, points, hammerstones, metates, manos, pestles, steatite tube, stone beads, throwing stick, cooking and polishing stones.	Eberhart (1951)
Supplement	Shell, chips, olivella disk beads.	Cowper (1967)
Supplement	Approximately 200' by 1,500' of pottery, plus flakes, shell, and bone.	Corbin (1974)
Supplement	"Much pottery", flakes, cremation area, about 40 acres; Mano frags, metate, shell, bone, pottery, rough clay, pestle frag., shell beads.	Lipp and Swenson (1977)
CA-RIV-1530	Deflating midden: Groundstone, ceramics, shell, bone, flakes, and charcoal.	Baldwin (1978)
Supplement	Hearth, bone, ceramics, milling stones, fire-affected rock.	Sutton (1985b)
CA-RIV-1754	About 40 pottery sherds.	Breece and Breece (1979)
Supplement	Secondary deposit due to channelization of the Whitewater River and construction of the levee.	McCarthy (1984a)
CA-RIV-2195	Light scatter on hard pan: 15 fire cracked rocks, 20 potsherds, and 1 shell frag.	Bowles (1981)
Supplement.	Could not relocate.	McCarthy (1989a)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-2197	Numerous ceramic fragments, bone, midden and charcoal.	Fenenga (1972)
CA-RIV-2200	Sparse scatter with three concentrations: Hearth, pottery sherds, mano, historic glass, shell.	Salpas (1980a)
Supplement	Mano frag., numerous pottery, burnt bone. Site disturbed by dumping and channelizing of river.	McCarthy (1988 and 1989b)
Supplement	Sparse scatter with several concentrations: Mostly potsherds, mano, hammerstone, burnt rodent bone, three frags of amethyst glass.	Hogan, Saubel, and Broomhall (1992)
CA-RIV-2934	Artifact scatter: Possible fired clay floors, mano frags, metate frag., flakes (some obsidian).	McCarthy (1984b)
CA-RIV-2935	Artifact scatter: Possible clay floor remains, Desert Side-notched point. Disturbed due to ORV use and channelizing of river.	McCarthy (1984c)
Supplement	Surface and buried deposit: Possible house construction (burned clay), ceramics, bone, lithics.	Toenjes and Toenjes (1984)
CA-RIV-2936	Extensive area in sand dunes: Possible clay house floors, pottery, bone, bone awl, manos, metate frag. exposed in blow-outs.	McCarthy (1984d)
Supplement	Extensive artifact scatter: Hearths, fire-affected rocks, fired clay daub, burnt bone.	McCarthy (1989c)
Supplement	Extensive scatters of pottery, fire-affected rock, debitage, and faunal remains. Western portion tested in 1990 by Yohe.	Everson (1992a)
Supplement	Scatter of pottery sherds, animal bone, shell frags, fire-affected rock.	Reeves (1996)
CA-RIV-3007	Cremation, shell ornaments, bead, awl, and charcoal. Badly disturbed by pothunting.	Sutton (1985d)
CA-RIV-3659 (CA-RIV-150A)	Burned clay, fire-affected rocks, pottery, lithic flakes in deflated depressions.	Toenjes (1989)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-3679H Supplement Supplement	Three concentrations of pottery, flakes, cores. Possible hearths, artifact scatter, pottery sherds, burnt bone, fired daub. Majority of site disturbed. Potsherds, possible hearths. Historic trash dump one meter deep.	Salpas (1980b) McCarthy (1989d) Hogan and Everson (1992)
CA-RIV-3680 Supplement	Scatter of pottery, daub, and fire affected rock Scatter of pottery, daub, and fire affected rock. Site tested; destroyed by development.	McCarthy (1989e) Everson (1992b)
CA-RIV-3681 Supplement	Pottery sherds, clay daub, mano frag., burnt bone, and hearths. Site damaged prior to testing, destroyed by development.	McCarthy (1989f) Everson (1992c)
CA-RIV-3682 Supplement	Several fire hearths, pottery, clay daub, burnt bone. Testing yielded substantial subsurface deposit to three meters: Human coprolites, pottery, burnt bone, debitage, bifacial artifacts.	McCarthy (1989g) Everson (1992d)
CA-RIV-3683 Supplement	Artifact scatter: Pottery and fire-affected rock. Site disturbed by channelizing river and highway construction. Potsherds, debitage, ground stone frags, core and faunal remains.	McCarthy (1989h) McCarthy, Arkush and Hogan (1992)
CA-RIV-3866	Scattered and concentrated midden in deflated and mounded deposits: Possible burned and collapsed structure, clay daub, fire-affected rock, bone, shell, pottery, and biface frag.	Toenjes (1990)
CA-RIV-4076	Scatter of pottery sherds.	Swope and Thaler (1990)
CA-RIV-4107	Approximately 1,400 potsherds.	Archaeological Associates (1991a)
CA-RIV-4108	Six potsherds.	Archaeological Associates (1991b)
CA-RIV-4745	Scattered pottery and shell.	Everson (1992e)
CA-RIV-4756-H	Water-valve tower, old piping, and fence.	Everson (1992f)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-5840	Camp emerging from dune: pottery sherds, pestle frag., debitage, possible burnt clay structure floor.	Mouriquand (1996a)
CA-RIV-5841	Scatter of pottery sherds and fire-affected rock.	Mouriquand (1996b)
CA-RIV-5842	Hearth, pottery sherds, and mano.	Mouriquand (1996c)
CA-RIV-5843	Pottery sherd scatter.	Mouriquand (1996d)
CA-RIV-5844	Pottery sherd scatter.	Mouriquand (1996e)
CA-RIV-5876	Pottery sherds, chipped stone, faunal, and fire affected rock.	Brock (1997)

FIELD METHODS

The surface of the site areas were systematically examined by a team of archaeologists. All observed artifacts were marked with pin flags. Artifacts located within a 50 cm radius of each other were marked with a single pin flag and mapped as a cluster. The location of each artifact or cluster was recorded relative to site datum using transit and stadia radiation techniques. The site datums used were those established to record supplemental site records during an earlier study (Brown 1998). (The provenience of artifacts was recorded but no artifacts were collected during that study). All artifacts collected during this study were brought to the RMW laboratory for processing and preliminary analysis.

The surface artifacts at CA-RV-3008, consisting entirely of pottery sherds, were marked with pin flags and mapped with the use of a Brunton compass and fiberglass tape. A previously placed surveyor's stake served as datum. Distance and azimuth were also taken to the middle of the graded road and a corner of the school yard fence. Four areas of sherds were observed, and designated areas 1 through 4. After measuring the perimeter of each area, the pottery was collected, and four shovel test pits (STPs) were excavated. The STPs were 35 to 60 cm in diameter and 35 to 62 cm in depth.

The subsurface investigation at CA-RIV-3005 consisted of six one meter square hand excavated units and five machine excavated trenches. The subsurface investigation at CA-RIV-5876 consisted of four hand excavated units and three machine excavated trenches. Figures 3, 4, and 5 show locations of units and trenches. All units were dug in 10 cm arbitrary levels and all excavated soil was dry screened through 1/8 inch mesh. All of the units were dug to either the 50 or 60 cm level. Trenching was accomplished by a backhoe with a 24 inch bucket. The trenches were excavated to a depth of approximately six feet. All of the trenching was directed and closely

monitored by the archaeologists to limit damage to any subsurface cultural deposit. Sand from the trenches was spread adjacent to the trench and excavation was halted while the archaeologist examined the sand for artifactual remains. All units and trenches were backfilled for safety.

All observed cultural material from each level of the units was recovered from the screen and placed within a ziplock bag marked with the appropriate provenience data. Soil samples were recovered from the top of each level. Sidewall profiles were drawn for units that exhibited stratigraphy. All cultural material collected during trenching was likewise placed in a ziplock bag and marked with the proper provenience. A profile of representative stratigraphy was drawn for each trench.

Site maps (Figures 3, 4, and 5) illustrating surface artifact distribution, unit, and trench locations, were produced by Tim Goddard. The maps were created by first digitizing the existing engineer's map into AutoCAD. The survey information was then plotted on the imported map. Final production was achieved by importing the CAD file into CorelDraw for final editing for page presentation. Colors were used in the maps to represent different data sets. Green represents artifacts recorded during the April 1998 survey; red represents artifacts collected during this study; purple shows the location of the backhoe trenches Unit locations are depicted on each map.

FINDINGS

CA-RIV-3005: The artifacts recovered from this site consist of pottery sherds, lithic material and faunal remains. There are a total of 132 pottery sherds. The vast majority, 123 sherds, were collected from the surface. Only three sherds were collected from levels below 10 cm. Twelve lithics were identified as groundstone fragments; probably the remains of manos or metates. There are two pieces of debitage, one flake, two tool fragments, and 42 items identified as manuports. Twenty lithic fragments from this site were fire affected. The faunal remains consist of four shell fragments (*Anodonta dejecta*), the unidentifiable bone fragments of a small rodent and a snake vertebra.

CA-RIV-3008: There were 106 pottery sherds recovered from this site . Forty eight sherds were from the surface, 16 from STP "A", 21 from STP "B", 2 from STP "C", and 19 from STP "D". The sherds had deteriorated to the degree that only three still retained evidence of the interior and exterior finished surface.

CA-RIV-5876: The artifacts recovered from this site are 184 pottery sherds, 21 lithic fragments, four bone fragments, and two pieces of shell. The lithics include one flake, one utilized flake, a chopper, one groundstone fragment, and 15 items described as manuports. The only identified artifact collected from below 10 cm was a pottery sherd from the 10 to 20 cm level in Unit 10. The dirt road running east and west across the southern part of the site contained 138 small sherds. It was obvious that these sherds had been repeatedly broken by traffic and also displaced. Accordingly, they were collected as a group, with the surrounding boundaries point provenienced.

A metate fragment was collected from Trench 4 and one pottery sherd from Trench 8 (CA-RIV-3005). A chert flake was recovered from Trench 1 (CA-RIV-5876) at approximately 160 cm and a pottery sherd was recovered from the same trench at about 20 cm.

The term "manuports" has been used to describe lithic materials that are not native to the dunes area. The identified lithic materials recovered from the sites include basalt, chert, gneiss, granitics, metavolcanics, quartz, quartzite, sandstone, schist, scoria, and sillimante. Many of these rocks could have been collected from the adjacent Whitewater River bed and brought to the site with the intent of using them as cooking stones, for tool manufacture, for fire hearths or other diverse purposes.

The laboratory cataloging of the pottery sherds included Munsel values for color coding, temper size and content, size and thickness of fragments, and whether the fragments had rims. Unusual attributes were also recorded. Six of the fragments appear to have a residue adhering to the interior surface. Sixteen of the fragments are rim fragments and two are possibly decorated. Unidentifiable fragments of burnt clay and daub, similar in description to those found on sites located southeast of the project area (Yohee II 1990), were collected from both CA-RIV-3005 and CA-RIV-5876.

DISCUSSION/INTERPRETATION

The primary purpose of this study, which took place 10 through 18 June 1998, was to conduct exploratory investigations at CA-RIV-3005 and CA-RIV-5876 to establish reasonable methods for use during the Phase 2 archaeological evaluation of the two prehistoric sites. The project was limited in scope to a few of the areas of artifact concentration that were visible when the work was accomplished. It must be noted that significant differences in surface artifact distributions were noted between April 1998, when the reconnaissance of the property was performed, and June 1998, when the work described in this report was accomplished. In other words, the shifting sands cause major differences in visible artifact distributions over very short time periods.

During excavations at CA-RIV-3005 and CA-RIV-5876, the vast majority of cultural remains were found on the surface or within the 0 to 10 cm level beneath the surface. Archaeological excavation (Yohe II 1990) of prehistoric sites in the vicinity, and a test excavation (Alexandrowicz et. al 1998) of the western portion of CA-RIV-5876 (located on a five acre parcel to the immediate west), indicate a similar distribution of cultural remains. A comparison of the surface distribution of artifacts, as mapped during the April 1998 survey and site recording of CA-RIV-3005 and CA-RIV-5876 (Brown 1998), and the artifact distribution as mapped during this investigation in June 1998 (Figures 3, 4, and 5), indicates that the wind blown sand uncovers and covers artifacts rapidly. This was demonstrated when a beer can dating from the 1970s was recovered from a depth of approximately 130 cm in Trench 1. (A chert flake was recovered from the same area within the trench at a depth of approximately 160 cm).

The 50+ acre project parcel contains two recorded prehistoric archaeological sites consisting of four currently visible principal areas containing artifact concentrations (primarily pottery sherds

with some lithics), plus apparently isolated artifacts located among those areas. Given the limited scope of the current project, it is unknown if these artifacts represent the remains of a single large site scattered throughout the 50 acres, the remains of multiple campsites, a satellite of the large prehistoric village recorded to the south, or are related to the historic era village recorded northwest of the parcel.

The shell fragments collected from these sites are small, but are probably freshwater mussel (cf. *Anodonta dejecta*), a species common to the ancient Lake Cahuilla and known to have been a food resource of the local inhabitants. A majority of the bone fragments, such as the snake vertebra and rodent fragments, probably represent naturally occurring animal deaths. Only one bone fragment was fire affected.

CA-RIV-3008 (in the northwest section of the parcel surveyed in April) is located on an unconsolidated sand dune. Although many of the sherds were collected during excavation of the STPs, the area surrounding the excavations was continually caving in, bringing sand and any near surface sherds into the STPs. All of the sherds are similar in exhibiting an unusual state of deterioration, color, and temper and are believed to represent only one or two vessels.

RECOMMENDATIONS

It is recommended that a Phase 2 test evaluation (based on CEQA) be accomplished at CA-RIV-3005 and CA-RIV-5876. The purpose of this investigation of CA-RIV-3005 and CA-RIV-5876 was to determine the most efficient method of completing the Phase 2 test evaluation of the two sites. Because of the paucity of subsurface cultural material, it was determined that information for a valid assessment of site importance can be most effectively obtained by the use of 0 to 10 cm deep surface scrapes placed judgementaly and randomly within the sites. It is also recommended that an attempt be made to move quantities of sand by the use leaf blowers in an effort to discover features such as fire hearths, post holes relating to prehistoric structures, human coprolite remains, and/or possible midden deposits within the sand dunes. Additionally, it is recommended that the Phase 2 test include a geomorphologist to determine dune formation and movement and how those actions would influence the displacement of artifactual remains. This information would then be used to determine the areas that would be most likely to yield artifactual remains. This study would precede the Phase 2 test excavation.

It is recommended that the Phase 2 test evaluation (based on CEQA) to determine the ability of these sites to provide research information, and to determine the horizontal and vertical extent of CA-RIV-3005 and CA-RIV-5876 be accomplished far in advance of any planned ground disturbing activities within the area.

It is strongly recommended that the pottery sherds collected during this investigation be incorporated into an in depth ceramic analysis during the test phase. The 422 fragments collected to date represent a variety of color ranges, that could indicate if the clays were residual or sedimentary in origin. Sixteen of the sherds are rim fragments. An analysis of these fragments

could determine vessel type and size. Additionally, six of the sherds possibly contain residue and, upon residue analysis, could represent prehistoric food remains. Two of the sherds appear to be decorated, uncommon in this area and one sherd has a ground edge. This artifact could be part of a lid or a tool.

No additional research is required at CA-RIV-3008, however, it is recommended that the site area be monitored by an archaeologist during ground disturbing activities. During a previous study (Brown 1998), no additional cultural material was observed in the study area north of Miles Avenue and the recommendation was that that area also be monitored during ground disturbing activities.

No cultural remains were observed within the Whitewater River Channel during a survey of the river bottom. No additional cultural resources investigation is warranted within that area.

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1987- 88	Natural History Museum of Los Angeles County Foundation, Molding & Casting of Fossils
1987	Field Director: Historical archaeology sites. Heritage Park Project, Santa Fe Springs, California
1985	Analysis of faunal remains from archaeology sites. Archaeological Associates, Sun City, California
1983-85	Paleontological field salvage. RMW Paleo Associates, Inc. Mission Viejo, California
1983-85	Archaeological site surveying, salvage and laboratory work, including faunal analysis. CSUF
1982-83	Field Director: Pacific Coast Archaeology Society, Crystal Cove State Park survey, recording & analysis of 7 sites
1982	Paleontological field salvage. Los Angeles County Museum National Geographic Grant.
1981	Laboratory preparation of fossil specimens. Los Angeles County Museum, NSF Grant
1980-81	Paleontological field salvage. Scientific Resource Surveys, Inc. Santa Ana, California
1978-79	Archaeological site surveying. Christina Brewer and Company, Laguna Beach, California
1979- present	Associate: Natural History Museum of Los Angeles County

Publications

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Degrees & Certifications

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1983 - 1986.	Independent Consultant Archaeologist
1976 - 1983.	Information Specialist and Administrative Services Officer, Leighton and Associates
1956 - 1976.	United States Army. Rank at retirement was Major of Field Artillery

Publications

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Degrees

1983 Anthropology, M.A., Archaeological Emphasis. California State University, Fullerton, California
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1972 Bachelor of Arts, Geology and History, San Diego State University, San Diego, California
1989 Introduction to Federal Projects and Historic Preservation Law. Sponsored by the Advisory Council on Historic Preservation and the General Services Administration Training Center

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RESUME

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EDUCATION

1995	B.A. (Anthropology) University of Arizona
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PROFESSIONAL EXPERIENCE

1998-present	RMW Paleo Associates Archaeologists: Responsibilities include fieldwork(survey, excavation, monitoring) and producing technical reports.
1995-present	Computer Consultant. Responsibilities include generation of maps by use of survey, remote sensing, and computer softaware includig CAD and GIS.
1997-98	Western Cultural Resource Management: Responsibilities included fieldwork(survey, excavation) and Crew Chief duties. Experience in both prehistoric and historic archaeology .
1996-97	Museum of History and Art Salt Lake City, Utah. Contracted Consultant: Responsibilities included restoration of historic pioneer furniture and research of craftsman.
1996	Assistant director for historic archaeology field school. University of Nevada-Reno.
1996	Archaeological survey and excavation . Desert Archaeology, Tucson, AZ.
1995	Archaeological Crew Chief (GS-7) Lassen National Forest, Susanville, CA.
1995	Assistant director for historic archaeology field school. University of Nevada-Reno.
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1992	Western Cultural Resource Management: Responsibilities included fieldwork(survey, excavation). Experience in both prehistoric and historic archaeology.
1992	Archaeological survey and excavation . Desert Archaeology, Tucson, AZ
1991	Office of Contract Archaeology- ENRON Project University of New Mexico. Responsibilities included laboratory processing, preliminary analysis, coordinator of ceramic processing, logistics, crew chief on call, member of emergency excavation team.
1991	New World Consultants, Inc. Albuquerque, New Mexico. Archaeological field salvage.
1990	INFOTEC Research Inc. Ely NV. Responsibilities included illustration and drafting for archaeological reports.
1989-91	Bilby Lab, Northern Arizona University. Laboratory processing of wide variety of artifacts.
1990	University of Nevada-Reno Historical Archaeology Field School. Instructed students in use of alidade and transit.
1989	United States Forest Service, Flagstaff, AZ. Stabilization of Oak Creek Ruin.

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EXPERIENCE:

1991-1992: Crew Member, Reconnaissance, Sequoia National Forest, Kern and Tulare Counties, California. In excess of 10,000 acres were examined during the project and more than 60 archaeological sites were recorded.

1993: Excavator, Millingstone Age site in La Habra, Orange County, California.

1994: Excavator, four Millingstone Age sites in eastern Orange County, California.

1994: Volunteer Assistant, excavation of Late Period site in Santa Ana Mountains, western Riverside County, California, for California State University, Fullerton field methods class.

1994-1995: Excavator, early to late period site in Rose Canyon, San Diego County, California.

1995: Crew Member, Reconnaissance, Forecast Property, Oceanside, San Diego, County, California.

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
1	Surface		Lithic	Manuport	1	Quartz	7.64	NO					
2	Surface		Ceramic		1		4.12	YES		7.5YR 7/2 Pinkish Gray	7.5YR 6/4 Light Brown	Sand, Moderate Mica, Medium-Coarse	
3	Surface		Ceramic		1		2.41	YES		10YR 5/1 Gray	10YR 5/1 Gray	Sand, Low Mica, Coarse	Scrape marks visible on interior
4	Surface		Lithic	FAR	1	Granitic	30.98	NO					
5	Surface		Ceramic		1		4.34	YES		7.5YR 6/4 Light Brown	10YR 4/1 Dark Gray	Sand, Moderate Mica, Coarse	
6	Surface		Ceramic		1		3.36	NO		7.5 YR 6/2 Pinkish Gray	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
7	Surface		Lithic	Manuport	1	Quartzite	122.45	NO					
8.1	Surface		Ceramic		1		4.61	YES		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown,Dark Brown	Sand, High Mica, Mediuum	
8.2	Surface		Lithic	Ground Stone Fragment	1	Granitic	238.6	NO					
9.1	Surface		Ceramic		1		2.44	NO		7.5YR 6/4 Light Brown	7.5YR 5/4 Brown	None	Baked clay
9.2	Surface		Ceramic		1		3.84	NO		7.5YR 5/2 Brown	7.5YR 6/2 Pinkish Gray	Sand, Moderate Mica, Coarse	
9.3	Surface		Ceramic		1		9.65	YES		7.5YR 3/1 Very Dark Gray	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	Burned residue interior
10	Surface		Ceramic		1		3.27	YES		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	
11	Surface		Lithic	Manuport	1	Granitic	83.97	NO					
12.1	Surface		Lithic	Manuport	1	Granitic	68.71	NO					
12.2	Surface		Lithic	FAR	1	Granitic	137.05	NO					
13.1	Surface		Ceramic		1		0.31	NO		7.5YR 5/2 Brown		None	Baked clay
13.25	Surface		Lithic	Manuport	1	Quartzite	220.2	NO					
14	Surface		Ceramic		1		0.23	NO		7.5YR 6/4 Light Brown		None	Baked clay
15	Surface		Ceramic		1		1.07	NO		7.5YR 6/4 Brown		None	Baked clay

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
16	Surface		Lithic	FAR	1	Gneiss	132.59	NO					
17	Surface		Ceramic		1		8.94	NO		5YR 6/6 Reddish Yellow		None	Baked clay
18	Surface		Ceramic		1		3.27	NO		2.5YR 6/4 Light Brown	77.5YR 5/2 Brown	Sand, High Mica, Coarse	
19	Surface		Ceramic		1		15.19	YES		7.5YR 5/2 Brown	7.5YR 3/0 Very Dark Gray	Sand, High Mica, Very Coarse	Burned residue interior
20	Surface		Ceramic		1		3.5	YES	Slight Rounded	7.5YR 6/4 Light Brown	7.YR 6/4 Light Brown	Sand, Moderate Mica, Medium	
21	Surface		Shell	cf. Anodonta dejecta	2		0	NO					
22	Surface		Ceramic		1		4.67	YES		7.5YR 6/2 Pinkish Gray	7.5R 6/2 Pinkish Gray	Sand, High Mica, Coarse	
23	Surface		Ceramic		1		2.57	YES		7.5YYR 4/0 Dark Gray	7.5YR 5/0 Gray	Sand, High Mica, Coarse	
24.1	Surface		Ceramic		1		4.21	NO		7.5YR 5/2 Brown	7.5YR 5/0 Gray	Sand, Moderate Mica, Medium	
24.2	Surface		Ceramic		1		3.69	NO		7.5YR 6/4 Light Brown	7.5YR 4/2 Brown, Dark Brown	Sand, High Mica, Medium	
24.3	Surface		Ceramic		1		3.11	YES		10YR 6/3 Pale Brown	10YR 4/1 Dark Gray	Sand, Moderate Mica, Medium	
24.4	Surface		Ceramic		1		0.45	NO		10YR 6/3 Pale Brown	10YR 4/1 Dark Gray	Sand, High Mica, Coarse	
24.5	Surface		Lithic	Manuport	1	Granitic	2.64	NO					
25	Surface		Lithic	Groundstone	1	Granitic	33.91	NO					
26.1	Surface		Ceramic		1		9.58	NO		10YR White	10YR 8/2 White	Sand, Low Mica, Coarse	
26.2	Surface		Lithic	FAR	1	Gneiss	181.87	NO					
27	Surface		Lithic	Manuport	1	Quartz	20.07	NO					
28	Surface		Lithic	Tool Fragment	1	Quartz	6.67	NO					
29	Surface		Ceramic		1		2.53	YES		10YR 5/3 Brown	10YR 5/3 Brown	Sand, Low Mica, Medium	Interior indentations
30	Surface		Ceramic		1		4.35	NO		7.5YR 4/0 Dark Gray	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	Interior'strations from finishing exterior linear

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
31	Surface		Ceramic		1		6.36	YES		10YR 6/3 Pale Brown	10YR 5/2 Grayish Brown	Sand, Moderate Mica Coarse	
32	Surface		Ceramic		1		6.68	NO		10YR 4/4 Dark, Yellowish Brown	10YR 4/4 Dark Yellowish Brown	Sand, High Mica, Coarse	White fiberous residue exterior (natural?)
33.1	Surface		Ceramic		1		4.34	NO		10YR 3/1 Very Dark Gray	10YR 5/3 Brown	Sand, High Mica, Medium	Finishing striations, exterior
33.2	Surface		Ceramic		1		4.89	YES		10YR 3/3 Dark Brown	10YR 2/1 Black	Sand, High Mica, Medium	Finishing striations exterior white fibrous,
34	Surface		Ceramic		1		5.25	YES		10YR 2/1 Black	10YR 5/2 Grayish Brown	Sand, High Mica, Medium	Exterior portion of finished scratched off
35	Surface		Ceramic		1		0.94	NO		10YR 5/2 Grayish Brown	10YR 5/2 Greyish Brown	Sand, Moderate Mica, Coarse	
36	Surface		Ceramic		1		13.29	NO	Slightly Rounded	10YR 5/3 Brown	2.5YR 5/4 Reddish Brown	Sand, Moderate Mica, Coarse	Finishing striations, exterior
37	Surface		Ceramic		1		5.24	YES		7.5YR 5/4 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Coarse	
38.1	Surface		Lithic	Possible Tool	1	Sillimanite	8.96	NO					
38.2	Surface		Lithic	Manuport	1	Granitic	28.97	NO					
38.3	Surface		Lithic	Manuport	1	Granitic	29.74	NO					
38.4	Surface		Lithic	Groundstone Fragment	1	Granitic	122.05	NO					
39	Surface		Ceramic		1		0.78	NO		7.5YR 6/4 Light Brown		None	Baked clay
40.1	Surface		Ceramic		1		1.83	NO	Slightly Rounded	7.5YR 6/4 Light Brown	7.5YR 6/4 Light Brown	None	Baked clay
40.2	Surface		Ceramic		1		0.16	NO		7.5YR 6/4 Light Brown		None	
41.1	Surface		Ceramic		1		6.26	NO		10YR 5/3 Brown	10YR 5/1 Gray	Sand, Low Mica, Very Coarse	
41.2	Surface		Ceramic		1		0.24	NO		7.5YR 6/4 Light Brown		None	Baked clay
41.3	Surface		Ceramic		1		0.18	NO		7.5YR 6/4 Light Brown		None	Baked clay
41.4	Surface		Lithic	FCR	1	Granitic	88.6	NO					
41.5	Surface		Ceramic		1		0	NO		7.5YR 6/4 Light Brown			Lithic

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
42.1	Surface		Ceramic		1		0.18	NO		7.5YR 6/4 Light Brown		None	Baked clay
42.2	Surface		Lithic	FCR	1	Sandstone	59.34	NO					
42.3	Surface		Lithic	Groundstone Fragment	1	Schist	75.54	NO					
43.1	Surface		Ceramic		1		4.14	NO		7.5YR 6/4 Light Brown		None	Baked clay
43.2	Surface		Ceramic		1		1.15	NO		7.5YR 6/4 Light Brown		None	Baked clay
43.3	Surface		Ceramic		1		0.12	NO		7.5 YR 6/4 Light Brown		None	Baked clay
44.1	Surface		Ceramic		1		0.9	NO		7.5YR 6/4 Light Brown		None	Baked clay
44.2	Surface		Ceramic		1		0.57	NO		7.5YR 6/4 Light Brown		None	Baked clay
45.1	Surface		Ceramic		1		0.17	NO		7.5YR 6/4 Light Brown		None	Baked clay
46	Surface		Lithic	FAR	1	Gneiss	96.4	NO					
47.1	Surface		Ceramic		1		2.53	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	
47.2	Surface		Ceramic		1		0.57	NO		7.5YR 6/4 Light Brown		None	Vesicular clay
47.3	Surface		Lithic	FAR	1	Granitic	22.81	NO					
47.4	Surface		Lithic	FAR	1	Granitic	63.75	NO					
48	Surface		Ceramic		1		1.09	NO		7.5YR 6/4 Light Brown		None	Baked clay
49	Surface		Ceramic		1		4.19	NO		10YR 8/2 White	10YR 5/1 Gray	Sand, Low Mica, Coarse	Exterior ridges from rough finishing
51.1	Surface		Lithic	Fragment	1	Quartz	0.39	NO					
51.2	Surface		Lithic	Manuport	1	Metavolcanic	31.04	NO					
51.3	Surface		Lithic	FAR	1	Metavolcanic	39.74	NO					
52	Surface		Ceramic		1		2.63	YES		7.5YR 6/4 Light Brown	7.5YR 6/4 Light Brown	Sand, Moderate Mica, Coarse	

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
53	Surface		Ceramic		1		4.64	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Medium	
54	Surface		Lithic	Manuport	1	Granitic	22.32	NO					
55.1	Surface		Ceramic		1		2.97	NO		7.5YR 6/4 Light Brown		None	Vesicular clay
55.2	Surface		Lithic	Manuport	1	Granitic	32.63	NO					
55.3	Surface		Lithic	FAR	1	Granitic	60.49	NO					
55.4	Surface		Lithic	Manuport	1	Granitic	148.8	NO					
56.1	Surface		Lithic	Manuport	1	Granitic	34.5	NO					
56.2	Surface		Lithic	FAR	1	Granitic	103	NO					
57	Surface		Ceramic		1		0.7	NO		7.5YR 6/4 Light Brown		None	Baked clay
58.1	Surface		Ceramic		1		2.03	NO		7.5YR 6/4 Light Brown		None	Baked clay
58.2	Surface		Ceramic		1		6.54	NO		7.5YR 7/4 Pink		None	Baked clay
58.3	Surface		Ceramic		1		3.52	NO		7.5YR 6/4 Light Brown		None	Baked clay
58.4	Surface		Ceramic		1		4.13	NO		7.5YR 6/4 Light Brown		None	Baked clay
58.5	Surface		Ceramic		1		0.24	NO		7.5YR 6/4 Light Brown		None	Baked clay
59	Surface		Lithic	FAR	1	Granitic	124.62	NO					
59.1	Surface		Ceramic		1		3.38	NO		7.5YR Brown		None	Baked clay
59.2	Surface		Ceramic		1		0.29	NO		7.5YR 5/4 Brown		None	Baked clay
59.3	Surface		Ceramic		1		0.2	NO		7.5YR 5/4 Brown		None	Baked clay
59.4	Surface		Ceramic		1		0.6	NO		7.5YR 5/4 Brown		None	Baked clay
59.5	Surface		Ceramic		1		0.4	NO		7.5YR 5/4 Brown		None	Baked clay

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
60.1	Surface		Ceramic		1		2.98	NO		7.5YR 6/4 Light Brown		None	Baked clay
60.2	Surface		Lithic	Groundstone	1	Sandstone	37.21	NO					
61	Surface		Ceramic		1		9.19	YES		10YR 5/2 Grayish Brown	10YR 5/1 Gray	Sand, High Mica, Coarse	Finishing striations, exterior and interior
62.1	Surface		Ceramic		1		5.59	NO		10YR 2/1 Black	10YR 4/2 Dark Grayish Brown	Sand, Low Mica, Coarse	Burned residue interior
62.2	Surface		Lithic	Manuport	1	Granitic	242.9	NO					
63	Surface		Lithic	FAR	1	Granitic	113.59	NO					
64	Surface		Ceramic		1		1.9	NO		5YR 5/2 Reddish Gray	5YR5/1 Gray	Sand, High Mica, Coarse	
65	Surface		Ceramic		1		2.02	NO		10R 6/6 Light Red		None	Vesicular clay
66	Surface		Lithic	Debitage	1	Quartz	24.44	NO					
67	Surface		Ceramic		1		3.02	NO		5YR 5/1 Gray	5YR 5/3 Reddish Brown	Saqnd, Low Mica, Coarse	
68.1	Surface		Lithic	Manuport	1	Granitic	142.49	NO					
68.2	Surface		Ceramic		1		2.35	NO		5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	Sand, Low Mica, Very Coarse	
69.1	Surface		Lithic	FAR	1	Granitic	218.1	NO					
69.2	Surface		Lithic	Manuport	1	Granitic	78.14	NO					
69.3	Surface		Lithic	Manuport	1	Granitic	31.15	NO					
69.4	Surface		Lithic	Fragment	1	Granitic	10.19	NO					
69.5	Surface		Ceramic		1		1.27	NO		7.5YR 6/4		None	Baked clay
69.6	Surface		Ceramic		1		1.5	NO		10R 6/6 Light Red		None	Vesicular clay
69.7	Surface		Ceramic		1		0.17	NO		10R 6/6 Light Red		None	Vesicular clay
70.1	Surface		Ceramic		1		0.42	NO		10R 6/6 Light Red		None	Vesicular clay

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
70.3	Surface		Lithic	Manuport	1	Granitic	14.05	NO					
71	Surface		Lithic	Groundstone Fragment	1	Granitic	97.19	NO					
72	Surface		Ceramic		1		6.59	YES		5YR 3/3 Dark Reddish Brown	5YR 5/3 Reddish Brown	Sand, Moderate Mica, Coarse	
73	Surface		Ceramic		1		0.4	NO	Flare moderate	7.5YR 6/4 Light Brown	7.5YR 6/4 Light Brown	None	Baked clay
74	Surface		Lithic	Flake	1	Basalt	0.33	NO					
75	Surface		Lithic	Flake	1	Basalt	2.29	NO					
76	Surface		Lithic	Flake in 2 pieces	1	Basalt	1.05	NO					
77	Surface		Lithic	Flake	1	Basalt	0.39	NO					
78.1	Surface		Lithic	Flake	1	Basalt	0.16	NO					
78.2	Surface		Lithic	Manuport - discard?	1	Quartz	0.28	NO					
78.3	Surface		Shell	cf. Anodonta dejecta	1		0.29	NO					
79	Surface		Lithic	Flake with complex dorsal	1	Basalt	0.62	NO					
80	Surface		Lithic	?	1	Schist	33.41	NO					
81	Surface		Lithic	Mano Fragment	1	Granitic	11.57	NO					
82.1	Surface		Lithic	Flake	1	Basalt	0.71	NO					
82.2	Surface		Lithic	Flake	1	Basalt	0.27	NO					
82.3	Surface		Lithic	Flake	1	Basalt	0.09	NO					
82.31	Surface		Lithic	Debitage	1	Basalt	0.03	NO					
82.4	Surface		Lithic	Flake	1	Basalt	0.06	NO					
82.5	Surface		Lithic	Flake?	1	Schist	0.18	NO					

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
83	Surface		Lithic	Manuport	1	Granitic	342.6	NO					
84	Surface		Lithic	Groundstone fragment	1	Granitic	30.48	NO					
85	Surface		Ceramic		1		32.63	YES		7.5YR 6/4 Light Brown	7.5YR 6/4 Light Brown	Sand, Low Mica, Fine-Medium	Interior indentations in 2 pieces
86	Surface		Ceramic		1		12.22	YES		7.5YR 5/4 Brown	2.5YR 5/2 Weak red	Sand, Low Mica, Coarse	
87	Surface		Lithic	Manuport	1	Granitic	186.4	NO					
88	Surface		Lithic	Manuport	1	Quartz	37.18	NO					
89.1	Surface		Ceramic		1		11.73	YES		2.5YR 5/4 Reddisn Brown	2.5YR 4/0 Dark Gray, 10R 5/3 Weak Red	Sand, Low Mica, Very Coarse	Distinct firing coloration
89.2	Surface		Lithic	Groundstone?	1	Granitic	87.6	NO					
90	Surface		Ceramic		1		6.89	NO		7.5YR 6/4 Light Brown	5YR 6/6 Reddish Yellow	None	Baked clay
91	Surface		Lithic	Manuport	1	Granitic	122.25	NO					
92.1	Surface		Lithic	FCR	1	Granitic	43.31	NO					
92.2	Surface		Lithic	Manuport	1	Granitic	165.93	NO					
92.3	Surface		Lithic	FCR	1	Granitic	126.83	NO					
92.4	Surface		Ceramic		1		2.61	NO		10YR 5/3 Brown	10YR 5/3 Brown	Sand, Low Mica, Coarse	Interior exfoliated away
93.1	Surface		Ceramic		1		12.61	YES		5YR 5/4 Reddish Brown	10YR 6/4 Light Yellowish Brown	Sand, Moderate Mica, Medium-Coarse	
93.2	Surface		Ceramic		1		4.21	YES		2.5Y 3/0 Very Dark Gray	7.5YR 5/2 Brown	Sand, Moderate Mica, Coarse	Burned residue interior
93.3	Surface		Ceramic		1		3.64	YES		10YR 6/3 Pale Brown	10YR 5/1 Gray, 2.5YR 4/0 Dark Grey	Sand, Low Mica, Fine	Possible burnished decoration
93.4	Surface		Ceramic		1		3.24	NO		7.5YR 6/2 Pinkish Gray	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
93.5	Surface		Lithic	Manuport	1	Quartz	15.19	NO					
93.6	Surface		Lithic	Manuport	1	Granitic	299.7	NO					

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
94	Surface		Ceramic		1		1.55	NO		5Y 6/1 Gray		None	Baked clay
95	Surface		Ceramic		1		18.71	YES		10YR 5/2 Grayish Brown	5YR 3/4 Dark Reddish Brown	Sand, High Mica, Very Coarse	Finishing striations, exterior
96	Surface		Ceramic		1		3.32	YES		10YR 6/3 Pale brown	7.5YR 5/0 Gray	Sand, Low Mica, Coarse	
97.1	Surface		Ceramic		1		1.39	NO		10YR 6/2 Light Brownish Gray	10YR 6/2 Light Brownish Gray	Sand, Low Mica, Coarse	
97.2	Surface		Ceramic		1		4.51	NO		7.5YR 7/4 Pink	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Coarse	
98.1	Surface		Ceramic		1		2.35	NO		7.5YR 6/4 Light Brown	7.5YR 6/2 Pinkish Gray	Sand, High Mica, Coarse	
98.2	Surface		Ceramic		1		1.93	NO		7.5YR 7/4 Pink	5YR 7/2 Pinkish Gray	Sand, Moderate Mica, Coarse	
99	Surface		Ceramic		1		1.67	NO		10YR 5/1 Gray	10YR 5/1 Gray	Sand, Low Mica, Coarse	
100.1	Surface		Ceramic		1		4.04	YES		10YR 7/1 Light Gray	10YR 6/1 Gray	Sand, Low Mica, Coarse	
100.2	Surface		Ceramic		1		1.12	NO		10YR 5/1 Gray	10YR 6/2 Light Brownish Gray	Sand, Low Mica, Medium - Coarse	
100.3	Surface		Ceramic		1		0.9	NO		10YR 6/2 Light Brownish Gray	5YR 6/6 Reddish Yellow	Sand, High Mica, Coarse	
101.1	Surface		Ceramic		1		2.64	NO		10YR 5/1 Gray	10YR 6/1 Light Gray, Gray	Sand, Low Mica, Coarse	
101.2	Surface		Ceramic		1		1.99	NO		10YR 6/3 Pale Brown	10YR 7/3 Very Pale Brown	Sand, Low Mica, Coarse	
101.3	Surface		Ceramic		1		0.31	NO		10YR 5/1 Gray	10YR 6/1 Gray	Sand, High Mica, Medium	
102.1	Surface		Ceramic		1		2.37	NO		10YR 6/3 Pale Brown	10YR 6/7 Light Brownish Gray	Sand, High Mica, Coarse	
102.2	Surface		Ceramic		1		1.65	NO		10YR 5/2 Grayish Brown	10YR 5/2 Grayish Brown	Sand, High Mica, Coarse	
102.3	Surface		Ceramic		1		0.66	NO		10YR 6/2 Light Brownish Gray	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Coarse	
102.4	Surface		Ceramic		1		0.32	NO		No surface present	10YR /2 Light Brownish Gray	Sand, Moderate Mica, Coarse	
102.5	Surface		Ceramic		1		0.47	NO		No surface present	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Coarse	
102.6	Surface		Ceramic		1		0.23	NO		10YR 6/2 Light Brownish Gray	7.5YR 7/2 Pinkish Gray	Sand, High Mica, Coarse	

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
103	Surface		Ceramic		1		7.74	YES		10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, Moderate Mica, Coarse	
104.1	Surface		Ceramic		1		5.81	YES	Rounded Margin	10YR 6/2 Light Brownish Gray	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
104.2	Surface		Lithic	Possible Groundstone	1	Granitic	266.5	NO					
104.3	Surface		Lithic	FCR	1	Granitic	84.53	NO					
105	Surface		Ceramic		1		3.84	NO		5Y 8/2 White		None	Baked clay
106.1	Surface		Ceramic		1		1.79	NO		7.5YR 7/6 Reddish Yellow		None	Baked clay
106.2	Surface		Ceramic		1		2.23	NO		10YR 6/2, 6/3 Light Brownish Gray, Pale Brown	10YR 6/3 Pale Brown	Sand, Low Mica, Coarse	
106.3	Surface		Ceramic		1		3.73	YES		10YR 7/2 Light Gray	10YR 6/2 Light Brownish Gray	Sand, High Mica, Coarse	
106.4	Surface		Ceramic		1		0.75	NO		7.5YR 6/4 Light Brown	10YR 6/3 Pale Brown	Sand, Moderate Mica, Medium	
106.5	Surface		Lithic	Manuport	1	Granitic	29.66	NO					
106.6	Surface		Lithic	Manuport	1	Granitic	24.58	NO					
107.1	Surface		Lithic	Manuport	1	Granitic	424.8	NO					
107.2	Surface		Lithic	FCR	1	Granitic	10.09	NO					
107.3	Surface		Ceramic		1		2.63	YES		10YR 6/3, Pale Brown	10YR 6/2, Light Brownish Gray	Sand, Moderate Mica, Medium	
107.4	Surface		Ceramic		1		0.21	NO		7.5YR 7/4 Pink		None	Baked clay
108	Surface		Ceramic		1		2.35	NO		7.5YR 6/4 Light Brown	10YR 6/2 Light Brownish Gray	Sand, Low Mica, Coarse	
109	Surface		Ceramic		1		1.18	NO		5YR 6/4 Light Reddish Brown	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Coarse - Very Coarse	
110	Surface		Lithic	Groundstone	1	Granitic	71.86	NO					
111	Surface		Ceramic		1		1.59	NO		10YR 6/1 Gray	7.5YR Reddish Yellow	Sand, Low Mica, Coarse	Dense quartz included finishing striations
112.1	Surface		Ceramic		1		1.47	NO		5YR 6/4 Light Reddish Brown		None	Baked clay

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
112.2	Surface		Ceramic		1		14.88	YES		10YR 4/2 Dark Grayish Brown	10YR 5/2 Grayish Brown	Sand, Low Mica, Very Coarse	Small amount possible? Burnt
112.3	Surface		Lithic	Manuport	1	Granitic	198.6	NO					
112.4	Surface		Lithic	Manuport	1	Granitic	9.4	NO					
113	Surface		Ceramic		1		4.8	YES	Margin Rounded	10YR 6/2 Light Brownish gray	10YR 6/2 Light Brownish Gray	Sand, Low Mica, Very Coarse	
114	Surface		Ceramic		1		0.75	NO		5YR 6/4 Light Reddish Brown	7.5YR 5/6 Strong Brown	Sand, Low Mica, Medium	2 pieces fit together
114.1	Surface		Lithic	Manuport	1	Quartz	14.85	NO					
677	Trench 4	4-1/2" dp	Lithic	Metate Fragment?	1	Granitic	422.7	NO					
678	Trench 6		Lithic	Manuport	1	Granitic	44.14	NO					
679	Trench 8		Lithic	Manuport	1	Granitic	202.8	NO					
680	Trench 8		Lithic	Manuport	1	Granitic	1.66	NO					
681	Trench 8		Ceramic		1		3.37	YES		5YR 3/1 Very Dark gray	5YR 2.5/1 Black	Sand, Moderate Mica, Coarse	
682	Unit 1	0-10cm	Shell	cf. Anodonta dejecta	1	Shell	0.03	NO					
683	Unit 1	0-10cm	Sample		1	Soil	0	NO					
684	Unit 1	10-20cm	Sample		1	Soil	0	NO					
685	Unit 1	20-30cm	Sample		1	Soil	0	NO					
686	Unit 1	30-40cm	Lithic	FCR	1	Granitic	140.95	NO					
687	Unit 1	30-40cm	Sample		1	Soil	0	NO					
688	Unit 1	40-50cm	Sample		1	Soil	0	NO					
689	Unit 1	50-60cm	Sample	Silty Soil	1	Soil	0	NO					
690	Unit 2	0-10cm	Ceramic		1		2.84	YES		10YR 4/2 Dark Grayish Brown	10YR 4/1 Dark Gray	Sand, Low Mica, Coarse	Finishing striations, Interior

ID No	Prov	Depth	Class	Description	CT	Material	Wt.	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
691	Unit 2	0-10cm	Sam		1		3.67	NO		10YR 4/2 Dark Grayish Brown	10YR 4/1 Dark Gray	Sand, Low Mica, Medium - Coarse	Finishing triations Interior
692	Unit 2	0-10cm	Sample		1	Soil	0	NO					
693	Unit 2	10-20cm	Sample		1	Soil	0	NO					
694	Unit 2	20-30cm	Sample		1	Soil	0	NO					
695	Unit 2	30-40cm	Sample		1	Soil	0	NO					
696	Unit 2	40-50cm	Bone	Small rodent fragments	1		0.09	NO					
697	Unit 2	50-60cm	Sample		1		0	NO					
698	Unit 5	0-10cm	Sample		1	Sandy Soil	0	NO					
699	Unit 5	0-10cm	Sample		1	Charcoal	0	NO					
700	Unit 5	0-10cm	Ceramic		1		5	YES		10YR 7/4 Very Pale Brown	10YR 7/3 Very Pale Brown	Sand, Low Mica, Medium - Coarse	
701	Unit 5	0-10cm	Ceramic		1		3.82	NO		10YR 6/3 Pale Brown	10YR 7/3 Very Pale Brown	Sand, High Mica, Medium	Finishing striations, exterior
702	Unit 5	0-10cm	Ceramic		1		2.4	NO		10YR 7/3 - 7/4 Very Pale Brown	10YR 7/2 Light gray	Sand, Moderate Mica, Medium - Coarse	Exterior beginning to deteriorate
703	Unit 5	10-20cm	Ceramic		1		0.05	NO		7.5YR 6/4 Light Brown		None	Baked clay
704	Unit 5	10-20cm	Ceramic		1		0.16	NO		10YR 7/3 Very Pale Brown	10YR 7/4 Very Pale Brown	Sand, Low Mica, Medium	
705	Unit 5	10-20cm	Sample		1	Charcoal	0	NO					
706	Unit 5	10-20cm	Sample		1	Sandy Soil	0	NO					
707	Unit 5	20-30cm	Sample		1	Sandy Soil	0	NO					
708	Unit 5	30-40cm	Sample		1	Sandy Soil	0	NO					
709	Unit 5	40-50cm	Sample		1	Sandy Soil	0	NO					
710	Unit 5	50-60cm	Sample		1	Sandy	0	NO					

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
711	Unit 6	0-10cm	Lithic	Manuport	1	Quartz	4.37	NO					
712	Unit 6	0-10cm	Sample		1	Sand	0	NO					
713	Unit 6	0-10cm	Ceramic		1		8.1	YES		10YR 7/3 Very Pale Brown	10YR 7/2 Light Gray	Sand, Low Mica, Coarse	
714	Unit 6	10-20cm	Bone	Snake vertebrae	1		0.45	NO					
715	Unit 6	10-20cm	Sample		1	Sand	0	NO					
716	Unit 6	20-30cm	Sample		1	Sand	0	NO					
717	Unit 6	30-40cm	Sample		1	Sand	0	NO					
718	Unit 6	30-40cm	Lithic		1	Basalt	0.15	NO					
719	Unit 6	30-40cm	Ceramic		1		2.08	NO		7.5YR 7/6 Reddish Yellow		None	Baked clay
720	Unit 6	40-50cm	Sample		1	Sand	0	NO					
721	Unit 6	50-60cm	Sample		1	Sand	0	NO					
722	Unit 7	0-10cm	Sample		1	Sand	0	NO					
723	Unit 7	10-20cm	Sample		1	Sand	0	NO					
724	Unit 7	10-20cm	Sample		1	Charcoal	0	NO					
725	Unit 7	20-30cm	Sample		1	Sand	0	NO					
726	Unit 7	30-40cm	Sample		1	Sand	0	NO					
727	Unit 7	40-50cm	Sample		1	Sand	0	NO					
728	Unit 7	50-60cm	Sample		1	Sand	0	NO					
729	Unit 8	0-20cm	Lithic		1	Basalt (fine grain)	0.63	NO					
730	Unit 8	0-20cm	Sample		1	Sand	0	NO					

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
731	Unit 8	20-30cm	Sample		1	Sand	0	NO					
732	Unit 8	30-40cm	Sample		1	Sand	0	NO					
733	Unit 8	40-50cm	Sample		1	Sand	0	NO					
734	Unit 8	50-60cm	Sample		1	Sand	0	NO					

ID No	Prov	Class	CT	Wt	Curved	Color, Int	Color, Ext	Temper	Comment
735	Surface	Ceramic	1	5.3	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, High Mica, Coarse	
736	Surface	Ceramic	1	4.39	YES	7.5YR 6/4 Light Brown	No Surface Present	Sand, High Mica, Coarse	
737	Surface	Ceramic	1	3.01	YES	7.5YR 6/4 Light Brown	5YR 6/3 Light Reddish Brown	Sand, High Mica, Coarse	Small piece of exterior presents showing spalling nature of ceramic
738	Surface	Ceramic	1	2.57	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Coarse	
739	Surface	Ceramic	1	3.19	NO	7.5YR 6/4 Light Brown	No Surface Present	Sand, Moderate Mica, Coarse	
740	Surface	Ceramic	1	0.85	YES	No Surface	7.5YR 6/6 Reddish Yellow	Sand, Low Mica, Coarse	
741	Surface	Ceramic	1	2.95	YES	7.5YR 6/4 Light Brown	10YR 6/3 Pale Brown	Sand, Low Mica, Coarse	
742	Surface	Ceramic	1	3.37	YES	5YR 6/6-7/6 Reddish Yellow	No Surface	Sand, Low Mica, Coarse	White fiberous residue on interior
743	Surface	Ceramic	1	1.31	YES	5YR 6/4-6/6 Light Reddish Brown	No Surface	Sand, Low Mica, Coarse	
744	Surface	Ceramic	1	1.59	YES	No Surface	5YR 5/3 Reddish Brown	Sand, Moderate Mica, Coarse	
745	Surface	Ceramic	1	1.23	YES	No Surface	5YR 7/4, 7/6 Pink - Reddish Yellow	Sand, Moderate Mica, Coarse	Scrape marks on finish
746	Surface	Ceramic	1	1.32	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Coarse	
747	Surface	Ceramic	1	0.96	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Coarse	
748	Surface	Ceramic	1	1.16	YES	5YR 5/6 Yellowish Red	No Surface	Sand, Moderate Mica, Coarse	
749	Surface	Ceramic	1	0.93	YES	7.5YR 6/4 Light Brown	No Surface Present	Sand, Moderate Mica, Very Coarse	
750	Surface	Ceramic	1	0.4	NO	10YR 6/3 Pale Brown	No Surface	Sand, Low Mica, Coarse	
751	Surface	Ceramic	1	0.54	NO	5YR 6/4 Light Reddish Brown	5YR 6/4 Light Reddish Brown	Sand, Moderate Mica, Coarse	90% temper, 10% surface. Not sure which surface
752	Surface	Ceramic	1	0.4	YES	5YR 6/4 Light reddish Brown	No Surface	Sand, Moderate Mica, Coarse	
753	Surface	Ceramic	1	0.47	NO	No Surface	No Surface	Sand, High Mica, Coarse	
754	Surface	Ceramic	1	0.48	YES	No Surface	10YR 6/2, 5/2 Grayish Brown, Light Brownish Gray	Sand, High Mica, Coarse	
755	Surface	Ceramic	1	0.38	YES	No Surface	10YR 6/3 Pale Brown	Sand, High Mica, Coarse	
756	Surface	Ceramic	1	0.43	YES	No Surface	10YR 6/3 Pale Brown	Sand, Moderate Mica, Coarse	
757	Surface	Ceramic	1	0.24	YES	5YR 5/2 Reddish Gray	No Surface	Sand, Low Mica, Coarse	
758	Surface	Ceramic	1	0.68	YES	5YR 5/6 Yellowish Red	No Surface	Sand, High Mica, Very Coarse	
759	Surface	Ceramic	1	0.27	YES	No Surface	10YR 6/3 Pale Brown	Sand, High Mica, Very Coarse	
760	Surface	Ceramic	1	0.34	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Coarse	
761	Surface	Ceramic	1	0.17	YES	5YR 6/4-6/6 Light Reddish Brown.	No Surface	Sand, Low Mica, Coarse	
762	Surface	Ceramic	1	0.28	NO	No Surface	No Surface	Sand, Low Mica, Coarse	
763	Surface	Ceramic	1	0.58	NO	No Surface	7.5YR 5/6 Strong Brown	Sand, Moderate Mica, Coarse	
764	Surface	Ceramic	1	0.35	NO	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
765	Surface	Ceramic	1	0.21	NO	No Surface	5YR 6/4 Light Reddish Brown	Sand, Low Mica, Medium - Coarse	
766	Surface	Ceramic	1	0.19	NO	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
767	Surface	Ceramic	1	0.18	NO	7.5YR 7/4 Pink	No Surface	Sand, Low Mica, Coarse	
768	Surface	Ceramic	1	0.06	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Coarse	
769	Surface	Ceramic	1	0.08	NO	5YR 6/4 Light Reddish brown	No Surface	Sand, Moderate Mica, Coarse	
770	Surface	Ceramic	1	0.08	NO	5YR 5/6 Yellowish Red	No Surface	Sand, Low Mica, Coarse	
771	Surface	Ceramic	1	1.65	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
772	Surface	Ceramic	1	0.77	YES	No Surface	7.5YR 5/4 Brown	Sand, High Mica, Coarse	
773	Surface	Ceramic	1	0.38	YES	1-YR 5/3 Brown	No Surface	Sand, Low Mica, Medium	
774	Surface	Ceramic	1	0.28	YES	7.5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Coarse	

ID No	Prov	Class	CT	Wt	Curved	Color, Int	Color, Ext	Temper	Comment
775	Surface	Ceramic	1	3.05	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Moderate Mica, Coarse	White fibrous residue on finish
776	Surface	Ceramic	1	1.42	YES	7.5YR 6/4 Light Brown	No Surface	Sand, Moderate Mica, Coarse	
777	Surface	Ceramic	1	0.78	YES	7.5YR 6/4 Light Brown	No Surface	Sand, Moderate Mica, Coarse	
778	Surface	Ceramic	1	0.55	YES	7.5YR 6/4 Light Brown	No Surface	Sand, High Mica, Coarse	
779	Surface	Ceramic	1	0.38	YES	10YR 6/3 Pale Brown	No Surface	Sand, High Mica, Coarse	
780	Surface	Ceramic	1	1.09	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, High Mica, Coarse	
781	Surface	Ceramic	1	0.19	YES	2.5YR 6/6 Light Red	No Surface	Sand, Low Mica, Coarse	
782	Surface	Ceramic	1	0.21	YES	5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Medium	
783	Posthole A	Ceramic	1	2.72	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Coarse	
784	Posthole A	Ceramic	1	3.06	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Moderate Mica, Coarse	Shoulder fragment
785	Posthole A	Ceramic	1	1.37	YES	No Surface	7.5YR 6/4 Light Brown	Sand, High Mica, Medium - Coarse	
786	Posthole A	Ceramic	1	1.36	NO	7.5YR 6/4 Light Brown	No Surface	Sand, High Mica, Coarse	
787	Posthole A	Ceramic	1	0.72	NO	7.5YR 6/4 Light Brown	No Surface	Sand, Low Mica, Coarse	
788	Posthole A	Ceramic	1	1.15	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	Scrape marks on finish
789	Posthole A	Ceramic	1	0.34	YES	No Surface	10YR 5/1 gray	Sand, Low Mica, Medium	
790	Posthole A	Ceramic	1	0.27	YES	No Surface	5YR 6/4 Light Reddish Brown	Sand, Low Mica, Medium	
791	Posthole A	Ceramic	1	0.48	YES	5YR 6/6 Reddisn Yellow	No Surface	Sand, High Mica, Coarse	
792	Posthole A	Ceramic	1	0.41	NO	No Surface	7.5YR 6/6 Reddish Yellow	Sand, Low Mica, Medium	Scrape marks on finish
793	Posthole A	Ceramic	1	0.22	NO	No Surface	No Surface	Sand, Low Mica, Medium	
794	Posthole A	Ceramic	1	0.13	NO	No Surface	No Surface	Sand, Low Mica, Medium	
795	Posthole A	Ceramic	1	0.14	NO	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
796	Posthole A	Ceramic	1	0.16	NO	5YR 5/3 Reddish Brown	No Surface	Sand, Low Mica, Medium	
797	Posthole A	Ceramic	1	0.06	NO	No Surface	No Surface	Sand, Low Mica, Medium	
798	Posthole A	Ceramic	1	0.02	NO	No Surface	No Surface	Sand, Low Mica, Medium	
799	Posthole B	Ceramic	1	2.91	YES	No Surface	7.5YR 7/6 Reddish Yellow	Sand, Moderate Mica, Coarse	Shoulder scrape marks on finish
800	Posthole B	Ceramic	1	2.02	YES	10YR 6/3 Pale Brown	No Surface	Sand, Moderate Mica, Coarse	
801	Posthole B	Ceramic	1	2.17	YES	No Surface	7.5YR 6/6 Reddish Yellow	Sand, Moderate Mica, Coarse	
802	Posthole B	Ceramic	1	2.21	YES	No Surface	10YR 6/3 Pale Brown	Sand, High Mica, Medium	
803	Posthole B	Ceramic	1	1.65	YES	No Surface	7.5YR 6/6 Reddish Yellow	Sand, Moderate Mica, Coarse	
804	Posthole B	Ceramic	1	1.55	YES	No Surface	5YR 6/4 Light Reddish Brown	Sand, Moderate Mica, Coarse	
805	Posthole B	Ceramic	1	1.49	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Coarse	Blackened area on surface around inclusion
806	Posthole B	Ceramic	1	1.63	YES	No Surface	5YR 6/6 Reddish Yellow	Sand, Low Mica, Coarse	Scrape marks on finish
807	Posthole B	Ceramic	1	0.97	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Moderate Mica, Coarse	
808	Posthole B	Ceramic	1	0.77	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
809	Posthole B	Ceramic	1	1.06	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Medium	
810	Posthole B	Ceramic	1	0.78	YES	No Surface	7.5YR 6/4 Light Brown	Sand, High Mica, Coarse	
811	Posthole B	Ceramic	1	0.63	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Coaarse	
812	Posthole B	Ceramic	1	0.48	NO	No Surface	No Surface	Sand, Low Mica, Coarse	
813	Posthole B	Ceramic	1	0.69	YES	7.5YR 6/4 Light Brown	No Surface	Sand, High Mica, Medium	
814	Posthole B	Ceramic	1	0.36	NO	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Medium	
815	Posthole B	Ceramic	1	0.52	YES	No Surface	7.5YR 6/6 reddish Yellow	Sand, Low Mica, Coarse	
816	Posthole B	Ceramic	1	0.23	YES	7.5YR 6.6 Reddish Yellow	No Surface	Sand, Low Mica, Medium	

ID No	Prov	Class	CT	Wt	Curved	Color, Int	Color, Ext	Temper	Comment
817	Posthole B	Ceramic	1	0.35	YES	No Surface	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
818	Posthole B	Ceramic	1	0.29	YES	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
819	Posthole B	Ceramic	1	0.15	NO	No Surface	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
820	Posthole C	Ceramic	1	2.87	YES	10YR 6/3 Pale Brown	No Surface	Sand, High Mica, Medium	
821	Posthole C	Ceramic	1	0.79	YES	7.5YR 6/4 Light Brown	No Surface	Sand, High Mica, Coarse	
822	Posthole D	Ceramic	1	0.92	YES	No Surface	5YR 5/6 Yellowish Red	Sand, Moderate Mica, Coarse	
823	Posthole D	Ceramic	1	0.83	YES	No Surface	5YR 6/6 Reddish Yellow	Sand, High Mica, Coarse	
824	Posthole D	Ceramic	1	1.26	YES	No Surface	5YR 6/6 Reddish Yellow	Sand, Low Mica, Medium	
825	Posthole D	Ceramic	1	0.89	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Moderate Mica, Medium	
826	Posthole D	Ceramic	1	0.73	YES	7.5YR 6/6 Reddish Yellow	No Surface	Sand, High Mica, Medium	
827	Posthole D	Ceramic	1	0.84	YES	No Surface	10YR 5/2 Gravish Brown	Sand, Moderate Mica, Coarse	
828	Posthole D	Ceramic	1	0.69	YES	No Surface	5YR 6/6 Reddish Yellow	Sand, Low Mica, Medium	Scrape marks on exterior
829	Posthole D	Ceramic	1	0.4	YES	No Surface	5YR 6/6 Reddish Yellow	Sand, Low Mica, Coarse	
830	Posthole D	Ceramic	1	0.36	YES	No Surface	7.5YR 6/6 Reddish Yellow	Sand, Low Mica, Coarse	
831	Posthole D	Ceramic	1	0.52	YES	No Surface	10YR 5/2 Gravish Brown	Sand, Low Mica, Medium	
832	Posthole D	Ceramic	1	0.28	YES	7.5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Medium	
833	Posthole D	Ceramic	1	0.18	NO	5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Coarse	
834	Posthole D	Ceramic	1	0.34	NO	7.5YR 6/4 Light Brown	No Surface	Sand, Low Mica, Medium	
835	Posthole D	Ceramic	1	0.36	YES	7.5YR 6/4 Light Brown	No Surface	Sand, Low Mica, Medium	
836	Posthole D	Ceramic	1	0.22	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Medium	
837	Posthole D	Ceramic	1	0.22	NO	5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Coarse	
838	Posthole D	Ceramic	1	0.12	YES	10YR 6/2 Light Brownish Grav	No Surface	Sand, Moderate Mica, Coarse	
839	Posthole D	Ceramic	1	0.12	YES	5YR 6/6 Reddish Yellow	No Surface	Sand, Low Mica, Coarse	
840	Posthole D	Ceramic	1	0.15	YES	5YR 6/4 Light Reddish Brown	No Surface	Sand, Low Mica, Medium	

ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
1.1	Surface		Ceramic		1		2.31	NO		7.5YR 5/2 Brown	7.5YR 6/2 Pinkish Gray	Sand, Moderate Mica, Medium	Well rounded liquid like
1.2	Surface		Ceramic		1		0.98	NO		7.5YR 6/2 Pinkish Gray	7.5YR 6/4 Light Brown	Sand, Low Mica, Very Coarse	
1.3	Surface		Ceramic		1		0.55	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Moderate Mica, Medium	Well rounded liquid like
1.4	Surface		Ceramic		1		1.41	NO		7.5YR 6/2 Pinkish Gray	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	
2.1	Surface		Lithic	Manuport	1	Granitic	80.44	NO					
2.2	Surface		Lithic	Manuport	1	Granitic	112.06	NO					
3.1	Surface		Ceramic		1		0.79	NO		7.5YR 5/2 Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	
3.2	Surface		Ceramic		1		1.45	NO	Slightly Rounded	7.5YR 4/2 Brown, Dark Brown	7.5YR 4/4 Brown, Dark Brown	Sand, High Mica, Medium - Coarse	
3.3	Surface		Ceramic		1		1.02	NO		7.5YR 5/2 Brown	7.5YR 5/4 Brown	Sand, High Mica, Medium - Coarse	
3.4	Surface		Ceramic		1		0.36	NO		7.5YR 5/2 Brown	7.5YR 5/4 Brown	Sand, Low Mica, Medium	
4.1	Surface		Ceramic		1		0.65	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, High Mica, Medium	
4.2	Surface		Ceramic		1		1.49	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	
5	Surface		Ceramic		1		1.96	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	
6	Surface		Ceramic		1		1.14	NO		7.5YR 4/0 Dark Gray	7.5YR 4/0 Dark Gray	Sand, Low Mica, Very Coarse	
7.1	Surface		Ceramic		1		0.61	YES		10R 5/4 Weak Red	10R 5/4 Weak Red	Sand, Moderate Mica, Very Coarse	
7.2	Surface		Ceramic		1		1.25	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	
8	Surface		Ceramic		1		2.32	NO		10R 5/4 Weak Red	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica	
9	Surface		Ceramic		1		2.94	NO		7.5YR 5/2 Brown	7.5YR 5/4 Brown	Sand, Moderate Mica, Very Coarse	
10.1	Surface		Ceramic		1		2.75	NO		7.5YR 6/2 Pinkish Gray	7.5YR 6/2 Pinkish Gray	Sand, Low Mica, Very Coarse	
10.2	Surface		Ceramic		1		1.25	NO		10R 5/4 Weak Red	7.5YR 6/4 Light Brown	Sand, High Mica, Very Coarse	
11	Surface		Ceramic		1		3.11	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 brown, Dark Brown	Sand, Low Mica, Very Coarse	Evenly fired
12	Surface		Ceramic		1		4.4	NO		7.5YR 6/2 Pinkish Gray	7.5YR 6/2 Pinkish Gray	Sand, High Mica, Very Coarse	
13	Surface		Ceramic		1		4.36	YES		7.5YR 6/2 Pinkish Gray	7.5YR 6/4 Light Brown	Sand, High Mica, Very Coarse	
14.1	Surface		Ceramic		1		0.68	NO		10R 5/4 Weak Red	10R 5/4 Weak Red	Sand, Low Mica, Very Coarse	
14.2	Surface		Ceramic		1		0.77	NO		10R 5/4 Weak Red	10R 5/4 Weak Red	Sand, Low Mica, Very Coarse	
14.3	Surface		Ceramic		1		0.21	NO		10R 5/4 Weak Red	10R 5/4 Weak Red	Sand, Low Mica, Very Coarse	
14.4	Surface		Ceramic		1		0.23	NO		10R 5/4 Weak Red	10R 5/4 Weak Red	Sand, Low Mica, Very Coarse	
14.5	Surface		Shell	cf. Anodonta	1		0	NO					
15	Surface		Ceramic		1		0.74	NO		2.5YR 5/4 Reddish Brown	2.5YR 5/4 Reddish Brown	Sand, High Mica, Very Coarse	
16	Surface		Ceramic		1		0.92	NO		7.5YR 5/4 Brown	7.5YR 5/4 Brown	Sand, Moderate Mica, Coarse	Evenly fired
17	Surface		Ceramic		1		1.05	NO		7.5YR 6/4 Light Brown	7.5YR 6/4 Light Brown	Sand, High Mica, Very Coarse	
18	Surface		Ceramic		1		4.51	YES		7.5YR 6/2 Pinkish Gray	7.5YR 6/2 Pinkish Gray	Sand, Low Mica, Very Coarse	
19	Surface		Ceramic		1		4.03	YES		10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, High Mica, Fine - Medium	
20	Surface		Ceramic		1		1.4	NO		10R 5/4 Weak Red	10YR 5/4 Weak Red	Sand/Low Mica, Very Coarse	Evenly fired
21.1	Surface		Ceramic		1		1.57	YES		7.5YR 5/2 Brown	7.5YR Pinkish Gray	Sand, Moderate Mica, Very Coarse	
21.2	Surface		Ceramic		1		1.16	NO		7.5YR 5/2 Brown	7.5YR Pinkish Gray	Sand, High Mica, Very Coarse	
21.3	Surface		Ceramic		1		0.27	NO		7.5YR 5/2 Brown	7.5YR Pinkish Gray	Sand, Moderate Mica, Very Coarse	
22	Surface		Ceramic		1		0.82	NO		10YR 5/3 Weak Red	10R 5/3 Weak Red	Sand, High Mica, Medium - Coarse	
23	Surface		Lithic	Groundstone	1	Sandstone	203.5	NO					
24	Surface		Ceramic		1		0.76	NO		7.5YR 6/4 Light Brown	7.5 YR 6/4 Light Brown	Sand, High Mica, Coarse	
25.1	Surface		Ceramic		1		5.37	YES		10R 5/3 Weak Red	7.5YR 6/4 Pinkish Gray	Sand, Low Mica, Medium - Fine	
25.2	Surface		Bone	Unidentifiable	1		0.51	NO					
26	Surface		Ceramic		1		5.17	YES	Slightly Rounded	10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, Moderate Mica, V ery Coarse	
27	Surface		Ceramic		1		0.95	NO		10YR 5/1 Gray	10YR 5/1 Gray	Sand, Low Mica, Very Coarse	
28	Surface		Lithic	Chopper	1	Quartzite	249.3	NO					

ID No.	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
29	Surface		Ceramic		1		4.56	NO		10YR 4/2	10YR 4/2 Dark Gravish Brown	Sand, Low Mica, Very Coarse	
30	Surface		Ceramic		1		0.64	NO		10YR 5/3 Brown	10YR 3/3 Dark Brown	Sand, Low Mica, Coarse	Well rounded liquid like
31	Surface		Ceramic		1		0.69	NO		2.5YR 5/4 Reddish Brown	10YR 3/2 Very Dark, Gravish	Sand, Low Mica, Very Coarse	
32.1	Surface		Ceramic		1		1.13	NO		10YR 6/2 Light Brownish Grav	10YR 6/2 Light Brownish Grav	Sand, Low Mica, Very Coarse	
32.2	Surface		Ceramic		1		1.18	NO		2.5YR 5/4 Reddish Brown	10YR 4/1 Dark Grav	Sand, Low Mica, Very Coarse	Well rounded liquid like
33	Surface		Ceramic		1		0.6	NO		7.5YR 5/4 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	
34	Surface		Ceramic		1		0.87	NO		7.5YR 5/4 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	Well rounded liquid like
35.1	Surface		Ceramic		1		4.76	NO		5YR 5/3 Reddish Brown	2.5YR 4/4 Reddish Brown	Sand, Low Mica, Very Coarse	Well rounded liquid like
35.2	Surface		Ceramic		1		0.69	NO		5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	Sand, Low Mica, Very Coarse	Well rounded liquid like
35.3	Surface		Ceramic		1		0.73	NO	Slight/Flattened	5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	Sand, Low Mica, Very Coarse	
36.1	Surface		Ceramic		1		1.26	NO		10YR 5/3 Brown	10YR 4/1 Dark Grav	Sand, Low Mica, Very Coarse	
36.2	Surface		Ceramic		1		1.86	NO		2.5YR 5/2 Weak Red	2.5YR 4/2 Weak Red	Sand, Low Mica, Very Coarse	Rounded
37	Surface		Ceramic		1		0.76	NO	Slightly Rounded	2.5YR 5/4 Reddish Brown	2.5YR 4/2 Weak Red	Sand, Low Mica, Coarse	
38	Surface		Ceramic		1		0.42	NO		7.5YR 5/2 Brown	7.5YR 6/2 Pinkish Grav	Sand, Low Mica, Very Coarse	Rounded
39	Surface		Ceramic		1		2.08	NO		7.5YR 6/2 Pinkish Brown	7.5YR 5/2 Brown	Sand, Low Mica, Very Coarse	Rounded
40.1	Surface		Ceramic		1		0.35	NO		7.5YR 5/2 Brown	7.5YR 6/4 Light Brown	Sand, Low Mica, Coarse	
40.2	Surface		Ceramic		1		1.17	NO		10R 6/4 Pale Red	10R 6/3 Pale Red	Unknown, Moderate Mica	Different matrix no quartz
41	Surface		Ceramic		1		0.39	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Low Mica, Medium - Coarse	
42	Surface		Ceramic		1		0.98	NO		7.5YR 6/4 Light Brown	10YR 5/1 Grav	Sand, Moderate Mica, Medioum	Well rounded liquid like
43	Surface		Ceramic		1		2.29	YES		2.5YR 6/4 Light Reddish Brown	2.5YR 6/4 Light Reddish Brown	Sand, High Mica, Coarse - Very	
44	Surface		Ceramic		1		1.42	NO		7.5YR 5/2 brown	7.5YR 5/2 Brown	Sand, High Mica, Coarse	
45	Surface		Shell	cf. Anodonta	1		0.06	NO					
46.1	Surface		Ceramic		1		2.52	NO		10YR 5/4 Weak Red	10R 4/1 Dark Reddish Grav	Sand, Moderate Mica, Caorse	
46.2	Surface		Ceramic		1		0.41	NO		5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	Sand, High Mica, Coarse	
47.1	Surface		Ceramic		1		0.43	NO		5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	None	Baked clay
48.1	Surface		Ceramic		1		1.13	NO		5YR 6/3 Light Reddisn Brown	5YR 5/2 Reddish Grav	Sand, Low Mica, Coarse	
48.2	Surface		Ceramic		1		0.87	NO		5YR 6/3 Light Reddish Brown	5YR 5/2 Reddish Grav	Sand, Moderate Mica, Coarse	
48.3	Surface		Ceramic		1		0.77	NO		10R 5/4 Weak Red	2.5YR 6/6 Light Red	Sand, Low Mica, Medium	Well rounded liquid like
48.4	Surface		Lithic	Manuport	1	Granitic	45.34	NO					
49	Surface		Ceramic		1		0.45	NO		7.5YR 6/2 Pinkish Grav	7.5YR 6/2 Pinkish Grav	Sand, Low Mica, Coarse	
50	Surface		Ceramic		1		0.95	NO		7.5YR 5/4 Brown	7.5YR 6/2 Pinkish Grav	Sand, High Mica, Medium	
51	Surface		Ceramic		1		5.01	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, High Mica, Very Coarse	
52	Surface		Ceramic		1		1.41	NO		7.5YR 6/2 Pinkish Grav	7.5YR 6/2 Pinkish Grav	Sand, Low Mica, Very Coarse	
53.1	Surface		Ceramic		1		1.11	NO		7.5YR 5/4 Brown	7.5YR 5/4 brown	Sand, Low Mica, Very Coarse	
54	Surface		Ceramic		1		1.18	NO		10R 5/4 Weak Red	10R 4/4 Weak Red	Sand, Low Mica, Very Coarse	
55	Surface		Ceramic		1		12.81	NO		10YR 6/4 Light Yellowisn Brown	10YR 6/4 Light Yellowish brown	None	Baked clay
56	Surface		Lithic	Flake	1	Granitic	14.72	NO					
57	Surface		Ceramic		1		4.01	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Moderate Mica, Coarse	Well rounded liquid like
58	Surface		Ceramic		1		3.32	NO		7.5YR 5/2 Brown	7.5YR 5/2 Brown	Sand, Moderate Mica, Coarse	
59.1	Surface		Ceramic		1		0.69	NO		No Interior surface present	5YR 5/3 Reddish Brown	Sand, Moderate Mica, Coarse	(labeled groundstone)
59.2	Surface		Lithic	Fragment	1		0.69	NO					
60	Surface		Ceramic		1		1.96	NO		10YR 5/3 Brown	10YR 5/3 brown	Sand, High Mica, Coarse	
61.1	Surface		Ceramic		1		3.69	YES		10YR 4/2 Dark Gravish Brown	10YR 4/3 Brown, dark Brown	Sand, High Mica, Coarse	Possible finger indent.
61.2	Surface		Ceramic		1		1.5	NO		10YR 7/2 Light grav	10YR 7/2 Light Grav	Sand, Low Mica, Coarse	
61.3	Surface		Ceramic		1		0.7	YES		10YR 7/2 Light grav	10YR 7/2 Light Grav	Sand, Low Mica, Coarse	

ID No.	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
61.4	Surface		Ceramic		1		0.56	NO		10YR 5/2 Grayish Brown	10YR 5/2 Grayish Brown	Sand, Moderate Mica, Coarse	
62.1	Surface		Ceramic		1		2.2	NO		10R 5/4 Weak Red	7.5YR 5/2 Brown	Sand, Low Mica, Medium	High density quartz
62.2	Surface		Ceramic		1		0.6	NO		7.5YR 6/2 Pinkish Gray	7.5YR 6/2 Pinkish Gray	Sand, High Mica, Coarse	Ceramic No finished
63	Surface		Lithic		1	Quartz	0.59	NO					
64	Surface		Ceramic		1		6.03	YES	Moderate, Flattened, High	10YR 6/3 Pale Brown	10YR 6/3 Paleo Brown	Low, Mica, Unknown Fine - Medium	
65	Surface		Ceramic		1		4.18	YES		10YR 5/2 Grayish Brown	10YR 5/2	Sand, Low Mica, Very Coarse	
66	Surface		Ceramic		1		7.76	YES		10YR 6/2 Light Brownish Gray	7.5YR 6/4 Light Brown	Sand, Moderate, Coarse	Interior indentations
67.1	Surface		Ceramic		1		13.97	YES		10YR 5/2 Grayish Brown	10YR 5/2 Grayish Brown	Sand, Moderate Mica, Medium	Well rounded liquid like
67.2	Surface		Ceramic		1		3.61	YES		10YR 5/3 Brown	10YR 5/3 Brown	Sand, High Mica, Very Coarse	
67.3	Surface		Ceramic		1		5.51	YES		10YR 5/3 Brown	10YR 5/3 Brown	Sand, Moderate, Mica, Medium	Well rounded liquid like
67.4	Surface		Ceramic		1		2.07	NO		10YR 4/3 Brown, dark Brown	10YR 4/3 Brown, dark Brown	Sand, Low Mica, Coarse	
67.5	Surface		Lithic	Manuport	1	Schist	16.36	NO					
68	Surface		Ceramic		1		3.75	NO		10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, Low Mica, Medium	
69	Surface		Ceramic		1		0.51	NO		10R 5/6 Red	10YR 5/3 Brown	Sand, Low Mica, Medium	
70.1	Surface		Ceramic		1		1.07	NO		10YR 7/3 Very Pale Brown	5YR 6/4 Light Reddish Brown	Sand, Moderate Mica, Medium	
70.2	Surface		Ceramic		1		1.12	NO		5YR 6/4 Light Reddish Brown	5YR 6/4 Light Reddish Brown	Sand, Low Mica, Medium	
70.3	Surface		Ceramic		1		1.16	YES		5YR 6/4 Light Reddish Brown	5YR 6/4 Light Reddish Brown	Sand, Low Mica, Medium	Well rounded liquid like
70.4	Surface		Ceramic		1		1.02	NO		5YR 5/4 Reddish Brown	5YR 5/4 Reddish Brown	Sand, Low Mica, Medium	Well rounded liquid like
70.5	Surface		Lithic	Manuport	1	Granitic	18.87	NO					
71.1	Surface		Ceramic		1		3.8	YES		5YR 6/4 Light Reddish Brown	10YR 6/3 Pale Brown	Sand, High Mica, Medium	
71.2	Surface		Ceramic		1		0.65	NO		5YR 7/6 Reddish Yellow	5YR 7/6 Reddish Yellow	Sand, Moderate Mica, Fine - Medium	
72	Surface		Ceramic		1		0.89	NO		7.5YR 6/2 Pinkish Gray	7.5YR 6/2 Pinkish Gray	Sand, High Mica, Medium	Well rounded liquid like
73	Surface		Ceramic		1		0.88	NO		7.5YR 4/0 Dark Gray	7.5YR 4/0 Dark Gray	Sand, Low Mica, Coarse	
74	Surface		Ceramic		1		0.49	NO			7.5YR 6/4 Light Brown		Baked clay
75	Surface		Ceramic		1		0	NO					Discarded
76	Surface		Ceramic		1		2.14	YES		10YR 6/2 Light Gray, Gray	10YR 6/2 Light gray, Gray	Sand, High Mica, Coarse	
77.1	Surface		Ceramic		1		3.55	NO		10YR 6/2 Light Gray, Gray	10YR 6/2 Light Gray, Gray	Sand, Moderate Mica, Coarse	
77.2	Surface		Ceramic		1		0.38	NO		7.5YR 6/2 Pinkish Gray	2.5YR 5/4 Reddish Brown	Sand, Moderate Mica, Coarse	
78.1	Surface		Ceramic		1		4.74	YES		2.5YR 6/4 Light Reddish Brown	2.5YR 5/4 Reddish Brown	Sand, Low Mica, Very Coarse	
78.2	Surface		Ceramic		1		3.36	NO		2.5YR 5/4 Reddish Brown	2.5YR 5/4 Reddish Brown	Sand, High Mica, Very Coarse	
79.1	Surface		Ceramic		1		0.79	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.2	Surface		Ceramic		1		0.8	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.3	Surface		Ceramic		1		1.4	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.4	Surface		Ceramic		1		0.17	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.5	Surface		Ceramic		1		0.44	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.6	Surface		Ceramic		1		0.45	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.7	Surface		Ceramic		1		0.39	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.8	Surface		Ceramic		1		0.15	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
79.9	Surface		Ceramic		1		0.19	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	None	Baked clay
80	Surface		Ceramic		1		1.03	NO		5YR 6/3 Reddish Brown	5YR 5/3 Reddish Brown	None	Baked clay
81	Surface		Ceramic		1		1.79	NO		10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, Low Mica, Very Coarse	
82	Surface		Ceramic		1		3.44	YES	Slight, Flattened,	10YR 7/3 Very Pale Brown	10YR 7/3 Very Pale Brown	Sand, Moderate Mica, Very Coarse	
83	Surface		Ceramic		1		3.36	YES					
84.1	Surface		Ceramic		1		0.77	NO		10R 6/6 Light Red		None	Baked clay

ID No.	Prov.	Depth	Class	Description	CT	Material	Wt.	Curved	Rim Type	Color, Int.	Color, Ext.	Temper	Comment
84.2	Surface		Ceramic		1		1.81	NO		10R 6/6 Light Red		None	Baked clay
85.1	Surface		Ceramic		1		6.31	YES		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	Sand, Moderate Mica, Coarse	Interior Impressions
85.2	Surface		Ceramic		1		3.4	NO		10YR 6/4 Light Yellowish Brown	10YR 6/4 Light Yellowish Brown	Sand, High Mica, Coarse	
85.3	Surface		Ceramic		1		0.62	NO		10YR 5/2 Grayish Brown	10YR 5/2 Grayish brown	Sand, Low Mica, Medium	Possible shell in temper
85.4	Surface		Ceramic		1		0.34	NO		2.5YR 6/4 Light Reddish Brown		None	Baked clay
86	Surface		Ceramic		1		0.69	NO		10YR 6/2 Light Brownish Gray	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Coarse	
87	Surface		Ceramic		1		1.25	NO		10YR 6/2 Light Brownish Gray	10YR 6/2 brownish Gray	Sand, Low Mica, Very Coarse	
88	Surface		Lithic	Manuport	1	Granitic	32.21	NO					
89	Surface		Lithic	Manuport	1	Quartz	14.21	NO					
90	Surface		Ceramic		1		0.5	NO		2.5YR 4/4 Reddish brown	2.5YR 4/2 Weak Red	Sand, Low Mica, Coarse	
91.1	Surface		Ceramic		1		0	NO		10YR 6/2 Light Brownish Gray	10YR 4/1 Dark Gray	Sand, Moderate Mica, Medium	
91.2	Surface		Ceramic		1		1.04	NO		10YR 5/3 Brown	10YR 5/1 Gray	Sand, Moderate Mica, Moderate	
92	Surface		Ceramic		1		2.58	YES		7.5YR 6/2 Pinkish Gray	7.5YR 6/4 Light Brown	Sand, Low Mica, Fine - Medium	
93.1	Surface		Ceramic		1		2.92	NO		10YR 7/2 Light Gray	5 YR 5/4 Reddish Brown	Sand, Moderate Mica, Fine	
93.2	Surface		Ceramic		1		14.42	YES		10YR 7/3 Very Pale Brown	10YR 7/3 Very Pale Brown	Sand, Low Mica, Fine	
94	Surface		Ceramic		1		1.44	NO		7.5YR 6/4 Light Brown	10YR 4\5/2 Grayish Brown	Sand, Low Mica, Coarse	
95.1	Surface		Bone	Large	1		0	NO					
95.2	Surface		Ceramic		1		1.17	YES		10YR 6/3 Pale Brown	10YR 4/1 Dark Gray	Sand, Low Mica, Coarse	
95.3	Surface		Ceramic		1		1.29	NO		2.5YR 6/8 Light Reddish Brown		None	Baked clay
95.4	Surface		Ceramic		1		1.13	NO		5YR 6/4 Light reddish Brown	5YR 6/4 Light Reddish Brown	Sand, Moderate Mica, Fine	
95.5	Surface		Ceramic		1		0.3	NO		10YR 6/3 Pale Brown		None	Baked clay
600	Trench 1		Ceramic		1		4.93	NO		5YR 6/3 Light Reddish Brown	10YR 5/3 Brown	Sand, Low Mica, Very Coarse	Collected 4' east of Trench
601	Trench 1		Ceramic		1		0.91	NO		5YR 6/4 Light Reddish Brown	5YR 5/6 Yellowish Red	Sand, Low Mica, Fine	West end of Trench
602	Trench 1		Lithic		1	Chert	1.41	NO					Trench 1, 2' West of East end, 1' below 1970 era coors can
603	Trench 1	4-5' deep	Bone	Unidentifiable	1		0.72	NO					Trench 1, near center
604	Surface		Lithic	discard?	1	Quartz	0.8	NO					Surface, 5 meters north/n.w. of Trench 3
605	Unit 3, 0-10		Ceramic		1		16.14	YES		7.5YR 5/4 Light Brown	7.5YR 6/4 Light Brown	Sand, Moderate Mica, Coarse - Very Coarse	
606	Unit 3	0-10cm	Sample		1	Soil	0	NO					
607	Unit 3	10-20cm	Bone	Unidentifiable	1		0	NO					
608	Unit 3	10-20cm	Sample		1	Charcoal	0.08	NO					
609	Unit 3	10-20cm	Ceramic		1		0	NO					
610	Unit 3	20-30cm	Sample		1	Soil	0	NO					
611	Unit 3	30-40cm	Sample		1	Soil	0	NO					
612	Unit 3	40-50cm	Sample		1	Soil	0	NO					
613	Unit 3	50-60cm	Sample		1	Soil	0	NO					
614	Unit 4	0-10cm	Ceramic		1		0.83	NO		7.5YR 5/4 Brown	10YR 6/2 Light Brownish Gray	Sand, Moderate Mica, Medium - Coarse	
615	Unit 4	0-10cm	Ceramic		1		0.89	NO		10YR 5/4 Yellowish Brown	10YR 6/2 Light Brown Gray	Sand, High Mica, Medium - Coarse	
616	Unit 4	0-10cm	Ceramic		1		0.42	NO		10YR 6/3 Pale Brown	10YR 5/3 Brown	Sand, ModerateMica, Medium - Coarse	

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ID No	Prov	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
617	Unit 4	0-10cm	Ceramic		1		0.45	NO		2.5YR 5/4 Reddish Brown	2.5YR 5/6 Red	Sand, Low Mica, Coarse - Very Coarse	
618	Unit 4	0-10cm	Ceramic		1		0.67	NO		5YR 4/3 Reddish Brown	5YR 4/3 Reddish Brown	Sand, Moderate Mica, Coarse	
619	Unit 4	0-10cm	Ceramic		1		1.11	NO		5YR 5/2 Reddish Gray	5YR 4/3 Reddish Brown	Sand, Moderate Mica, Coarse	
620	Unit 4	0-10cm	Ceramic		1		15.52	NO		10YR 5/4 Yellowish Brown	10YR 5/4 Yellowish brown		Burnt daub or clay
621	Unit 4	0-10cm	Sample		1	Soil	0	NO					
622	Unit 4	10-20cm	Sample		1	Soil	0	NO					
623	Unit 4	20-30cm	Sample		1	Soil	0	NO					
624	Unit 4	30-40cm	Lithic		1	Quartzite	0.41	NO					
625	Unit 4	30-40cm	Sample		1	Soil	0	NO					
626	Unit 4	40-50cm	Sample		1	Soil	0	NO					
627	Unit 4	50-60cm	Sample		1	Soil	0	NO					
628	Road		Ceramic		1		1.32	NO	Flattened	5YR 3/2 Dark Reddish Brown	2.5Y 4/0 Dark Gray	Sand, Low Mica, Coarse	Road concentration
629	Road		Ceramic		1		0.67	NO	Flattened	5YR 4/2 Dark Reddish Gray	10YR 4/2 Dark Grayish Brown	Sand, Low Mica, Coarse	Road concentration
630	Road		Ceramic		1		0.94	NO	Rounded	10YR 5/3 Brown	10YR 5/3 Brown	Sand, Low Mica, Coarse	Road concentration
631	Road		Ceramic		1		0.82	NO	Flare Moderate	7.5YR 6/4 Light Brown	7.5YR 6/2 Pinkish Gray	Sand, Moderate Mica, Coarse	Road concentration
632	Road		Ceramic		1		0.79	NO	Rounded	10YR 4/2 Dark Grayish Brown	5YR 5/3 Reddish Brown	Sand, Low Mica, Coarse	Road concentration
633	Road		Ceramic		1		0.49	NO		7.5YR 6/4 Light Brown	7.5YR 4/0 Dark Gray	Sand, Low Mica, Coarse	Ground edge, circular
634	Road		Ceramic		1		0.29	NO	Flattened	5YR 5/3 Reddish Brown	5YR 5/3 Reddish Brown	Sand, Low Mica, Very Coarse	Road concentration
635	Road		Ceramic		1		0.33	NO	Flattened Slight	2.5YR 6/2 Pale Red	2.5YR 6/2 Pale Red	Sand, Low Mica, Medium	Road concentration
636	Road		Ceramic		1		0.42	NO		2.5YR 4/0 Dark Gray	2.5YR 4/0 Dark Gray	Sand, Low Mica, Medium	Road concentration
637	Road		Ceramic		1		0.22	NO		2.5YR 4/0 Dark Gray	2.5YR 4/0 Dark Gray	Sand, Low Mica, Medium	Road concentration
638	Road		Ceramic		1		0.93	NO		7.5YR 6/2 Pinkish Gray	2.5YR 5/4 Reddish Brown	Sand, Moderate Mica, Coarse	Road concentration
639	Road		Ceramic		1		0.54	NO		7.5YR 6/2 Pinkish Gray	2.5YR 5/4 Reddish Brown	Sand, Low Mica, Coarse	Road concentration
640	Road		Ceramic		1		3.39	YES		5YR 4/4 reddish Brown	7.5YR 4/2 Brown, Dark Brown	Sand, High Mica, Coarse	Road concentration
641	Road		Ceramic		1		0.87	NO		5YR 4/4 Reddish Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Very Coarse	Road concentration
642	Road		Ceramic		1		0.96	NO		5YR 4/4 Reddish Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse - Very	Road concentration
643	Road		Ceramic		1		1.09	NO		5YR 4/4 Reddish Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	Road concentration
644	Road		Ceramic		1		0.51	NO		5YR 4/4 Reddish Brown	7.5 YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	Road concentration
645	Road		Ceramic		1		1.49	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	Road concentration
646	Road		Ceramic		1		0.7	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Very Coarse	Road concentration
647	Road		Ceramic		1		0.74	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Very Coarse	Road concentration
648	Road		Ceramic		1		0.66	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Moderate Mica, Coarse	Road concentration
649	Road		Ceramic		1		0.57	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	Road concentration
650	Road		Ceramic		1		0.45	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Very Coarse	Road concentration
651	Road		Ceramic		1		1.42	NO		2.5YR 4/0 Dark Gray	7.5YR 4/2 Brown, Dark Brown	Sand, High Mica, Coarse	Road concentration
652	Road		Ceramic		1		0.62	NO		2.5YR 4/0 Dark Gray	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	Road concentration
653	Road		Ceramic		1		0.43	NO		10YR 6/2 Light Brownish Gray	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Fine - Medium	Road concentration
654	Road		Ceramic		1		0.56	NO		7.5YR 4/2 Brown, Dark Brown	7.5YR 4/2 Brown, Dark Brown	Sand, Low Mica, Coarse	Road concentration
655	Road		Ceramic		1		0.65	NO		7.5YR 6/4 Light Brown	7.5YR 6/2 Pinkish Gray	Sand, Low Mica, Coarse	Road concentration
656	Road		Ceramic		1		0.5	NO		10YR 5/1 Gray	7.5YR 6/2 Pinkish Gray	Sand, Low Mica, Coarse	Road concentration
657	Road		Ceramic		108		87.5	NO					Variety of sizes and colors - 108 fragments, 110.87 total weight of 137 total fragments in road

ID No.	Prov.	Depth	Class	Description	CT	Material	Wt	Curved	Rim Type	Color, Int	Color, Ext	Temper	Comment
657.1	Road	Surface	Lithic		1	Quartzite	0.54	NO					
658	Road	Surface	Lithic		1	Quartzite	0.45	NO					Road Concentration
659	Road	Surface	Lithic		1	Scoria	2.36	NO					Road Concentration
660	Road	Surface	Lithic		1	Scoria	0.76	NO					Road Concentration
661	Road	Surface	Lithic		1	Scoria	0.49	NO					Road Concentration
662	Road	Surface	Lithic		1	Scoria	0.41	NO					
663	Unit 9	0-10cm	Ceramic		1		25.51	YES		10YR 6/3 Pale Brown	10YR 6/3 Pale Brown	Sand, High Mica, Fine - Medium	
664	Unit 9	0-10cm	Sample	Soil becomes	1	Soil	0	NO					
665	Unit 9	10-20cm	Sample	Soil becomes	1	Soil	0	NO					
666	Unit 9	20-30cm	Sample	Soil becomes	1	Soil	0	NO					
667	Unit 9	30-40cm	Sample	Soil becomes	1	Soil	0	NO					
668	Unit 9	40-50cm	Sample	Soil becomes	1	Soil	0	NO					
669	Unit 10	0-10cm	Ceramic		1		1.3	NO		7.5YR 3/0 Very Dark Gray	10YR 6/2 Light Brownish Gray	Sand, Low Mica, Very Fine - Fine	
670	Unit 10	0-10cm	Ceramic		1		0.95	YES		5YR 6/4 Light Reddisn Brown	5YR 6/4 Light Reddish Brown	None	Baked clay
671	Unit 10	0-10cm	Sample	Soil becomes	1	Soil	0	NO					
672	Unit 10	10-20cm	Ceramic		1		0.68	NO		10YR 5/1 Gray	10YR 5/1 Gray	Sand, Moderate Mica, Fine	
673	Unit 10	10-20cm	Sample	Soil becomes	1	Soil	0	NO					
674	Unit 10	20-30cm	Sample	Soil becomes	1	Soil	0	NO					
675	Unit 10	30-40cm	Sample	Soil becomes	1	Soil	0	NO					
676	Unit 10	40-50cm	Sample	Soil becomes	1	Soil	0	NO					

11.9-62

AUTHOR:	Joan C. Brown
DATE:	April 1998
TITLE:	A Cultural Resources Reconnaissance For The Garden Of Champions Tennis Facility, Located Near Indian Wells, Riverside County, California
SUBMITTED BY:	RMW Paleo Associates, Incorporated 23392 Madero, Suite L Mission Viejo, California 92691 (714) 770-8042 FAX (714) 458-9058
SUBMITTED TO:	Robert Bein, William Frost and Associates 14725 Alton Parkway Post Office Box 57057 Irvine, California 92618-2069
CONTRACT NUMBER:	RMW Project Number 98-1204
MAP:	USGS La Quinta, California 7.5 Minute Quadrangle 1959, Photorevised 1980
ACREAGE:	Approximately 150 acres
KEYWORDS:	Indian Wells, California, Township 5 South, Ranges 6 and 7 East, San Bernardino Base and Meridian; CA-RIV-3005, CA-RIV-3008, CA-RIV-5876

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Appendix A: Personnel Qualifications

CONFIDENTIAL APPENDICES (Bound Separately)

Appendix B: Site Recording Forms

Appendix C: Bibliography of Previous Cultural Studies Within One Mile of the Project Area

MANAGEMENT SUMMARY/ABSTRACT

Purpose and scope: Robert Bein, William Frost and Associates is preparing an Environmental Impact Report (EIR) for the Garden of Champions Tennis Facility project area. The purpose of the current study is to perform a cultural resources reconnaissance of the project area, to record any sites that are found and to present those findings and recommendations in this report. The study was undertaken under the provisions of the California Environmental Quality Act (CEQA) (Sections 21081.6 and 21083.2 of the Statutes and Appendix K of the Guideline) (Governor's Office of Planning and Research 1992) and the guidelines for the California Register of Historic Resources published by the Office of Historic Preservation (1995)

Dates of investigation: Field reconnaissance for the project took place on 13, 28, and 29 March 1998. Field recording of sites took place on 17 and 18 April 1998.

Findings summary: Two prehistoric archaeological sites previously recorded within the project boundaries were relocated. A prehistoric archaeological site previously recorded on an adjacent parcel was found to extend into the current project area. Fragments of prehistoric ceramics were found scattered throughout the southern portion of the project area.

Investigation constraints: Approximately 25% of the ground surface was covered by vegetation. A majority of the artifactual material was observed in blow-outs within sand dunes. It is expected that additional cultural remains are obscured by the sand dunes that are prevalent throughout the project area.

Recommendations summary: If avoidance of the cultural deposits is not possible, it is recommended that a Phase II test excavation be undertaken to determine the presence and integrity of possible subsurface deposits.

Disposition of data: This report will be filed with the Eastern Information Center, University of California, Riverside; Robert Bein, William Frost and Associates; and RMW Paleo Associates, Inc. Field notes and records are on file at the office of RMW Paleo Associates, Inc.

CONTRACTING INFORMATION/INTRODUCTION

Undertaking: RMW Paleo Associates, Inc. was retained by Robert Bein, William Frost and Associates to provide a cultural resources assessment of the 150 acre project area currently scheduled to be developed for a tennis facility, a golf driving range, and commercial facilities. The area north of Miles Avenue will be developed as a tennis facility, including indoor and outdoor tennis courts, three stadiums, a T.V. amphitheater, and parking: The northeastern 40 acre parcel, abutting Washington Street, will consist of commercial development; The 50+ acre parcel of land south of Miles Avenue will be developed as a golf driving range and parking facilities.

The Cultural Resources study consisted of a surface reconnaissance of the project area, the preparation of supplemental site recording forms for the archaeological sites, and preparation of this report with recommendations. The study was undertaken under the provisions of the California Environmental Quality Act (CEQA) (Sections 21081.6 and 21083.2 of the Statutes and Appendix K of the Guideline) (Governor's Office of Planning and Research 1992), and the guidelines for the California Register of Historic Resources published by the Office of Historic Preservation (1995). The report follows the format for *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (California Department of Parks and Recreation 1989).

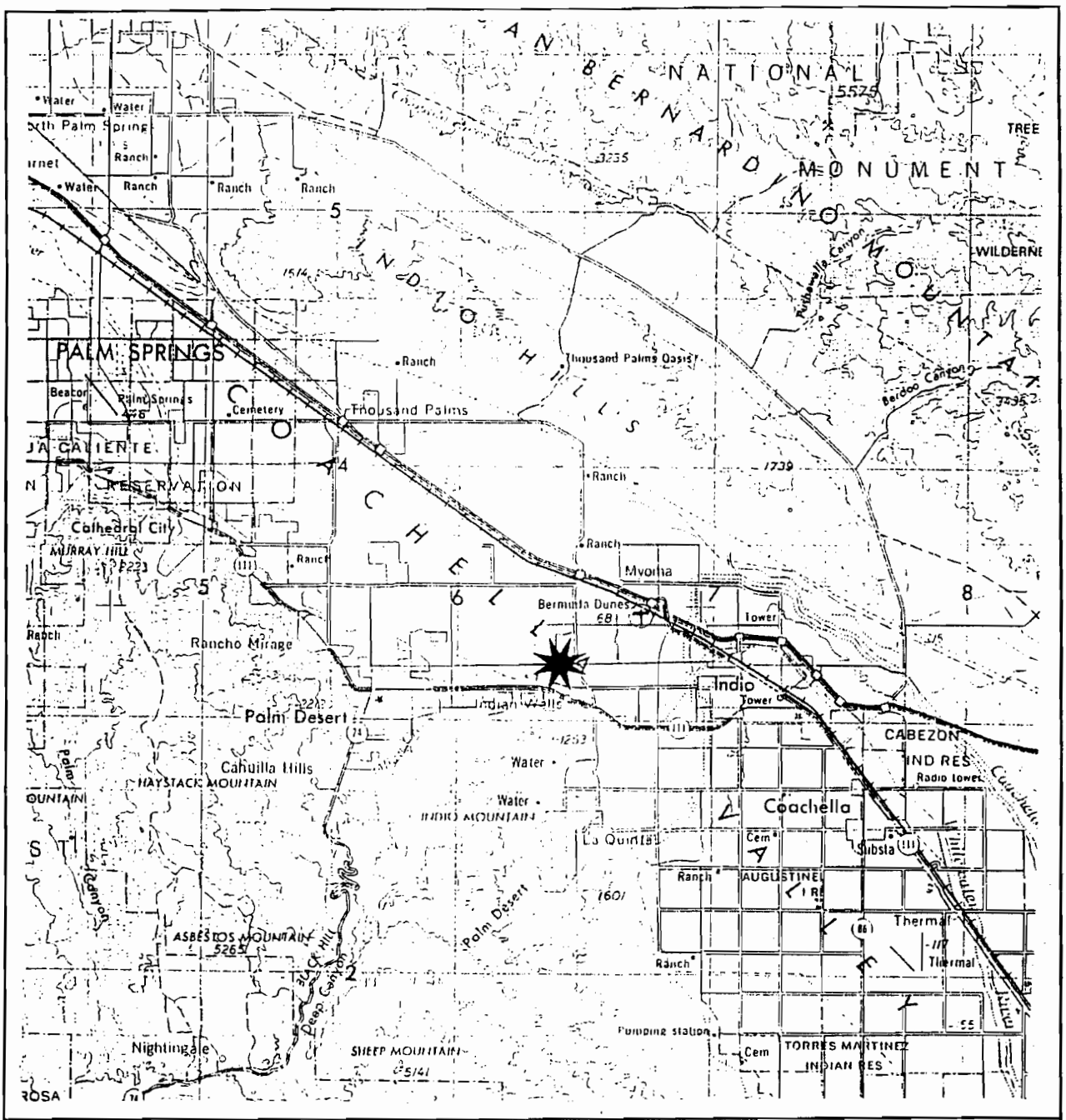
The project consists of approximately 150 acres located south of Fred Waring Drive, north of the Whitewater River Channel, east of Warner Trail, and west of Washington Street, near the community of Indian Wells, Riverside County, California. Figures 1 and 2 show the project location.

Personnel: Joan C. Brown was Principal Investigator for the cultural study and conducted field work, research, and report writing. Kenneth M. Becker was involved in the research and field work. Blanche A. Schmitz assisted with the field work. Resumes for the project personnel are contained in Appendix A.

NATURAL SETTING

The project area is located in the Coachella Valley, Riverside County, California. The Coachella Valley is in the northern portion of the Salton Trough and is separated from the Imperial Valley by the present day Salton Sea. The valley, which is considered part of the Colorado Desert, is bordered on the north and east by the Little San Bernardino, Cottonwood, and Orocopia Mountains; and on the west by the Santa Rosa, San Jacinto, and San Bernardino Mountains. The Santa Rosa and San Jacinto Mountains are the northernmost extension of the Peninsular Range. The mountains reach elevations from 6,000 to over 10,000 feet and have a pronounced rain shadow effect in the valley (Wilke 1978).

The climate of Coachella Valley is characterized by low humidity, very low precipitation, hot summers and mild winters. High summer temperatures can reach 125 degrees Fahrenheit and



Paleontology
Archaeology
History

Steatite Bird Effigy, Recovered by RMW Paleo, 1993

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Mission Viejo, CA 92691
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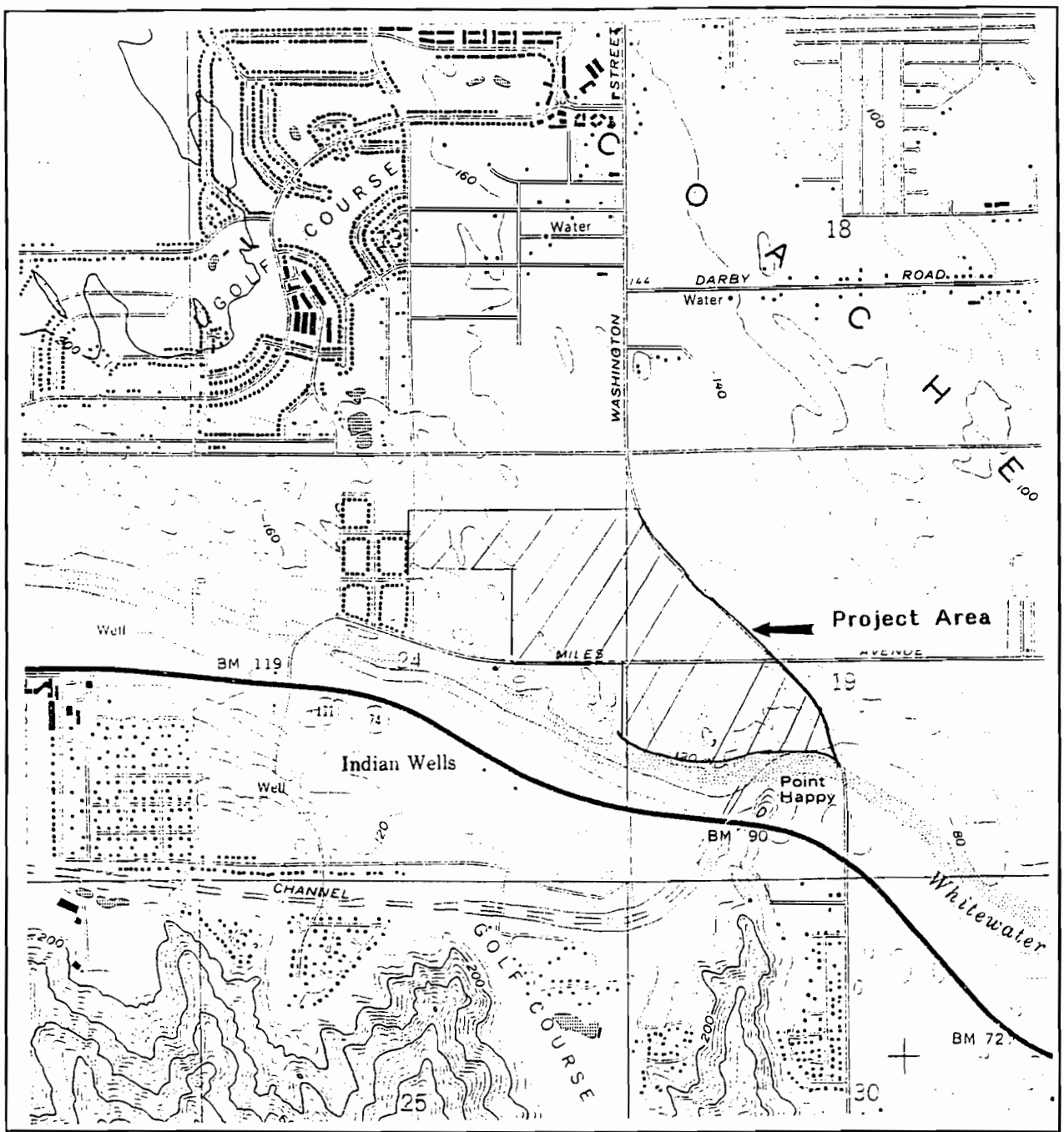
Figure 1: Project Vicinity Map

Portion of USGS 1 by 2 degree Santa Ana California Quadrangle 1959, Revised 1979

Scale 1:250,000

N



Steatite Bird Effigy, Recovered by RMW Paleo, 1993

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Figure 2: Index Map

Portion of USGS La Quinta California 7.5 Minute Series Quadrangel, 1959 Photorevised 1980. San Bernardino Base and Meridian

Scale 1:24,000

frost can occur in December and January. Winter precipitation from Pacific storms tends to fall on the western slopes of the Peninsular Range as rain and snow, but very little precipitation reaches the eastern slopes or the floor of the valley. Most precipitation occurs in the winter with an average annual rainfall of 3.2 inches recorded at Indio. Occasional summer tropical storms move north into the valley from the Gulf of Mexico, producing flash flooding (Wilke 1978).

The project area is located at an elevation of 120 feet to 160 feet above sea level within the Sonoran Desert Scrub plant community. Among those plants observed during the survey that would have been used by the prehistoric inhabitants were Mesquite (*Prosopis juliflora*), Creosote Bush (*Larrea divaricata*), Saltbush (*Atriplex californica*), and Desert Sage (*Salvia Dorrii*). Other plants found in the Sonoran Desert Scrub plant community that would have been utilized are Cholla (*Opuntia spp.*), Barrel Cactus (*Echinocactus acanthodes*), Saltbush (*Atriplex californica*), and Agave (*Agave spp.*).

Plants were used prehistorically for drinks, medicines, soap, dyes, construction materials, fuel, and tools; and plant fibers were used for thread, nets, and basketry (Bean 1972). Mesquite was among the most important of the desert plants. The mesquite blossoms, which are abundant in June, were roasted and could be dried; the pods (available in July and August) were either eaten fresh or ground into flour. Additionally, mesquite provided material for construction (Bean 1972:38). Creosote was used for treating ailments (Balls 1962:91). The roots of the saltbush were used as soap and the seeds were parched and ground for use in bread. The seeds of many plants, such as chia, cat's claw, palo verde, desert willow and ironwood, were used as food. Sage was mixed with tobacco leaves for smoking (Balls 1962).

Numerous varieties of cactus, such as the cholla, were abundant and provided leaves, stalks, fruit and seeds for food (Balls 1962:25; Bean 1972:40-43). The indigo bush, (when steeped in water) created a yellow dye used for coloring deer skins and dyeing fibers for use in creating patterns in baskets (Balls 1962:77).

Among the animals observed or expected in the project area are various lizards, snakes, birds, rabbits, squirrels, kangaroo rats, mice, skunks and coyotes. Lizards, particularly the chuckwalla, were eaten. Rattlesnakes were caught by men experienced in handling snakes and were either boiled or roasted and used as food. Birds were not only used as a food resource but their bones were used as tools and their feathers for ceremonial regalia (Brown 1989).

Rabbits provided the largest amount of animal food and their fur was used for blankets and clothing. Rabbits were killed with bows and arrows or throwing sticks, netted, or caught in snares. Most of the small animals were entirely consumed including the bones which were crushed and eaten in soups and mushes. Coyotes were probably not eaten, but their skins were used to make ceremonial objects (Bean 1972:59-63).

CULTURAL SETTING

Archaeological investigations in the Colorado desert area have been infrequent and many gaps

exist in our understanding of the area's prehistory. Humans have been present in the New World for at least 12,000 years B.P. (before present). The earliest portion of the archaeological sequence is identified as the Paleo-Indian Period (Chartkoff and Chartkoff 1984). There are no known Paleo-Indian sites in the Coachella Valley. The chronological framework frequently applied to the local area was established primarily on data collected in adjacent desert areas of California. Four temporal periods are generally accepted for the desert area: Pinto Period (5,000 - 2,000 B.C.), Gypsum Period (2,000 B.C.- A.D. 500), Saratoga Springs Period (A.D. 500-1200), and Protohistoric or Late Prehistoric Period (A.D. 1,200-Historic) (Warren 1984:410-430).

Pinto Period sites are few in number and are usually identified by a particular type of projectile point. Pinto sites are usually found along dry water courses and lakes, indicating the sites were in use when wetter conditions prevailed. Pinto sites are usually limited to the surface and are very difficult to date. Consequently, there is some confusion regarding the true range of artifact types that can be associated with Pinto Period sites.

The Gypsum Period is characterized by the presence of Humbolt Concave Base, Gypsum Cave, Elko Eared, or Elko Corner Notched projectile points. Milling equipment is found at Gypsum age sites, and becomes more common as the period progresses. The mortar and pestle were introduced during the latter part of the period. In general, the artifact assemblage reveals an increasing reliance on vegetable resources with less emphasis on hunting.

The Saratoga Springs period was a period of regional development. Milling equipment is common and pottery is introduced from the Colorado River area.

The majority of the sites excavated in the Coachella Valley area date to the Late Prehistoric or Ethnohistoric Periods. Archaeological research has been conducted along the old shoreline of Lake Cahuilla in an attempt to study human adaptation to the lake environment. The first thorough analysis was based on data from four sites located along the northwest lake shore of the now desiccated lake. Desert Side-notched and Cottonwood Triangular projectile points were common in the sites. Colorado Buff Ware and Tizon Brown Ware were present in the ceramic assemblage. Quantities of shell beads made from both Gulf of California and Pacific coast shell species are present. Analysis of the material indicated dates from about A. D. 800 to A. D. 1500 (Wilke 1978).

Analysis of human coprolites and floral and faunal remains indicated that shellfish, fish, aquatic birds, freshwater marsh plants, and animals and plants from both the adjacent lowlands and uplands contributed to the subsistence base. Furthermore, the analysis showed that some of the sites were occupied on a year around basis, while other sites were occupied on a seasonal basis, apparently when resources near the site were at a maximum (Wilke 1978).

These data, combined with evidence of a stable shoreline for a duration of several hundred years, led Wilke to postulate a large sedentary population living in villages along the northwest shore of the lake, relying heavily on lacustral resources, with lesser dependance on resources in outlying areas. Subsequent studies along the east and southwest shores contradict Wilke's model, and

indicate that shoreline occupation there was limited to only short term use on a seasonal basis (Pallette 1993; Wilke 1978).

After periodic episodes of infilling and recession, Lake Cahuilla is believed to have receded for the last time around A.D. 1580. Populations followed the receding shoreline while continuing to exploit the dwindling resources. Archaeological excavations of fish traps, nearby associated houses and middens situated at the -95 feet elevation level produced an abundance of fish bone. Fish bone is also reported from archaeological deposits at -103 feet and -120 feet near Thermal Airport (Wilke 1978:110). Finally, the water became too saline to support the usual flora and fauna, and human populations are believed to have abandoned the desert floor.

The final desiccation of the lake certainly had an impact on the populations dependent on the lake. However, exactly what occurred at this time is not certain. If the typical settlement pattern prior to the final recession was one of sedentary villages and year round dependance on the lacustral resources, the impact would have been tremendous. As resources in the immediate vicinity were quickly depleted, populations would have moved westward into the Peninsular Ranges, displacing, at least temporarily, other groups who collected in that area. If the alternative model of seasonal occupation of the lake shore is correct, then the effect of the final recession would have been less pronounced, with populations merely shifting subsistence emphasis to other areas already exploited.

Evidence exists of a partial infilling of Lake Cahuilla to sea level sometime between A.D. 1158 and A.D. 1710. The possibility of partial infilling of the lake after its final recession in A.D. 1580 is further supported by the oral history of the Cahuilla Indians:

> When questioned about the shore-line and water marks of the ancient lake, the chief gave an account of a tradition they have of a *great water (agua grande)* which covered the whole valley and was filled with fine fish. There was also plenty of geese and ducks. Their fathers lived in the mountains and used to come down to the lake to fish and hunt. The water gradually subsided 'poco,' 'poco,' (little by little), and their villages were moved down from the mountains, into the valley it had left. *They also said that the waters once returned very suddenly and overwhelmed many of their people and drove the rest back to the mountains* [emphasis added] (Blake 1856:98 in Wilke and Lawton 1975:11-12).

The people occupying the current study area at the time of the arrival of the Spanish are known as the Cahuilla. It is believed the Cahuilla first traveled from the north to southern California about 2,000 to 3,000 years ago (Bean and Bourgeault 1989:13). They occupied a large geographic area extending from present day Riverside to the central part of the Salton Sea with a population as high as 6,000 to 10,000 individuals (Bean 1978). Two thirds of the Cahuilla territory was in the low desert (Bean and Bourgeault 1989).

The Cahuilla structure was based on political units called sibs. Each sib had a defined territory

with various sibs uniting for protection and ceremonial purposes. Each sib had villages that were occupied year around. Houses were commonly grouped around a spring in a two to three square mile area. Villages were situated to take maximum advantage of basic resources such as climate, food, water, and materials. Individuals or groups would leave the villages for hunting, gathering, visiting, or trading activities (Bean 1972).

The first recorded contact of the Cahuilla with European culture took place when the Anza Expedition, enroute from Arizona to Mission San Gabriel, passed through Los Coyotes Canyon in 1776. By 1819, several mission asistencias were established near Cahuilla territory, and many of the Cahuilla began to learn European agriculture and cattle raising techniques (Bean 1972:17). A mail route was established in 1821 from Tucson through the San Gorgonio Pass and the Coachella Valley to coastal southern California. Indian runners who carried the mail followed the route known as the "Cocomaricopa Trail" (Wilke and Lawton 1975:22).

Jose Romero, looking for a new route to the Colorado River, made two expeditions to the Cahuilla area, the first in 1823 and the second in 1826. By that time, some of the Cahuilla could speak Spanish, and Mission San Gabriel was running cattle as far east as Palm Springs (Bean 1972:17). Jose Maria Estudillo, who accompanied Don Jose Romero in the winter of 1823-24, described in his diary the patches of corn, pumpkins, melons and watermelons he saw growing. This is the first known reference to Cahuilla agriculture (Wilke and Lawton 1975:23).

When David Prescott Barrows began his studies of the Cahuilla in 1891, the population had declined greatly. In 1770, there had been approximately 2,500 Cahuilla and by 1910 only 800 remained (Sleight 1971:6). A smallpox epidemic was responsible for the death of many of the people in 1862 and 1863 (Bean and Bourgeault 1989). Barrows described the Coachella Valley as being dotted with wells, many of them marking sites of homes long ago abandoned (1967:26-27). For generations the Cahuilla had been well diggers. Where the water table was from 10 to 30 feet below the surface, the Indians dug deep walk-in wells in the sand. The wells were great pits with terraced sidewalls leading down to a narrow hole at the bottom where the sand was banked around the well, creating small lakelets (Barrows 1967, Bean 1972). The wells were considered significant for survival in the desert and were typically surrounded by thick clumps of mesquite or other plants.

The Cahuilla houses were usually dome shaped, occasionally rectangular, the sides thatched with palm fronds, tule or whatever plant was available. The roofs were supported by forked branches with holes left open for the smoke to escape (Barrows 1967, Bean 1972). Barrows claimed that the most beautiful houses were those thatched with palm. The furnishings were simple. A metate or mortar could be seen on one side of the doorway, on the other side a water jar. The center of the room contained a hearth with cooking pots. Bunks constructed of poles were found along the wall, sometimes a bed consisting only of rawhide and a blanket was placed on the floor (Barrows 1967).

Among the Cahuilla, hunting was the activity of men, who also performed the skinning and butchering. Women were responsible for the gathering of vegetable foods and cooking. The diet of the Cahuilla was more diversified than most North American Indians, with over 300 plants

being used. The most important of the seed foods was chia. Food supplies were kept in earthen ollas or in grass baskets (Barrows 1967).

RESEARCH METHODS/RESULTS

A record search was undertaken at the Eastern Information Center at the University of California, Riverside to determine if prehistoric or historic sites had been previously recorded within or near the project area. Information regarding archaeological sites and studies within the project area and information for archaeological studies within a one mile radius of the project area were compiled. In addition to the Archaeological Inventory records, a check was made of the files of historic maps, the National Register of Historic Places Index, the Office of Historic Preservation Archaeological Determinations of Eligibility Listings (through January 14, 1997), and the Office of Historic Preservation Directory of Properties in the Historic Property Data File.
Reports housed at the Eastern Information Center showed that two previous cultural resources studies had been conducted on portions of the current project area (Sutton 1985a) (McKenna 1990). The 1985 study included the current study area plus adjacent parcels. Two prehistoric archaeological sites, CA-RIV-3005 and CA-RIV-3008, were recorded within the current project boundaries as a result of that study (Sutton 1985a, 1985c and 1985e). The artifactual remains of CA-RIV-3005 were observed in a series of blowouts located within small sand dunes. The site area, 300 meters by 250 meter in size, contained a mano, Brownware and Buffware ceramics, obsidian, jasper, basalt, chert, and quartz debitage, a jasper Desert Side-notched point, and animal and fish bone fragments. CA-RIV-3008 consisted of "at least 12 Brown ware sherds."

The 1990 study consisted of a portion of the current project and included the area located north of Miles Road. No cultural resources were observed during that survey, however, McKenna stated that a concentration of trees could be related to an early homesteading of the property. (McKenna (1990). An additional 78 cultural resource reports have been written for the area within a one mile radius of the project. Approximately 50% of the area within the one mile radius has been examined. A bibliography of those reports is contained in Appendix C.

Twenty nine archaeological sites are recorded within a one mile radius of the project and are listed in Table One.

A 1856 U.S. General Land Office plat map of Township 5S, Range 6E, surveyed by Henry Washington and John La Croze shows an Indian Ranchero in the northwestern quarter of Section 24 and a road apparently following along the north bank of the Whitewater River (Brock 1997, McKenna 1990). The same map also indicates the location of "Palma Seco Well" south of the current project area. Later maps, including the 1904 Indio 30' Quadrangle, the 1941 USGS Toro Peak 15' Quadrangle, and the 1959 USGS La Quinta 7.5' Quadrangle do not indicate any activity or structures within the project area.

Point Happy, located south of the river and the project area, is listed in the Historic Resources Inventory. The 134 acre Point Happy Ranch was purchased in 1922 by Chauncy and Marie Clarke who grew dates and raised Arabian horses (Carpenter 1982).

TABLE ONE: Archaeological Sites Recorded Within One Mile Of The Project Area

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-64	Camp Site: Cremations, magnesite and shell beads, potsherds, bone awl, manos, metates, clay objects, shaft smoothers, pendants, bone tools, clay pipes and olla. "Water hole at one time cut into lower level with steps leading to it." Partially destroyed in dredging storm channel.	Smith (1954) and Ruth Shepard (1963)
Supplement	Historic trash dumps, possible historic structures, potsherds, fire-affected rock, fired daub. Disturbed by Highway 111 and dumping	Hogan (1994)
CA-RIV-150	Sherds, bone, fire broken rock, shell and stone beads, arrow points, flakes, part of a clay pipe, gaming disks, metate, and manos.	(1933-35) recorded in files by Dorothy Cowper
Supplement	Village Site: Cremation area, pottery, bone, shell, points, hammerstones, metates, manos, pestles, steatite tube, stone beads, throwing stick, cooking and polishing stones.	Eberhart (1951)
Supplement	Shell, chips, olivella disk beads.	Cowper (1967)
Supplement	Approximately 200' by 1,500' of pottery, plus flakes, shell, and bone.	Corbin (1974)
Supplement	"Much pottery, flakes, cremation area, about 40 acres; Mano frags, metate, shell, bone, pottery, rough clay, pestle frag., shell beads.	Lipp and Swenson (1977)
CA-RIV-1530	Deflating midden: Groundstone, ceramics, shell, bone, flakes, and charcoal.	Baldwin (1978)
Supplement	Hearth, bone, ceramics, milling stones, fire-affected rock.	Sutton (1985b)
CA-RIV-1754	About 40 pottery sherds.	Breece and Breece (1979)
Supplement	Secondary deposit due to channelization of the Whitewater River and construction of the levee.	McCarthy (1984a)
CA-RIV-2195	Light scatter on hard pan: 15 fire cracked rocks, 20 potsherds, and 1 shell frag.	Bowles (1981)
Supplement.	Could not relocate.	McCarthy (1989a)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-2197	Numerous ceramic fragments, bone midden and charcoal.	Fenenga (1972)
CA-RIV-2200	Sparse scatter with three concentrations: Hearth, pottery sherds, mano, historic glass, shell.	Salpas (1980a)
Supplement	Mano frag., numerous pottery, burnt bone. Site disturbed by dumping and channelizing of river.	McCarthy (1988 and 1989b)
Supplement	Sparse scatter with several concentrations: Mostly potsherds, mano, hammerstone, burnt rodent bone, three frags of amethyst glass.	Hogan, Saubel, and Broomhall (1992)
CA-RIV-2934	Artifact scatter: Possible fired clay floors, mano frags, metate frag., flakes (some obsidian).	McCarthy (1984b)
CA-RIV-2935	Artifact scatter: Possible clay floor remains, Desert Side-notched point. Disturbed due to ORV use and channelizing of river.	McCarthy (1984c)
Supplement	Surface and buried deposit: Possible house construction (burned clay), ceramics, bone, lithics.	Toenjes and Toenjes (1984)
CA-RIV-2936	Extensive area in sand dunes: Possible clay house floors, pottery, bone, bone awl, manos, metate frag. exposed in blow-outs.	McCarthy (1984d)
Supplement	Extensive artifact scatter: Hearths, fire-affected rocks, fired clay daub, burnt bone.	McCarthy (1989c)
Supplement	Extensive scatters of pottery, fire-affected rock, debitage, and faunal remains. Western portion tested in 1990 by Yohe.	Everson (1992a)
Supplement	Scatter of pottery sherds, animal bone, shell frags, fire-affected rock.	Reeves (1996)
CA-RIV-3007	Cremation, shell ornaments, bead, awl, and charcoal. Badly disturbed by pothunting.	Sutton (1985d)
CA-RIV-3659 (CA-RIV-150A)	Burned clay, fire-affected rocks, pottery, lithic flakes in deflated depressions.	Toenjes (1989)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-3679H Supplement Supplement	Three concentrations of pottery, flakes, cores. Possible hearths, artifact scatter, pottery sherds, burnt bone, fired daub. Majority of site disturbed. Potsherds, possible hearths. Historic trash dump one meter deep.	Salpas (1980b) McCarthy (1989d) Hogan and Everson (1992)
CA-RIV-3680 Supplement	Scatter of pottery, daub, and fire affected rock Scatter of pottery, daub, and fire affected rock. Site tested; destroyed by development.	McCarthy (1989e) Everson (1992b)
CA-RIV-3681 Supplement	Pottery sherds, clay daub, mano frag., burnt bone, and hearths. Site damaged prior to testing, destroyed by development.	McCarthy (1989f) Everson (1992c)
CA-RIV-3682 Supplement	Several fire hearths, pottery, clay daub, burnt bone. Testing yielded substantial subsurface deposit to three meters: Human coprolites, pottery, burnt bone, debitage, bifacial artifacts.	McCarthy (1989g) Everson (1992d)
CA-RIV-3683 Supplement	Artifact scatter: Pottery and fire-affected rock. Site disturbed by channelizing river and highway construction. Potsherds, debitage, ground stone frags, core and faunal remains.	McCarthy (1989h) McCarthy, Arkush and Hogan (1992)
CA-RIV-3866	Scattered and concentrated midden in deflated and mounded deposits: Possible burned and collapsed structure, clay daub, fire-affected rock, bone, shell, pottery, and biface frag.	Toenjes (1990)
CA-RIV-4076	Scatter of pottery sherds.	Swope and Thaler (1990)
CA-RIV-4107	Approximately 1,400 potsherds.	Archaeological Associates (1991a)
CA-RIV-4108	Six potsherds.	Archaeological Associates (1991b)
CA-RIV-4745	Scattered pottery and shell.	Everson (1992e)
CA-RIV-4756-H	Water-valve tower, old piping, and fence.	Everson (1992f)

SITE#	DESCRIPTION	SOURCE AND DATE
CA-RIV-5840	Camp emerging from dune: pottery sherds, pestle frag., debitage, possible burnt clay structure floor.	Mouriquand (1996a)
CA-RIV-5841	Scatter of pottery sherds and fire-affected rock.	Mouriquand (1996b)
CA-RIV-5842	Hearth, pottery sherds, and mano.	Mouriquand (1996c)
CA-RIV-5843	Pottery sherd scatter.	Mouriquand (1996d)
CA-RIV-5844	Pottery sherd scatter.	Mouriquand (1996e)
CA-RIV-5876	Pottery sherds, chipped stone, faunal, and fire affected rock.	Brock (1997)

FIELD METHODS

The surface examination of the project area was accomplished by walking parallel transects spaced at intervals from five meters to twenty meters apart. Navigation was accomplished by the use of magnetic compass and the developers 1:200 scale map. Transects were oriented north/south during most of the reconnaissance. The northwest section of the parcel was examined while walking transects oriented east/west. To assure accuracy in navigation, the beginning and end of each transect was marked with a wooden stake which was then moved to reflect the new transect. The location of artifacts were recorded on the 1:200 scale map as they were observed in the field.

All visible artifacts were marked with pin flags and site mapping of the artifactual material was accomplished with a tripod mounted Brunton compass and fiberglass tape. At CA-RIV-3005 stakes were placed at 25 meter intervals extending in a line south from the site datum. A line of stakes, set at 25 meter intervals, extended west from the 50 meter point of the southern line and a third set of stakes, also set 25 meters apart, extended east from the 75 meter point of the southern line. Distance and azimuth of artifacts was then recorded from the nearest stake. The same procedure was used at CA-RIV-5876 with a line of stakes set at 25 meter intervals extending north from the site datum.

FINDINGS

During this reconnaissance, both CA-RIV-3005 and CA-RIV-3008 were relocated and re-examined. Ceramic fragments, lithic debitage, and milling stone fragments were observed within the recorded location of CA-RIV-3005. CA-RIV-3008 was found to consist of eight ceramic fragments. In addition to the previously recorded sites, it was found that CA-RIV-5876, a

prehistoric archaeological site recorded on an adjacent parcel, extends into the current project boundaries. The artifactual material observed in that area consisted primarily of ceramic sherds and quartzite debitage. Both Buffware and Brownware ceramic sherds were observed scattered throughout the southern portion of the project area. The artifactual remains were found primarily in sand dune blowouts or along dirt roads immediately north of the Whitewater River.

During this study it was apparent that the project area is currently being used and impacted by off road vehicle enthusiasts, hikers, and people walking their dogs. A contemporary campsite was seen in the southern portion of the property. During field recording of the sites, we encountered a crew of laborers collecting wildflower seeds from plants on the project parcel. On both days of field recording work, the crew of about ten men was intensively harvesting wildflower seeds from the entire surface.

DISCUSSION

The project is located in a highly sensitive area for prehistoric cultural resources. The study parcel is located on the northern edge of the Whitewater River in an area that would have been near the shifting shoreline of ancient Lake Cahuilla. Both the river and the lake would have provided water and food for the prehistoric people. An ethnographic era village was recorded immediately north of the project area and 32 archaeological sites are recorded within a one mile radius.

The 50+ acre parcel, south of Miles Avenue and adjacent to the Whitewater River, contains numerous artifactual remains. The artifacts observed during this study were primarily ceramic sherds, lithic debitage, and groundstone fragments. This assemblage differed somewhat from the artifacts recorded by Sutton thirteen years ago. At that time he found a mano, a Desert Side-notched point, and obsidian and jasper debitage, in addition to pottery sherds and debitage. The difference in observations could be caused by the shifting sand dunes alternatively covering and exposing material, by nearby residents collecting the most obvious artifacts, or a combination of these factors. Obvious artifacts would have been noticed by crews of laborers harvesting wildflower seeds. The history and extent of harvesting wildflower seeds on the property is unknown.

Three primary types of prehistoric archaeological sites exist in the Coachella Valley: Habitation sites, Camp sites, and Activity loci. Habitation sites are areas that were inhabited by relatively large groups of people over a sufficient time for accumulation of quantities of various types of debris, including food remains and discarded, lost or broken artifacts. These sites were frequently located along the northwest shore of ancient Lake Cahuilla from La Quinta to northwest of Indio. Most of these sites have been destroyed by development. Habitation sites yield information regarding aboriginal lifeways and have been found to contain human coprolites and cremations in addition to lithic, ceramic, and food remains (Wilke 1988). In fact, coprolite studies have provided a great deal of data relative to prehistoric dietary patterns.

Camp sites are less extensive than habitation sites and usually contain a narrower range of

artifactual remains. This sites are usually associated with the exploitation of specific resources in a specific location, such as fishing, bighorn sheep hunting, seed harvesting and processing, or agave collecting and roasting (Wilke 1988).

Activity loci represent activities rather then habitation. These are areas such as quarrying locations, agave roasting pits, rock art sites, aboriginal foot trails, bedrock milling stations, and isolated cremations. At this time it is unknown which type(s) of site is represented by the artifact assemblage in the project area. However, the variety of artifacts on the surface indicate that either habitation sites or camp sites are present. It is also unknown if a single extensive site is located within the 50+ acre parcel, or if the artifact scatters represent more then one site.

RECOMMENDATIONS

This study was undertaken under the provisions of the California Environmental Quality Act (CEQA). CEQA requires that the effect that a project will have on cultural resources be assessed and recommends avoidance or *in-situ* preservation of archaeological sites. When avoidance is not feasible, affected archaeological resources must be evaluated to determine their importance. Sites determined to be not important require no further work. The effects of the project on important archaeological sites must be mitigated to a level of insignificance, generally through excavation. Under Appendix K of CEQA an important archaeological resource is one which is: (A) Associated with a person or event of recognized significance in California or American history or is of recognized 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; © Has a special or particular quality such as the oldest, best example, largest, or last surviving example of its kind; (D) Is at 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.

If avoidance of the cultural deposits is not possible, then it is recommended that the exposed artifacts be mapped and collected and that a subsurface examination be undertaken to determine the presence and integrity of possible subsurface deposits. The 51+ acre parcel south of Miles Avenue has prehistoric indicators essentially throughout. The remains observed during this study consist primarily of potsherds, lithic debitage, and groundstone fragments. A projectile point and exotic lithics were recorded 13 years ago. Almost all of the artifactual material has been observed in blow outs where the hardpan is exposed. It is unknown whether the artifacts were deposited directly on the hardpan. An answer to this question is vital to development of an appropriate site treatment plan. If material was deposited in sand and it can be shown that the sand still contains artifacts, stratigraphy could be preserved and the deposit assumes greater importance than if the artifacts on the hardpan arrived there through the process of deflation, indicating that stratigraphy has been lost.

In either event (stratigraphy preserved or not), important archaeological data may still exist on the property. Postholes related to prehistoric house construction were found in the hardpan at a site a short distance to the southeast. Ancient human coprolites from another nearby site enabled

researches to acquire prehistoric dietary information.

Given the existing circumstances, any test excavation effort for the 50+ acre parcel must be designed to:

- Sample throughout the entire parcel. The logical beginning points are at sand blowouts, with excavation proceeding into the surrounding dunes.

- Process large amounts of sand while maintaining provenience of prehistoric material.

- Preserve the hardpan until it can be examined for cultural traces.

The adopted methodology for completion of the evaluation excavation will require the examination of large quantities of sand, while maintaining provenience of recovered artifactual and ecofactual material. This could be accomplished through either hand or carefully controlled machine methods, or by a combination of methods. In either case, hand excavation methods will be required to explore features and the hardpan.

It is recommended that shovel test pits be excavated at CA-RIV-3008, located in the northwest corner of the project area, to determine if a subsurface cultural deposit is present.

All recovered artifacts and ecofacts should be cataloged and analyzed and special studies undertaken, if the recovered cultural remains warrant such studies. All of the information should be complied in a report including further recommendations for the future management of the deposits. The cultural studies should be completed well in advance of any planned ground disturbing activities.

Because of the archaeological sensitivity of the project area, it is recommended that the entire area north of Miles Avenue be monitored during all ground disturbing activities.

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RESUME

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EDUCATION

M.A., Anthropology: In Progress, California State University at Los Angeles, Los Angeles, California. Awarded Certificate of Honor for Outstanding and Distinguished Achievement in the Department of Anthropology.

B.A., Anthropology: 1988, California State University at Los Angeles, Los Angeles, California. Honored in *The National Dean's List*, 1983-1984, Seventh Annual Edition and 1988-1989, Twelfth Annual Edition.

A.A., Anthropology: 1982, Pasadena Community College, Pasadena, California. Awarded Honors for Superior Achievement in Anthropology.

Intensive Course in Management Communication: 1988, Gib Whiteman Seminars, Interdependence Associates Inc., Guilford, Connecticut.

Introduction to Federal Projects and Historic Preservation Law.
Sponsored by the Advisory Council on Historic Preservation and the General Services Administration Training Center, 1994.

EXPERIENCE

Archaeological:

Field Director of Archaeology:
1988 to the present, RMW Paleo Associates, Mission Viejo, California. Responsible for all phases of field work including surface reconnaissance, test excavation, and data recovery excavation. Additional duties include report writing, cartography, laboratory analysis, employee management, and acting as an intermediary between development companies and Native American groups.

Editor, *California Anthropologist*:
1992 to the present, Department of Anthropology, California State University at Los Angeles. (The *California Anthropologist* is a scholarly journal publishing articles in Anthropology and related disciplines.) Responsibilities include critical review of submissions, editing, and managing general office procedures. Member of the Editorial Board since 1991.

Teaching Assistant:
1985, "Archaeological Field Research Techniques" for Dr. Fred Reinman. California State University at Los Angeles, Anthropology Department.

Archaeological Consultant:
1983 to 1984, various firms in southern California.

Other:

Store Manager:
1978 to 1988, Sunseri's Market, Rosemead, California. Responsibilities included customer service, inventory control, advertising, and human resource management.

MEMBERSHIPS

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RESUME

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1988 M.A. (Anthropology: Emphasis in Archaeology) California State University Fullerton (C.S.U.F.). Thesis Research: Avifauna remains from Archaeology Sites.

Independent research in progress: Fossil Birds from Archaeological and Paleontological Sites.

1982 B.A. (Anthropology). C.S.U.F.

1979 A.A. (Social Science). Saddleback College Mission Viejo, California.

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PROFESSIONAL EXPERIENCE

1988 - Present RMW Paleo Associates Senior Archaeologist:
Responsibilities include project management, proposal writing, report writing and personnel supervision.

1987-88	Natural History Museum of Los Angeles County Foundation. Responsibilities included molding and casting of fossils for 75th Anniversary of Rancho La Brea Traveling Exhibit.
1987	Field Director: Historical Archaeology Sites. Heritage Park Project, Sante Fe Springs, California. Mitigation of sites prior to reconstruction of Victorian era, and Mission period remains.
1985	Analysis of faunal remains from archaeology sites. Archaeological Associates, Sun City, California.
1983-85	Paleontological field salvage, includes monitoring, evaluating and collection of fossils. RMW Paleo Associates. Mission Viejo, California.
1983-85	Archaeological site surveying, salvage and laboratory work, including faunal analysis. Archaeology Resource Foundation. C.S.U.F. Fullerton, California.
1982-83	Field Director: Pacific Coast Archaeology Society. Responsibilities included being in charge of over thirty volunteers during the survey, recording and analysis of seven archaeology sites at Crystal Cove State Park, Corona del Mar, California.
1982	Paleontological field salvage. Los Angeles County Museum National Geographic Grant.
1981	Laboratory preparation of fossil specimens. Los Angeles County Museum National Science Foundation Grant.
1980-81	Paleontological field salvage. Scientific Resource Surveys, Inc. Santa Ana, California.
1978-79	Archaeological site surveying. Christina Brewer and Company, Laguna Beach, California.
1979-Present	Associate: Natural History Museum of Los Angeles County. Responsibilities include field collecting of specimens, laboratory preparation of materials, micro-fossil sorting, cataloging of museum collections.

PROFESSIONAL ACTIVITIES

Presentations and guest lecturer for:
Southern California Academy of Sciences 100th Anniversary meeting held at University of Southern California and the Natural History Museum of Los Angeles County.
California State University, Fullerton Anthropology Department.
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ORGANIZATIONS

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University of California Irvine, Irvine, CA (1990-1991).

PROFESSIONAL EXPERIENCE

1988 - Present	Adjunct Instructor of Anthropology, Orange Coast College, Costa Mesa, California.
1983 -	Archaeological site surveying, salvaging and laboratory analysis. Paleontological field salvage and monitoring. RMW Paleo Associates, Mission Viejo, CA.
1985-87	Archaeological salvage, Archaeological Resource Management Corporation (ARMC), Fullerton, California.
1985	Archaeological salvage, Archaeological Research Foundation, California State University Fullerton.
1978-80	Archaeological site surveying, Christine Brewer & Company, Laguna Beach, California.

Paleontological Assessment of 150 Acres for the Garden of Champions Tennis Facility Located in Riverside County, California

Prepared For:

Robert Bein, William Frost and Associates
14725 Alton Parkway
Irvine, California 92618-2069

Prepared By:

RMW Paleo Associates, Incorporated
23392 Madero, Suite L
Mission Viejo, California 92691
(714) 770-8042
FAX (714) 458-9058
Project Number: 98-1204

Author:

Dave Stevens
Certified Paleontologist

12 April 1998

INTRODUCTION

The following presents the results of RMW Paleo Associate's assessment of the potential paleontological resources of the Garden of Champions Tennis Facility project site, located in the City of Indian Wells, Riverside County, California. The site consists of approximately 150 acres of rolling terrain covered with sand dunes. Specifically, the site lies north of the Whitewater River, west of Washington Street, and south of Fred Waring Drive (Figure 1).

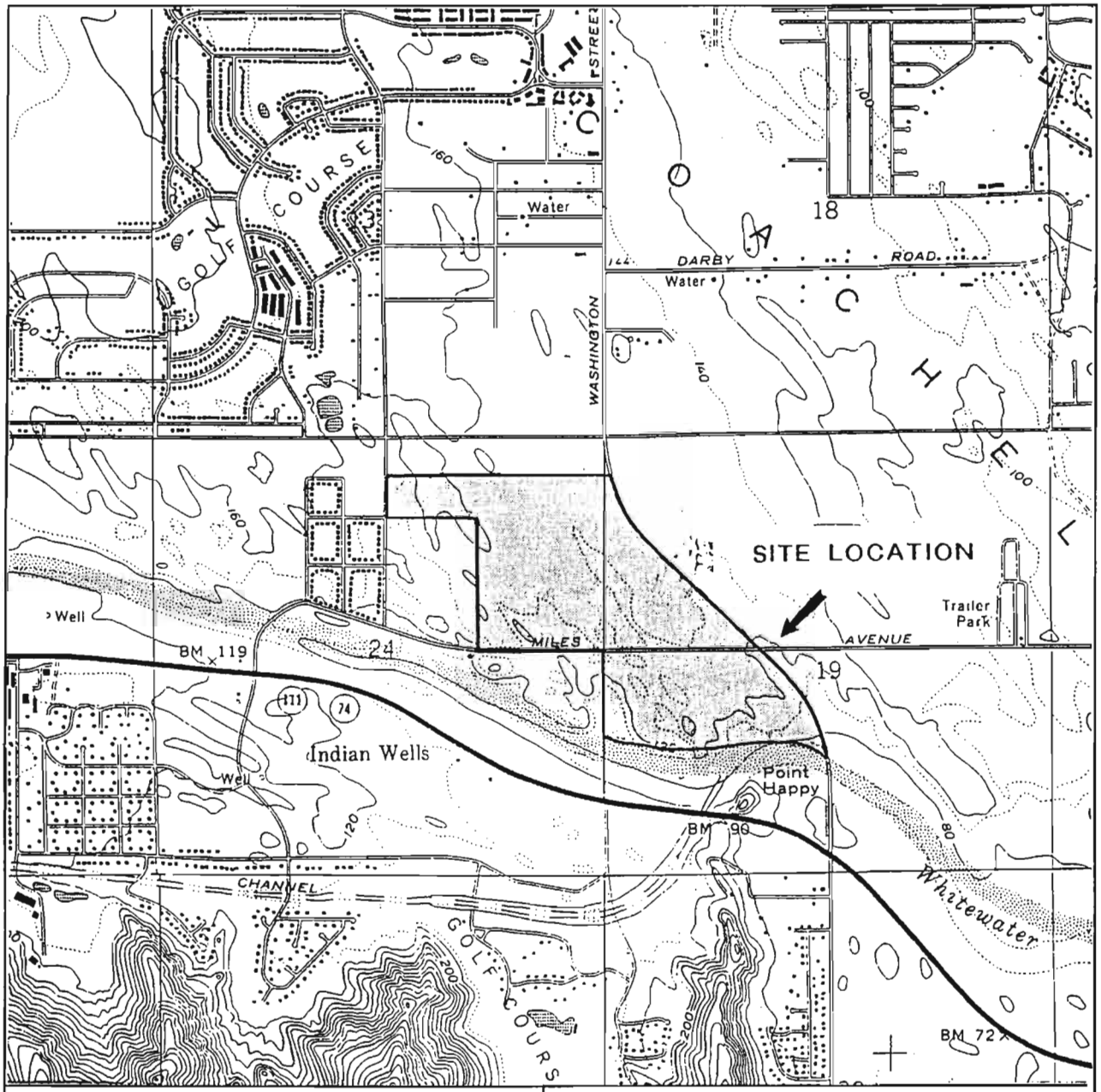
METHODS

The purpose of this report is to assess the known and potential paleontologic resources within the project area. Pertinent geological and paleontological literature and maps were reviewed for this assessment. A records search was performed at the San Bernardino County Museum in March 1998. A field reconnaissance of the project site was conducted by the author during April 1998. No fossils were discovered on the project site during this field reconnaissance.

STRATIGRAPHY AND PALEONTOLOGY

The Garden of Champions Tennis Facility site is located in the Coachella Valley in Riverside County, California. The northeastern Coachella Valley is underlain by a very thick sequence of sedimentary rocks. The majority of this sedimentary sequence is terrestrial in origin, with minor amounts of the section of marine origin. This sequence of sedimentary rocks ranges from Miocene (20 +/- million years old) sediments at the base to Holocene (10,000 years) sediments at the surface. In the northeastern section of the Coachella Valley, these sediments may attain a maximum thickness of more than 10,000 feet.

The Garden of Champions Tennis Facility site is mapped as sand dune deposits of undetermined thickness (Rogers 1965). The near-surface sand dune sediments are Holocene age (10,000 years



Paleontology
Archaeology
History

RMW
Paleo Associates

23352 Madero, Suite J
Mission Viejo, CA 92691
(714) 770-8042
FAX (714) 458-9058

Figure 1: Site Location Map

Portion of USGS 7.5 minute quadrangle,
La Quinta, California. 1959
Photorevised, 1981.

Scale 1:24,000

old to present). Underlying the dune sands are deltaic deposits of the Whitewater River. These delta deposits are the clastic remains (clay, sand, gravels) of a delta formed by the Whitewater River as it approached the now dry ancient Lake Cahuilla area. The exact thickness of the delta deposits at the project site is unknown; however, the thickness of both dunes and deltaic deposits is estimated in this area to be no greater than 300 feet (Rogers 1965). At an unknown depth, the delta sediments transition from Holocene (10,000 years old) into Pleistocene (1.7 million to 10,000 years old) age sediments. Three miles north of the project location, the Whitewater Delta sediments have yielded possible fossil rodent bones and gastropods. Although collected at the same elevation, it is unknown at what depth in the delta deposits these specimens came from. Near-surface sediments which would be impacted by earth-moving operations associated with development are most likely Holocene in age.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of assessing paleontological resources within the Garden of Champions Tennis Facility project area is to determine the impact the proposed project will have on the region's paleontological resources. To determine the impact, an estimate of the potential for the discovery of fossils must be made. The potential for discovery of fossils is a measure of the likelihood that fossils will be discovered during excavations into the rock units which underlie the project site. This potential is based on the past discovery of fossils from these rocks, but can only be estimated because it is impossible to know exactly where fossils are located.

Due to past fossil production of the sand dunes and the deltaic deposits, a "low to moderate" potential for the discovery of fossils is assigned to this site. A "low to moderate" potential indicates that grading or excavating operations during development may expose fossils. If excavations (footings, trenches, etc.) or grading is performed at depths below 5 feet, there is a possibility that fossil resources may be encountered. This 'possibility' of finding fossils increases steadily with increasing depth of excavations. Therefore, deeper excavations would destroy any fossils present, and this would adversely impact the region's paleontological resources.

The following measures will be necessary to mitigate this possible adverse impact. These mitigation measures will reduce the adverse impacts to acceptable levels. Mitigation measures similar to these have proven successful in protecting paleontological resources, while allowing the timely completion of many projects in southern California.

1. During excavations greater than 5 feet, a qualified paleontologist should be retained to perform periodic inspections of the excavations and earthmoving processes, and if necessary, salvage exposed fossils. The frequency of inspections should depend on the rate of excavation, the materials being excavated, and if fossils are being discovered. If fossils are discovered by contractors or other personnel, and a paleontologist is not on site, the qualified paleontologist should be notified immediately.

2. The paleontologist should be allowed to divert or direct grading in the area of the exposed fossil to facilitate inspection and, if necessary, salvage resources.

3. Because some of the fossils may be small, it may be necessary to collect samples of promising horizons or beds for processing through fine screens.

4. Fossils collected should be prepared to the point of identification and catalogued before they are curated at a final repository. The repository should be a public, non-profit institution with a research interest in the materials, such as the San Bernardino County Museum.

5. A report detailing the results of the monitoring effort, a list of the fossils collected, and the name of the repository should be submitted to the lead agency at the conclusion of the project.

If you have any questions or if we can be of any additional service, do not hesitate to call.

Respectfully,

DAVE STEVENS

Dave Stevens

Certified Paleontologist

LITERATURE REVIEWED

Dibble, T. W., 1954. Geology of the Imperial Valley Region, California. *In*: Jahns. R. H., ed. Geology of Southern California, Bulletin 170. Chapter 2 Part 2, California Division of Mines and Geology.

Laylander, D., 1997. The Last Days of Lake Cahuilla: The Elmore Site. Pacific Coast Archaeological Society 33(1&2):1-138.

Raschke, R., 1998. Paleontological Resources Assessment for the La Quinta, California, General Plan.

Rogers, T. H., 1965. Geologic Map of California, Santa Ana Sheet. California Division of Mines and Geology.

11.10 Correspondence

The Gas Company

RECEIVED
APR 1 7 1998
ROBERT BEIN, WM FROST

Date: 4-16-98

TO: ROBERT BEIN, WILLIAM FROST & ASSOC.
14725 ALTON PARKWAY
IRVINE, CA. 92618-2069

Southern California Gas Company
1981 Lugonia Avenue
Redlands, CA
Mailing Address:
Box 3003
Redlands, CA
92373-0306

ATTENTION: DEREK L. ROSS

RE: PROP. GARDEN OF CHAMPIONS - INDIAN WELLS

FRANCHISE NUMBER: 98-024

(✓) Per your request

(✓) Copy/Copies of our Maps

( ) Copy of your Dwg./Plan with respect to the location of our facilities indicates that:

( ) Please forward prints of your Plan & Profile showing the location of our facilities

( ) Please forward two sets of your approved plans

( ) No conflict is expected

( ) A conflict is expected (see description below or attachment)

( ) Our relocation plan is attached for your:

( ) Review ( ) Approval ( ) Comments

( ) Depth checks and/or elevations were taken at:

( ) the location(s) requested

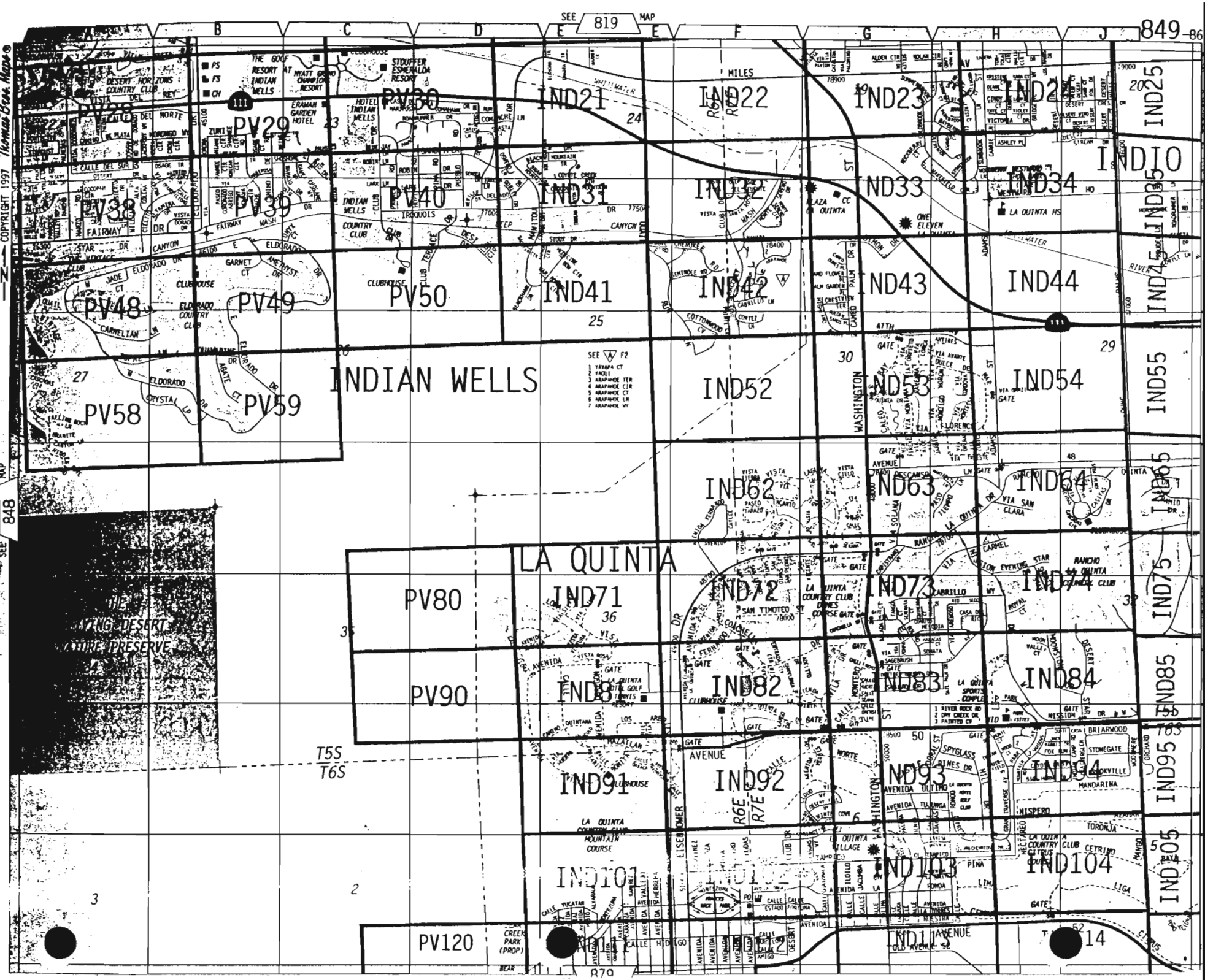
( ) the location(s) mutually agreed upon

( ) the location(s) we deemed necessary

( ) Depth or elevation information is tabulated or shown graphically on the enclosed or attached.

Comments: WE HAVE AN ADEQUATE SOURCE OF GAS FOR THIS PROJECT, WE ALSO HAVE A NEW 8" HIGH PRESS GAS LINE ON WASHINGTON ST., WHICH IS NOT POSTED YET. YOUR COMMERCIAL MARKETING REP. WILL BE, SCOTT ACKLEY - 909-335-3972.

Bob Guengerich
Planning Technician
(909) 335-7756


SEE 819 MAP
849-86
SEE 848 MAP
COPYRIGHT 1997 Thomas Bros. Maps
INDIAN WELLS
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WYATT GRAND CHAMPIONS RESORT
ERAWAN GARDEN HOTEL
HOTEL INDIAN WELLS
DESERT HORIZONS COUNTRY CLUB
THE GOLF RESORT AT INDIAN WELLS
MOUNTAIN COURSE
LA QUINTA COUNTRY CLUB
LA QUINTA HOTEL GOLF TENNIS RESORT
LA QUINTA SPORTS COMPLEX
LA QUINTA VILLAGE
LA QUINTA COUNTRY CLUB CITRUS
RANCHO LA QUINTA COUNTRY CLUB
SPYGLASS HILLS GOLF CLUB
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STONEGATE
MANDARINA
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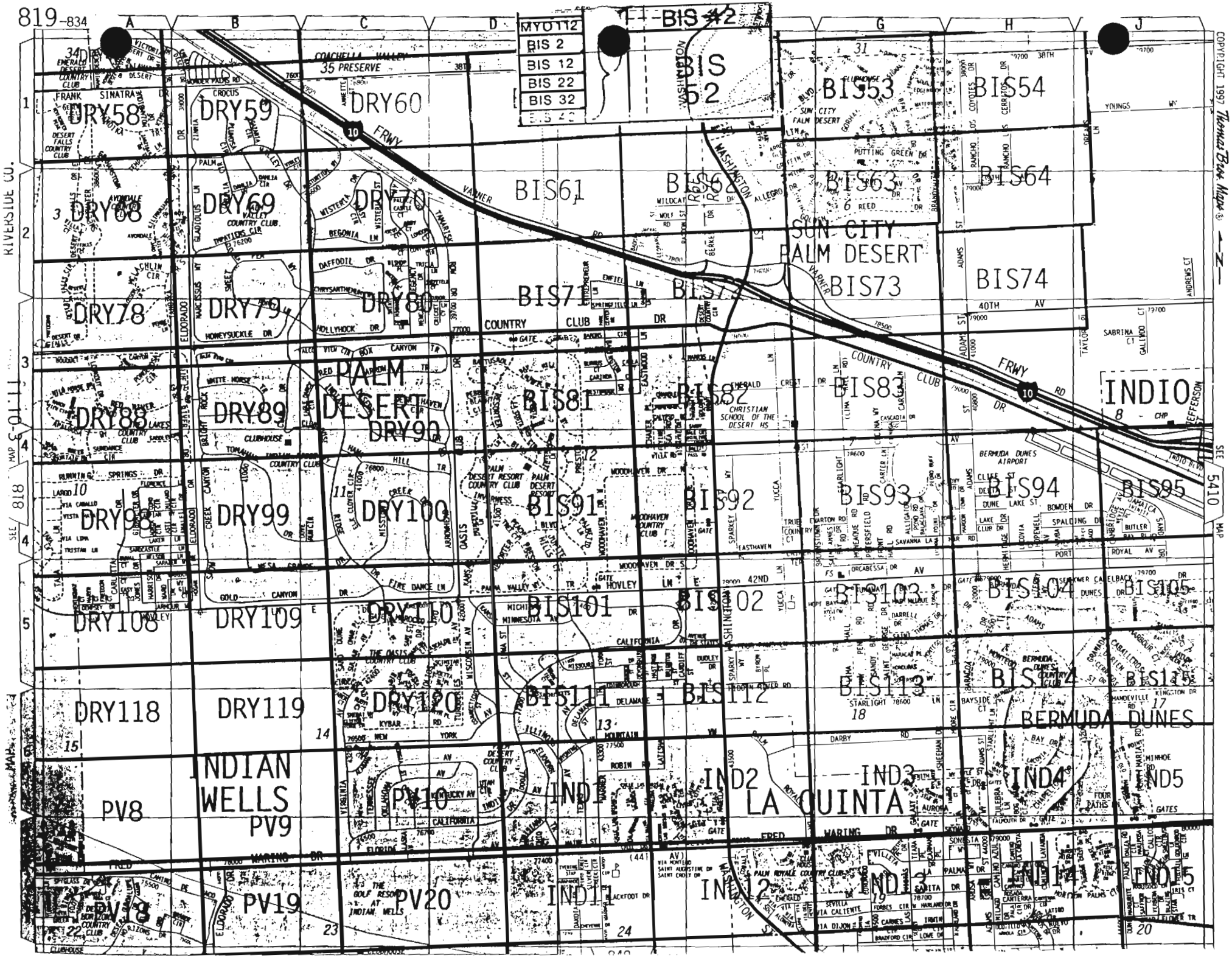
CETRINO
CREEK PARK (PROP)
AVENUE
MILES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PALM DESERT
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LA QUINTA
INDIO
BERMUDA DUNES
RIVERSIDE CO.
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WASHINGTON ST
COUNTRY CLUB DR
FRANK SINATRA DR
DESERT FALLS COUNTRY CLUB
EMERALD DESERT COUNTRY CLUB
COACHELLA VALLEY 35 PRESERVE
CHRISTIAN SCHOOL OF THE DESERT HS
BERMUDA DUNES AIRPORT
THE OASIS COUNTRY CLUB
THE GOLF RESORT AT INDIAN WELLS
PALM ROYALE COUNTRY CLUB
SEE MAP 818
SEE MAP 5410
COPYRIGHT 1997 Thomas Bros. Maps

GTE Telephone
Operations

295 N. Sunrise Way
Palm Springs, CA 92262-5295

April 17, 1998

RECEIVED
APR 2 1 1998
ROBERT BEIN, WM FROST

Mr. Derek L. Ross
Robert Bein, William Frost & Associates
14725 Alton Parkway
P.O. Box 57057
Irvine, CA 92619-2069

Dear Mr. Ross:

Subject: ***PROPOSED GARDEN OF CHAMPIONS NEAR INDIAN WELLS, CA***

In response to your letter and questionnaire dated April 14, 1998, the following is in answer to your questions and concerns:

1. Please indicate the location of telephone lines within the immediate project vicinity. **Major telephone facilities lie within the project (see attached for locations).**

2. Do you anticipate any impacts of the project on telephone facilities of services? If so, please list/summarize additions or modifications. Will telephone service be available for the project? **Yes, if facilities are damaged major out of services will result. If facilities require relocation all associated cost with relocation will be the responsibility of the developer. Yes, telephone service will be available for the project.**

3. Do you have any required or recommended mitigation measures for significant impacts? **If the project is to continue, I recommend that telephone facilities be relocated as soon as possible. We will require 60 to 120 days after documentation and monies are received to complete the project.**

4. Is there any other relevant information regarding potential impacts of the project? **None.**

Please contact me should you have any further questions regarding this matter. Thank you.

Sincerely,

David C. Guerrero

David C. Guerrero
Designer – Access Design
760/778-3603

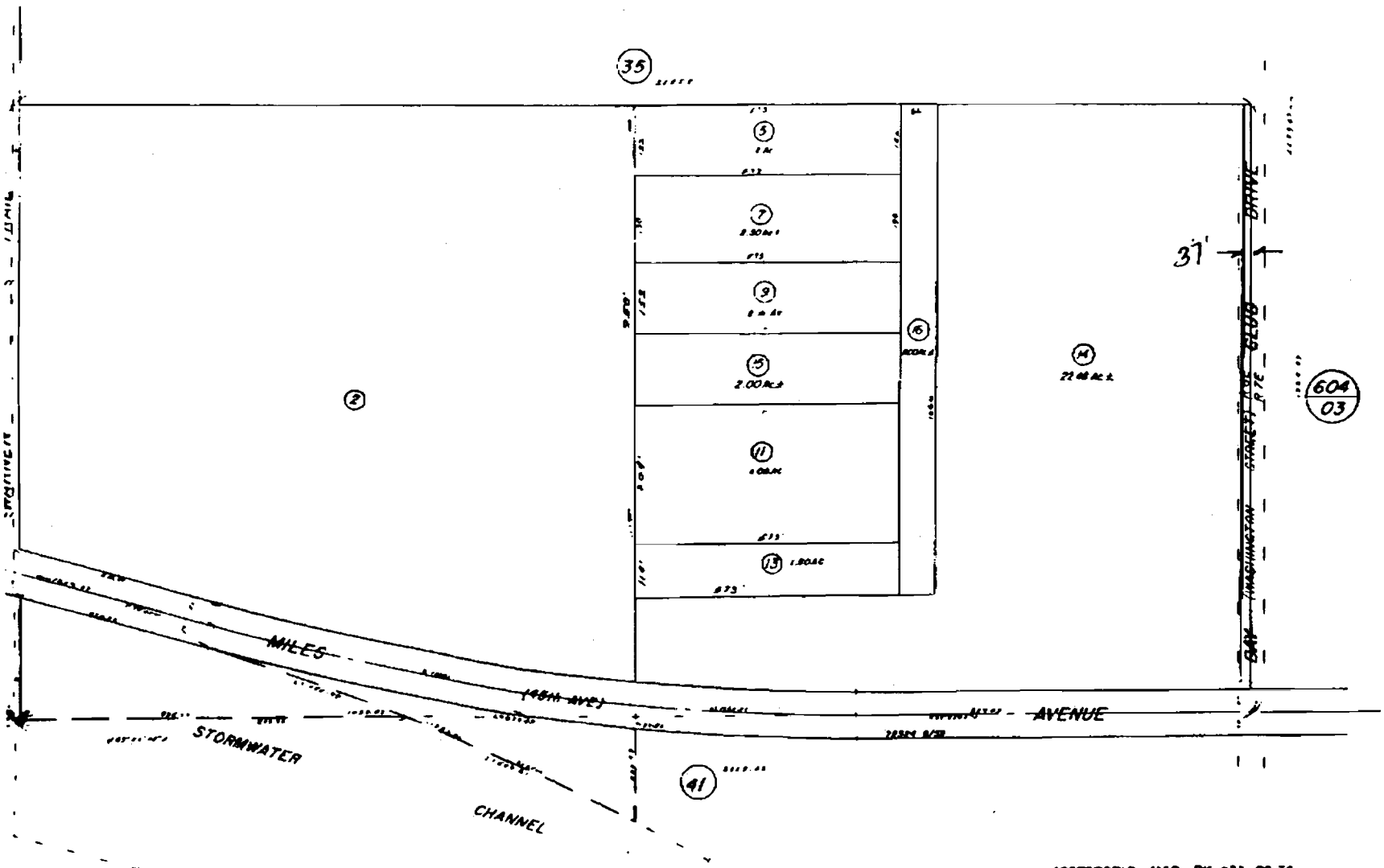
DCG:tjw

Attachment

TRA 075 012

POR NV2SE1/4 & SV2 NE1/4 SEC 24, T5S, R 6E

THIS MAP IS FOR ASSESSMENT PURPOSES ONLY



DATA: R/S 25/89, M II 97/21-22, 53/74
Co Rd 608-E, 702-NW, SVCWD R/W

DEC 1967

ASSESSOR'S MAP BK. 632 PG. 36
RIVERSIDE COUNTY, CALIF.

depicts 6' wide easement
37' w/o SECTION LINE
doc # 1966-48443

11.10-5

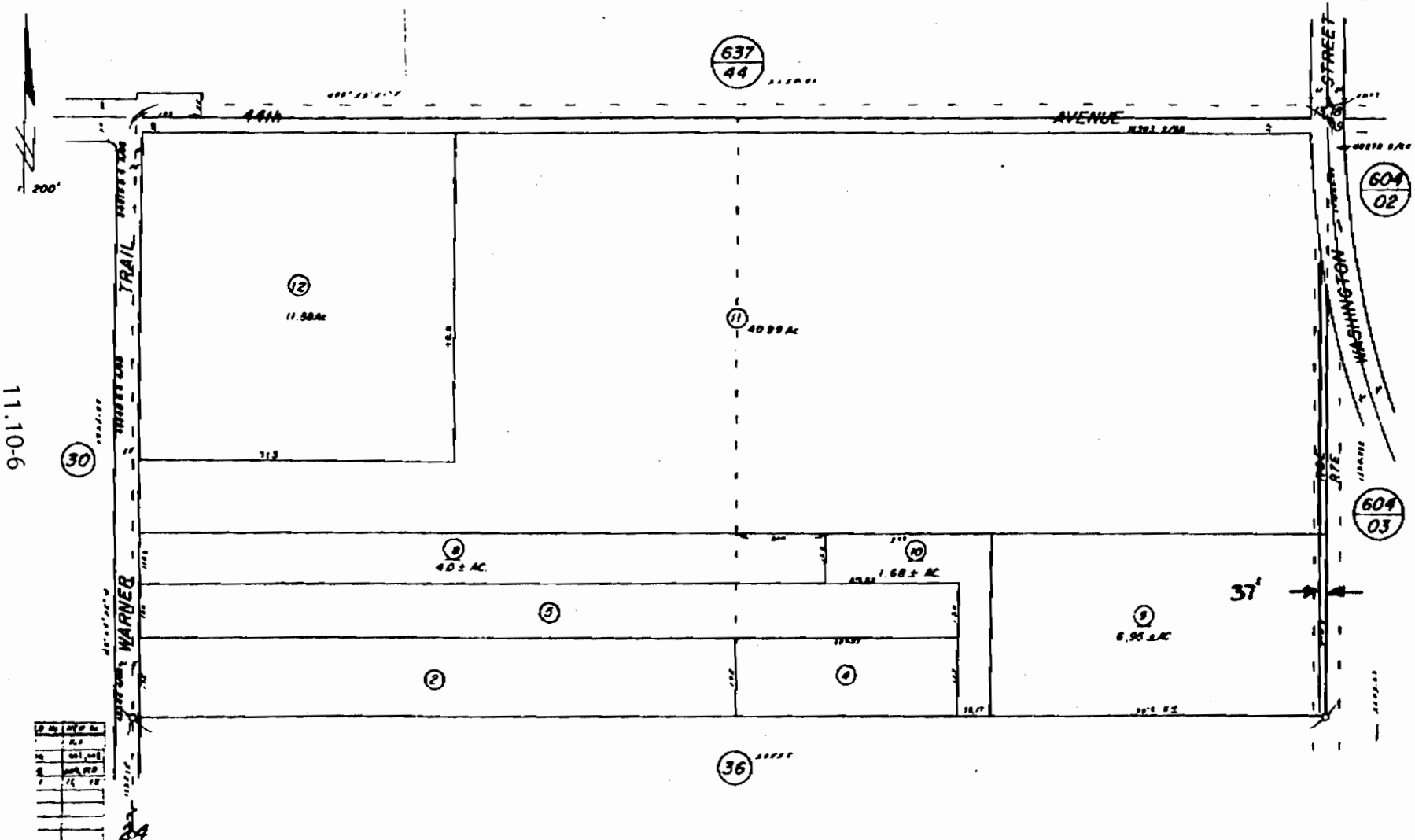
Riverside, CA, 1997-98 632 of

633-35

TR A 075 002

N1/2 NE1/4 SEC 24, T5S, R6E

THIS MAP IS FOR ASSESSMENT PURPOSES ONLY



DATA: R/S 5/9, 11/87, MB 32/21-22, 53/74, 52/8
Co Rd 408-E

DEC 1967

ASSESSOR'S MAP BK. 633 PG. 35
RIVERSIDE COUNTY, CALIF.

depicts 6' wide easement
37' w/o section line
doc # 1966-48445

11.10-6

USA WASTE
SERVICES, INC.

DESERT DISTRICT
P.O. BOX 10950
INDIO, CALIFORNIA 92202
(760) 345-7668
(760) 398-1463 FAX

April 17, 1998

RECEIVED
APR 20 1998
ROBERT BEIN, WM FROST

RBF & Associates
Mr. Derek L. Ross, Environmental Analyst
P.O. Box 57057
Irvine, CA 92619-7057

RE: Solid Waste Questionnaire – Garden of Champions Project

Dear Mr. Ross:

I hope the following response to your request will be sufficient for your needs. If you need any further information or assistance, please call me at (760) 345-7668.

1. Edom Hill Landfill, Cathedral City

2. We do not have estimated solid waste generation data for the proposed use but would suggest contacting the City of Indian Wells, as they have similar existing stadiums.

3. Solid waste pickup will be available for the project.

4. No

5. No

6. No

Sincerely,

Jim Brockman

Jim Brockman
Desert District Manager

A Waste Management Company

Date: April 28 , 1998

To: Troy Butzlaff
City of Indian Wells

From: Ross Minarcik
Operations Manager
Waste Management of the Desert

Subject:Year End Results

Troy, While conducting an internal audit on my operation I discovered a year-end task that may or may not have made it across your desk. If I have duplicated any efforts I sincerely apologize. Attached are the 1997 year end waste disposal tonnage's as indicated by Commercial , Rolloff , and Residential. Also included are the results for the 1st quarter of 1998. If any additional information is needed please let me know.

Line of Business	January	February	March
Commercial	265.74	255.74	262.63
Roll Off	349.98	445.84	598.45
Residential	206.75	133.60	133.99
Subtotal	822.47	835.18	995.07
Tons per day	33.57	37.96	42.34

	April	May	June
Commercial	241.97	200.72	160.79
Rolloff	739.46	1057.01	802.61
Residential	190.78	88.55	79.08
Subtotal	1172.21	1346.28	1042.48
Tons per day	48.84	56.10	45.33

Line of Business	July	August	September
Commercial	134.14	181.69	204.20
Roll Off	727.60	695.80	701.43
Residential	91.00	82.18	79.78
Subtotal	952.74	959.67	985.41
Tons per day	38.89	40.84	42.84

	October	November	December
Commercial	248.29	217.69	225.07
Roll Off	772.96	610.77	574.40
Residential	16.78	57.65	65.14
Subtotal	1038.03	886.11	864.61
Tons per day	41.52	40.28	35.29

Year to date totals 1997

Commercial	2598.67
Roll Off	8076.31
Residential	1225.28
Subtotal	11900.26
Tons per day	42.97

Year to date totals for 1998

	January	February	March
Commercial	211.89	215.22	244.23
Roll Off	704.90	507.96	593.49
Residential	59.87	139.41	115.58
Subtotal	976.66	862.59	953.30
Tons per day	40.69	39.21	39.72

Attachment to
Park and Recreational Facilities Questionnaire

1. **Palm Desert Community Center and Gymnasium (20,000 sq.ft)**
   43-900 San Pablo, Palm Desert approx. 5 miles from project

   Portola Community Center (4,000 sq ft)
   44480 Portola Ave., Palm Desert approx. 5 miles from project

   LaQuinta Community Center and Frances Hack Community Park
   (6,000 sq. ft. bldg.). 77-865 Avenida Montezuma, La Quinta
   Approx. 2 and ½ miles from project

   Indio Community Center and Gymnasium (33,000 sq. ft. 6 acre park)
   45-871 Clinton Street, Indio approx. 3 miles from project

   Bermuda Dunes Community Park and Center (design phase)
   Proposed bldg. 5,000-8,000 sq.ft. 12 acre park estimate
   Site still unsecured. Approx. 1 mile from project

2. **Unknown??**
3. **Yes**
4. **Yes there will be mitigation fees per dwelling unit.**
5. **You can either pay mitigation fees or dedicate parkland with the approval of the C.V. Recreation & Park District.**
6. **We require you pay mitigation fees and enter an agreement before pulling the building permit.**
7. **Impact will be the number of residents using existing facilities.**

RIVERSIDE COUNTY
LARRY D. SMITH. SHERIFF

Sheriff

73-520 FRED WARING DRIVE • PALM DESERT, CA 92260 • (760) 836-1600

RECEIVED
APR 23 1998
ROBERT BEIN, WM FROST

Mr. Derek Ross, Environmental Analyst
Robert Bein, William Frost & Associates
P.O. Box 57057
Irvine, CA 92619-7057

April 21, 1998

Dear Mr. Ross,

We have reviewed the Garden of Champions proposal, and the questions you had regarding police services. At present the area in question is serviced by the Palm Desert Sheriff's Station which is located at 73-520 Fred Waring Drive, Palm Desert. The Palm Desert Sheriff's Station provides law enforcement services to the cities of Indian Wells, Palm Desert and Rancho Mirage, as well as the unincorporated areas of Sky Valley, Thousand Palms, North Palm Springs, Pinyon, Painted Hills and Palm Springs Oasis. Our service area includes three cities which have their own police departments, i.e. Palm Springs, Cathedral City and Desert Hot Springs. Persons served by the Palm Desert Sheriff's Station number approximately 70,000.

As the proposed development lies immediately west of Washington Street which separates the areas of responsibility for the Palm Desert and Indio Sheriff Stations, the area could draw on resources from both stations in an emergency. At the Palm Desert Station, we routinely field 12 to 18 patrol units/deputies, and the Indio Station generally deploys 6 to 8. The total number of sworn deputy sheriffs at the Palm Desert and Indio Stations are 116 and 65 respectively.

With regard to response time to the project area, at present we can be on scene in 2 to 5 minutes or less in an emergency with deputies assigned to either Palm Desert, Indian Wells, La Quinta or Bermuda Dunes. Our routine response is lengthy as this area is an unincorporated island, and the nearest county patrol unit may respond from the Thousand Palms area or further. A 20 to 30 minute response to a routine call would not be unusual.

The proposed hotel, commercial development and residential village will eventually result in an increase in calls for services. We will see a slight increase in traffic accidents, crimes of theft, burglary and vandalism. The number of occurrences will be higher during tennis tournaments and special events. Thus far in April 1998, we have had two calls for services at the Grand Champions Hotel.

When tennis tournaments and other special events are held, the promoters or sponsors generally contract with the Palm Desert Sheriff's Station for extra duty deputies to police the event. As

each event is unique, the need will vary in each case. In the unincorporated areas, the County strives to maintain a ratio of one deputy per one thousand population.

We wish you well with the project. If there is anything we can assist you with, please do not hesitate to call.

Sincerely,

LARRY D. SMITH, SHERIFF

John M. Killin, Lieutenant
Palm Desert Station

IMPERIAL IRRIGATION DISTRICT

COACHELLA VALLEY POWER DIVISION
81-600 AVENUE 58 • P. O. BOX 1080 • LA QUINTA, CALIFORNIA 92253-1080
TELEPHONE (760) 398-5854 • FAX (760) 391-5999

RECEIVED
MAY 0 1 1998
ROBERT BEIN, WM FROST

IIDPD-DDC

April 29, 1998

Mr. Derek L. Ross, Environmental Analyst
14 725 Alton Parkway
Irvine, CA 92618-2069

Dear Mr. Ross:

Subject: Proposed Garden of Champions Project (approximately 150 acres) near Indian Wells, CA

The Imperial Irrigation District (District) has responded to Riverside County regarding this proposed complex, copy attached. Below are the answers to the Electric Service Questionnaire sent to the District dated April 22:

1. What is the present service area and/or locations of your facilities? Are any of these facilities within the proposed project boundaries as shown on the attached Site Vicinity map?

   The District only provides electrical service to Section 19 of Township 5S, Range 7E. Southern California Edison will provide the electrical service to Section 24 of Township 5S, Range 6E. Unfortunately, the District's existing distribution conduit system is presently on the east side of Washington Street. The owner/developer of this project will have to arrange for the connection of the existing system to the new underground conduit system required for this project. It is unknown at this time if Washington Street can be "cut" for this purpose, or if the conduits will have to be installed in a system bored under the street. In either event, the owner/developer will have to pay for all of these expenses.

2. What is the present capacity and/or nature of your facilities? (Please provide any available information necessary to evaluate existing conditions in the project area and potential impacts).

   An additional distribution circuit would have to be constructed to serve this project. The distribution system in this area is served via the North La Quinta Substation. The approximate Summer Peak Load on this substation is 21 MVA on the 28 MVA transformer. The District is proposing to accelerate the addition of a second substation transformer due to this Garden of Champions project. There is sufficient substation and sub-transmission capacity to serve the estimated electrical load that this project would demand.

3. What is the projected electrical demand for this project based upon the information provided (i.e. generation factors for stadium facilities, commercial, hotel and residential uses)?

   Unfortunately, no electrical load information was provided to the District for this complex. Until such electrical load information is provided, it is impossible to accurately determine the impact that this project will have on the District's facilities. However, an approximation of the electrical demand was made from the maps provided to the District. Results are below, with the associated assumed electrical demand:

District Area	50 Acres Parking	200 kVA
	40 Acres Future Development	3,500 kVA
	SUB-TOTAL	3,700 kVA
SCE Area	Tennis Complex	1,500 kVA
	Sports & Rec. Facility	1,500 kVA
	Residential	900 kVA
	Commercial	3,700 kVA
	SUB-TOTAL	7,600 kVA

   (The District is not responsible for the electrical load calculations shown above for SCE's service area.)

4. Can your facilities in the service area supply the required additional electricity currently or on project completion.

   Yes. Please refer to the answer for #2.

5. Do you anticipate any project related impacts to your facilities? Specifically, will the proposed project impact service or require new or modified facilities? If so, please list/summarize additions or modifications.

   The major impact that this project will have on the District's electrical system will be the requirement to construct a new distribution circuit from North La Quinta Substation to the project site. This will be mitigated by the developer/owner paying for the conduit and cable installation, as per District Regulations. Please also see answer to #2.

6. Do you anticipate any short-term construction related impacts, such as a possible disruption of service?

   We are unable to accurately answer this question at this time. It is very probable that short outages (less than one hour in duration) will be required to add the new distribution circuit to the existing distribution grid.

7. Do you require or recommend and mitigation measures for any project impacts noted in Questions 3,4, or 5?

   Yes. Please refer to the answer for #5.

8. Is there any other relevant information regarding potential significant impacts of the project?
   The District has been trying to construct a 230kV transmission loop to the Avenue 42 Substation (located in the vicinity of Madison Street and Avenue 42) since the early 1990's. This loop is vital to provide an additional source of power for the 92kV sub-transmission grid that serves the Thousand Palms/Indio/Coachella/ LaQuinta area. Possible system-wide blackouts are possible every summer due to the lack of this 230kV loop. The continued addition of electrical load on the District's system increases the likelihood of this blackout condition. Until this 230kV loop is constructed, the District cannot guarantee that there will be sufficient electrical power to meet the needs of this proposed project. The litigation on this 230 kV Loop has recently entered into the court hearing phase. It is hoped that the matter can be resolved within the next few months, which will allow for this line to be constructed by the summer of 2000.

Although the Imperial Irrigation District has received this preliminary plans for impact assessment, we will not begin to engineer nor derive cost estimates for this project until the owner/developer/contractor applies for electrical service. This procedure helps to eliminate wasted manpower spent on projects that never reach construction stage.

If you have any questions regarding this matter, or if I can be of further assistance, please contact me at 398-5818 or John Salas at 398-5834.

Sincerely,

Thomas F. Lyons Jr. P.E.

THOMAS F. LYONS, JR., P.E.
Senior Engineer

Enclosure

TFL: am

CC : O. Foote, HNC&F
T. King, IID
R. Macknicki, IID
J. Salas, IID
M. Remington, IID

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

RECEIVED
JUN 1
ROBERT BEIN, WM FROST

COACHELLA VALLEY WATER DISTRICT

POST OFFICE BOX 1058 • COACHELLA, CALIFORNIA 92236 • TELEPHONE (619) 398-2651

DIRECTORS
TELLIS CODEKAS, PRESIDENT
RAYMOND R. RUMMONDS, VICE PRESIDENT
JOHN W. McFADDEN
DOROTHY M. NICHOLS
THEODORE J. FISH

OFFICERS
THOMAS E. LEVY, GENERAL MANAGER-CHIEF ENGINEER
BERNARDINE SUTTON, SECRETARY
OWEN McCOOK, ASSISTANT GENERAL MANAGER
REDWINE AND SHERRILL, ATTORNEYS

June 5, 1998

File: 0421.1

Derek Ross
Robert Bein, William Frost and Associates
14725 Alton Parkway
Irvine, California 92618

Dear Mr. Ross:

We received your letter dated May 14 regarding Senate Bill 901 (SB901) Water Supply Assessment for the proposed Garden of Champions project near Indian Wells.

We are requesting a 30-day extension in accordance with section 10910, paragraph (f) of the government water code to continue our review of the water supply assessment.

If you have any questions please call Carrie Walker, assistant domestic water engineer, extension 268.

Yours very truly,

Tom Levy
General Manager-Chief Engineer

CW:md\eng\dom\jun\ross

TRUE CONSERVATION
USE WATER WISELY

11.10-17

11.11 Cumulative Projects

CITY OF INDIAN WELLS
MAJOR DEVELOPMENT LIST

LAST UPDATE: MARCH 1, 1998

PROJECT NAME	DESCRIPTION	LOCATION	DEVELOPER APPLICANT	RELATE CASES	APPRV'D PC - CC	CURRENT STATUS
Residential Development						
Tract 28282	Sandstone Development 17 Condos on 6.01 acres	Indian Wells Country Club area	George Martinovich Sandstone Dev., Inc. 77-705 Seminole Indian Wells 92210 (619) 345-0023	GPA 4-96-1 COZ 1-96-2 CUP 2-96-2	PC 3/28/96 CC 4/18/96	Under construction 12 units completed
Tract 24625	55 of 63 remaining lots	The Colony Southwest corner of HWY 111 and Manitou	Century Homes 1535 South "D" Street San Bernardino CA 92408			19 homes under construction (10 completed)
Tract 27104	45 SFR - formally, Inwell) Investments	Southwest side of Hy 111 and Eldorado Drive	McComic Consolidated 4920 Carroll Cyn Rd. San Diego, Ca 92121 (760) 557-9191	Final Map Approval 1/6/1997	CC 5/21/92	3 models, 11 under construction
Tract 27697	97 single family homes	West of Cook St. and North of Highway 111 909 381-6007	Century Crowell Communities 1535 So. "D" St., San Bern., Ste 200, 92408			Approved
Tract 28016	The Reserve at Hidden Vly Subdivide a 545 acre site into 250 single-family home sites with a golf course	South of the Living Desert, north of Ironwood CC, east of Portola (60 acres are in Palm Desert)	Keith Companies 41-865 Boardwalk Palm Desert, Ca 92260 760) 346-9844 Suite 101	CUP 2-92-5 EIR 6-91-2		Project approved Grading of streets begun. Houses in plan check

11.11-1

f:/barbara/misc/maj-dev.xls

Post-it™ Fax Note 7671	Date 4-13	# of pages ▶
To Bruce Grove	From Barbara	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 714 837-4122	Fax #	

Commercial Development

PROJECT NAME	DESCRIPTION	LOCATION	DEVELOPER APPLICANT	RELATE CASES	APPRV'D PC - CC	CURRENT STATUS
CUP 2-96-5	Renovate/remodel the Erawan Garden Resort	Miramonte Resort Indian Wells 76-477 Hwy 111 Indian Wells, Ca 92210	Marcus Hotel/Resort Concepts 4, Inc. #200 Mr. Michael Allen 1983 W. 190th Torrance, CA 90504		PC 12/18/96 CC 01/16/97	Completed 2/1998
CUP 2-97-3	African Trading Village	Southeast side of the Living Desert Reserve near the storm channel	Living Desert Reserve 47-900 Portola Avenue Palm Desert, CA			Approved. In plan check
CUP 2-86-4	Office/Professional building of '5,475 square feet.	Village II center	Warren Properties (PO Box 915, Rancho Santa Fe, CA 92067-0915, 756-3711			Approved. In plan check
CUP 97-5 VAR 97-2	3 office bldgs on vacant pads	Village Plaza Village Center Drive	Schmid Investments 15101 Red Hill Avenue Tustin, CA 92680 714-259-7900			In plan check.

11.11-2

$4.00

CITY OF LA QUINTA

RESIDENTIAL DEVELOPMENT STATUS REPORT

Revised as of October 1, 1997

City of La Quinta
Community Development Department
P. O. Box 1504
78-495 Calle Tampico
La Quinta, CA 92253

Phone: (760) 777-7125

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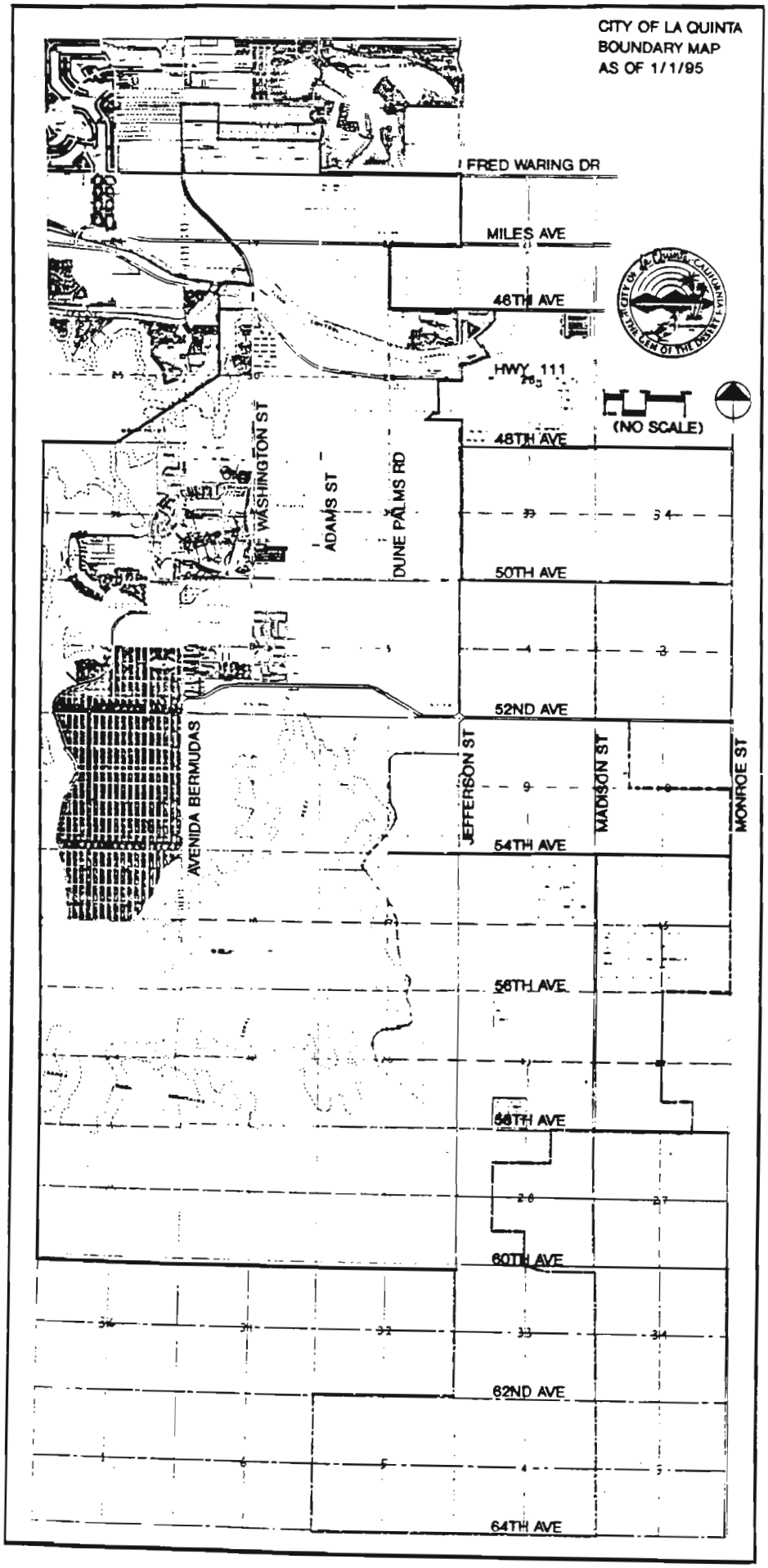
CITY OF LA QUINTA
BOUNDARY MAP
AS OF 1/1/95
FRED WARING DR
MILES AVE
46TH AVE
HWY 111
(NO SCALE)
48TH AVE
WASHINGTON ST
ADAMS ST
DUNE PALMS RD
50TH AVE
52ND AVE
AVENIDA BERMUDAS
JEFFERSON ST
MADISON ST
MONROE ST
54TH AVE
56TH AVE
58TH AVE
60TH AVE
62ND AVE
64TH AVE

CITY OF LA QUINTA
HISTORIC RECORD OF HOUSING DEVELOPMENT

Calendar Year	S. F. Detached	Apt. Units	Attached Condos	Mobile Homes +	Annual Total	Cumul. Total	Annual% Growth
Prior to 1983*	2,415	168	374	0	N/A	2,957	N/A
1983	20	10	227	226	483	3,440	+16.3%
1984	82	2	202	0	286	3,726	+8.3%
1985	74	0	307	0	381	4,107	+9.8%
1986	158	3	237	0	398	4,505	+9.7%
1987	143	0	123	0	266	4,771	+5.9%
1988	467	0	712	0	1179	5,950	+24.7%
1989	587	-6	142	0	723	6,673	+12.2%
1990	707	-4	371	0	1074	7,747	+16.1%
1991	282	0	4	0	286	8,033	+3.7%
1992	283	0	32	0	315	8,348	+3.9%
1993	312	0	12	0	324	8,672	+3.9%
1994	474	0	24	0	498	9,170	+5.7%
1995	380	91	28	0	499	9,669	+5.4%
1996	462	116	24	0	602	10,271	+6.2%
YTD 1997	341	1	0	0	342	10,613	+3.3%
Cumulative Totals	7,187	381	2,819	247+	N/A	10,634	N/A

See notes on following page regarding the Record of Housing Development.

HISTORIC RECORD OF HOUSING DEVELOPMENT

Note:

- Units are counted upon building permit issuance; where completed unit counts are given in summary, they are based on: *3 months backdating for single family dwelling; 6 months for multi-family/attached condominium. Demolished units are part of total counts by category.
- High 1988 counts attributable to building fee increase effective January 1, 1989.
- Any detached condo units and any zero lot line developments shown as single family detached.

Source: State Department of Finance (1986 Special Census; April 19, 1986)
City of La Quinta Building Department (Building Permit Records)

+Note: Mobile home set-up permits are not counted. 226 mobile homes were annexed into the City in 1983. State Department of Finance estimates the number of mobile homes annually; current count is 247.

Revised: As of October 1, 1997

* Based on Department of Finance data, and City incorporation boundary as of December 31, 1982. Prior to 1983, unit counts are estimated.

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DEVELOPMENT STATUS
SUMMARY REPORT
APPROVED RESIDENTIAL PROJECTS

*REFER TO LARGE SCALE "APPROVED PROJECTS" MAP FOR PROJECT LOCATIONS

Project		Units Approved	Permits Issued	Unit Balance	Round Acres
1.	La Quinta Resort and Club (Santa Rosa Cove)-SP 121-E (See related Tract listings)	916	460	456	638
2.	Duna La Quinta - SP 83-001 Condos, Single-Family & Apartments (See related Tract listings)	471	211	260	155
3.	PGA West - SP 83-002 Condos, Single-Family & Apartments (See related Tract listings)	5,000	1,709	3,291	1,685
4.	Rancho La Quinta - SP 84-004 (See related Tract listings)	1,500	226	1,274	693
5.	Oak Tree West - SP 85-006 (See related Tract listings)	2,245	96	2,149	1,025
6.	Inco Homes - SP 88-012 Tract 23995	1,056	35	1,021	132
7.	Foster Turf - SP 90-015	1,060	0	1,060	265
8.	The Grove - SP 90-016	1,208	0	1,208	327
9.	PGA Weiskopf Resort Course SP 90-017	880	0	880	220
10.	Vista Santa Rosa - SP 90-020	850	0	850	273
11.	USA Properties/Terracina Apts. CUP 96-023/PP 96-571	116	116	0	12
12.	The Seasons - SP 94-024	151	124	27	25
13.	The Green - SP 94-025	277	0	277	331
14.	Travertine Pointe - SP 94-026	2,300	0	2,300	909
15.	Palm Royale -Tract 18915	354	306	48	60
16.	Laguna De La Paz - Tract 20052	396	390	6	100

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Project		Units Approved	Permits Issued	Unit Balance	Round Acres
17.	Parc La Quinta - Tract 21555	150	150	0	40
18.	Cactus Flower - Tract 22982	142	133	**4	40
19.	Cactus Flower II - Tract 24208	68	67	1	20
20.	Acacia Homes - Tract 23268	199	188	11	48
21.	La Quinta Highlands/Vistas - Tract 23269	255	244	1	72
22.	Starlight Estates - Tract 23773	154	62	92	45
23.	Quinterra - Tract 23913	116	111	5	33
24.	Topaz - Tract 23935	196	189	7	50
25.	Deane Homes - Tract 23971	81	33	48	30
26.	Lake La Quinta/Spinnaker Cove Wilma Pacific/Century Homes Tracts 24230/26152	+281	134	147	151
27.	Rancho Ocotillo : Tract 24517 Tract 25290	 91 31	 91 30	 0 1	 27 9
28.	Rancho La Quinta - Tract 25154 (annexed)	98	23	75	31
29.	Painted Cove - Tract 25429	83	40	43	36
30.	Del Rey - Century-Crowell Communities: Tract 25363 Tract 26188 Tract 27899	 75 39 111	 54 39 0	 21 0 111	 20 10 30
31.	Richard Deman - Tract 25691	39	0	39	10
32.	Mike Hirsch - Tract 25953	144	0	144	38
33.	Bajada - Tract 26016	18	18	0	5
34.	Amcor Realty - Tract 26148	55	0	55	14
35.	La Quinta 33 - Tract 26444	98	0	98	32
36.	The Estancias: Tract 26524 Parcel Map 26525	 44 3	 8 2	 36 1	 38 4
37.	Hansch - Tract 26718	125	0	125	39

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Project		Units Approved	Permits Issued	Unit Balance	Round Acres
38.	Werner - Tract 26768	21	0	21	20
39.	The Estates - Tract 26769	14	7	7	20
40.	A & H Properties - Tract 26853	52	0	52	19
41.	Kanlian - Tract 26855	73	0	73	24
42.	Elliot/Poliak Trust - Tract 27224	98	0	98	40
43.	The Quarry:				360
	Tract 27728	59	7	52	
	Tract 28189	11	5	6	
44.	Kleine/Woodbridge - Tract 28034	25	1	24	19
45.	Tradition Club Assoc. - Tract 28470	242	0	242	746
46.	Snellenberger and Assoc: Bella Vista				
	Tract 28457	116	21	95	29
	Tract 28458	115	0	115	33
47.	Tract 28409 - Adobes	19	0	19	9
TOTALS		**22,321**	**5,330**	**16,976**	**9,041**

* All numbers include model home permits, which are part of total units in project approval.

\+ Total does not include 10-acre multi-family parcel - potential for 160 units. Tract 24230 includes this parcel and approximately 21 commercial acres.

** Residential lots currently in use as retention basin, pending storm drainage plans for area.

TOTALS row does not add up due to discrepancies in approved units vs. actual construction.

resdev97.tab

RESIDENTIAL DEVELOPMENT
SPECIFIC PLANS
(PAGE 1 OF 2)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
La Quinta Resort and Club (Santa Rosa Cove) - KSL 760-564-1088	Specific Plan 121E App'd 5/13/82 Amd't #4 app'd 9/16/97	Condominiums & 91 custom single-family lots, and a 185 acre golf course around La Quinta Hotel Resort & Club's 641 rooms Amd't #4 proposed for 119 residential timeshare units and a 20,200 s f. resort spa building.	133	406	0	539	916	460/460/0	See related tract map and use approvals as listed Amd't #4 adds 119 resort units
Duna La Quinta Larry Lichliter - KSL 760-564-1088	Specific Plan 83-001 Approved 5/15/84 Amd't #1 app'd 4/16/85 Amd't #2 app'd 11/5/85 Amd't #3 app'd 6/17/86 Amd't #4 app'd 12/17/91	App'd for development of 861 units on 180 acres oriented around portions of the La Quinta Dunes Course, and 100,00 sq ft of commercial and office space, generally bounded by 50th Ave. to the north, Eisenhower Dr. to the west and Adams Street to the east.	UNK	UNK	0	*471	*471	211/211/0	See related tract map & use permit approvals. Amd't #3 proposed 1,225 units. SP 94-024 removed apt's on 25 acres
PGA West Larry Lichliter - KSL 760-564-1088	Specific Plan 83-002 App'd 5/15/84 Amd't #1 app'd 9/20/88 Amd't #2 app'd 6/6/89 Amd't #3 app'd 8/6/96	Long-term approval for 5,000 dwellings on 1685 acres, 1000 hotel units, 20 acre retail/office/commercial and golf/tennis facilities, all oriented around 4 golf courses, generally bounded by 54th Ave. to the north, 53rd Ave. to the south, and Madison St. to the east.	UNK	UNK	0	5,000	5,000	1,709/1,670/39	See related tract map & use approvals Amdmt #2 app'd to increase hotel units to 1000 Amd't #3 updated the Plan's dev't standards
Rancho La Quinta T D Desert Development Tom Cullinan 760-777-7747	Specific Plan 84-004 App'd 11/20/84	Originally app'd for 1,500 dwellings oriented around 2 golf courses with a 28-acre country club and 80 member/guest cottages on 693 acres generally bounded by 48th Ave to the north, 50th Ave. to the south, Jefferson St. to the east and Washington St to the west.	UNK	UNK	0	1,500	1,500	226/206/20	See Specific Plan related tract maps. Current approvals indicate lesser intensity
Oak Tree West Larry Lichliter - KSL 760-564-1088	Specific Plan 85-006 App'd 10/15/85 Amd't #1 app'd 10/17/89	Currently app'd for 2,245 units, oriented around 2 golf courses & a 40,000 sq ft. golf clubhouse & a 26,000 sq ft office complex on 1,025 acres, bounded by 50th Ave. to the north, Jefferson St to the east, Calle Rondo to the west & 54th Ave to the south	UNK	UNK	0	2,245	2,245	96/96/0	18-hole Citrus Golf Course is complete
KSL Recreation Larry Lichliter 760-564-1088	Specific Plan 90-015 App'd 12/3/91	Specific Plan for 265 acre site with golf & 1,060 potential units on the north side of Airport Blvd between Madison and Monroe Streets.	UNK	UNK	0	1,060	1,060	0	Related cases: GPA 90-029 & CZ 90-054
	Specific Plan 90-016 App'd 12/3/91	Specific Plan for 327 acres including 21 acre commercial site, golf course & 1,208 potential units, generally north of 52nd Ave. at Jefferson St.	UNK	UNK	0	1,208	1,208	0	Related cases GPA 90-031 & CZ 90-056
	Specific Plan 90-017 App'd 12/3/91	Specific Plan for 220 acre site w/golf course & 880 units, generally on the north side of 58th Ave. & south boundary of PGA West.	UNK	UNK	0	880	880	0	Related cases: GPA 90-030 & CZ 90-055
Vista Santa Rosa Stuart Enterprises 760-340-3575	Specific Plan 90-020 App'd 1/21/92	Specific Plan for 273 acres, to include 850 units, generally bounded by Madison, 52nd Ave , Jefferson St & 53rd Ave	850	0	0	850	850	0	Includes 40 acres at the S/E corner of 52nd Ave & Madison
The Seasons E G Williams Devt Marty Butler 760-341-6880	Specific Plan 94-024 App'd 6/21/94	Specific Plan for 91 unit senior apt's with affordability status and a 60 lot SF subdivision with a 5-acre park Located west of the Ralph's Center at Calle Tampico and Washington St.	60	0	91	151	151	124/124/0	Apt units complete See related cases TT 28019 CUP 94-014, PP 94-524

RESIDENTIAL DEVELOPMENT
SPECIFIC PLANS
(PAGE 2 OF 2)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS: ISSUED/BUILT/ UNDER CONST.	COMMENTS
The Green Winchester Asset Mgm't 760-340-3575	Specific Plan 94-025 App'd 6/6/95	Specific Plan for 277 lots of varying sizes on 331 acres, incorporating natural open space and passive recreation (hiking, riding), generally located west of Jefferson St alignment, south of 59th Ave. alignment.	277	0	0	277	277	0	
Travertine Pointe Travertine Corp 760-346-4145	Specific Plan 94-026 App'd 6/6/95	Specific Plan for 2300 units oriented around two 18-hole golf courses, with a 27-acre resort hotel site and a 10-acre commercial site on 909 acres, generally bordered by Jefferson St., 60th Ave., Madison St. & 64th Ave	UNK	UNK	UNK	2,300	2,300	0	

11.11-11

CITY INITIATED
SPECIFIC PLANS

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Highway 111 Specific Plan Fred Baker 760-777-7065	Specific Plan 87-008 In process	Plan for implementation of circulation, land-use & architectural design & development of Highway 111 Corridor	N/A	N/A	N/A	N/A	N/A	N/A	General guidance document being conceptualized
Washington Street Specific Plan Community Dev't Dep't 760-777-7125	Specific Plan 86-007 App'd 3/4/86 Amd't #1, app'd 9/2/86 Amd't #2, app'd 1/19/88 Amd't #3, app'd 3/21/89	Concept plan for design, alignment & improvement of Washington St. to a major arterial, between Ave 52 & Fred Waring Drive.	N/A	N/A	N/A	N/A	N/A	N/A	City initiating phased implementation of the plan
Village at La Quinta Specific Plan Wallace Nesbit 760-777-7069	Specific Plan 87-009 App'd 2/2/88 Amd't #3 app'd 2/15/94	Plan for development of the 103+ acre central village area, generally bounded by Tampico, Eisenhower, 52nd Avenue & Desert Club Drive. Staff currently initiating an update/revision to the document	N/A	N/A	N/A	N/A	N/A	N/A	Staff started update process in early 1997 Cal Poly students completed Chamber-commissioned study, findings due in July

11.11-12

RECENT
GENERAL PLAN AMENDMENTS

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Winchester Asset Mgm't Craig Bryant 760-340-3575	GPA 93-043 App'd 8/3/93	GPA from Open Space lands to LDR (2-4 UPA), west of and including the old county gravel pit, for The Quarry Project.	70	0	0	70	70	11/11/0	See TT 27728 & 28189, TPM 27727 & CZ 93-075
The Green Keith International 760-346-9844	GPA 94-047 App'd 6/6/95	GPA from open space to OS, VLDR, LDR, & MDR at various locations within SP 94-025 (The Green project)	277	0	0	277	0	0	See SP 94-025, CZ 94-077
Travertine Pointe Craig Bryant 760-340-3575	GPA 95-049 App'd 6/6/95	GPA from LDR & OS to NC & TC w/in SP 94-026, So. Of 60th Ave., N.E. of 64th Ave. & east of Jefferson St. alignment.	UNK	UNK	UNK	2,300	2,300	0	
Dutch Parent Keith Int'l /Mike Rowe 760-346-9844	GPA 95-050 App'd 10/3/95	GPA to portions of HDR, LDR & CC to office w/in PM 27131, at the N/E corner of Fred Waring Dr. & Washington St.	UNK	UNK	UNK	UNK	0	0	
Rural Residential Overlay Winchester Asset Management 760-340-3575	GPA 95-051 App'd 6/4/96	GPA for removal of the Rural Residential Overlay (RRO) from 615 acres, bounded by Jefferson, Madison; 52nd and 54th Ave's.	N/A	N/A	N/A	N/A	N/A	N/A	Affected TT 26444 and SP 90-020
City of La Quinta 760-777-7125	GPA 96-052 App'd 7/22/96	GPA for deletion of certain precise General Plan policies for inclusion in the Zoning Ordinance Update.	N/A	N/A	N/A	N/A	N/A	N/A	App'd with Zoning Code (ZOA 96-050)
Brian Murphy/Lynn Kunkle 619-756-0467	GPA 96-053 In process	GPA from Park Facilities to LDR to allow potential subdivision of 20.3 ac. into 70 lots, bounded by Montezuma, the Bear Creek flood channel, Calle Chillon and Calle Ensenada	N/A	N/A	N/A	N/A	N/A	N/A	Filed with Change of Zone 96-080. No development plans yet submitted
KSL Land Corporation Chevis Hosea 760-564-1088	GPA 97-054 App'd 9/16/97	GPA from MDR to TC on 8.4 acres at the LQ Resort & Club, and from LDR to TC on 12.6 acres at the S/E corner of 50th and Eisenhower, to allow SP 121-E, Amd't #4.	0	119	0	119	0	0	Also see SDP 97-607 and 608, TT 28545, CZ 97-083

C-1-13

SPECIFIC PLAN RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
LA QUINTA COVE GOLF CLUB

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS: ISSUED/BUILT/ UNDER CONST	COMMENTS
Santa Rosa Cove at La Quinta Resort and Club 760-564-1315	TR 14496 Revised - App'd 3/20/84 Final maps recorded	Division of 108 acres into 589 condominiums west of Eisenhower Dr. at 52nd Ave.	0	334	0	334	589	334/334/0	Phases 4-7 resubdivided by other maps Phases 1 - 3 represent 334 of 589 units originally app'd
KSL Recreation Corp Chevis Hosea 760-564-1088	TR 18765 App'd 12/4/84 Final map recorded (part)	72 townhomes oriented around the La Quinta Hotel Tennis Club west of Eisenhower Dr. adjacent to the La Quinta Hotel	0	72	0	72	72	48/48/0	Phase I & II completed new TT for remaining phases must be filed
	TR 26251 App'd 10/2/90 Final map recorded	Subdivision of 3.3 acres into 2 large lot estates and one lettered access lot, located on the hillside above TR 25237	2	0	0	2	2	0	No activity to date Site previously approved for 15 condo units
	TPM 28334 App'd 5/16/96	Subdivision of 15 ac. into 3 parcels, located generally at the southeast corner of 50th Ave. & Eisenhower Dr	UNK	UNK	UNK	UNK	UNK	0	Expires 5/16/98
The Enclave Anden Corp 760-564-1315	TR 21120 App'd 9/20/85 Final map recorded	Division of 14 acres into 37 custom SF lots within Santa Rosa Cove (re-subdivision of Tract 14496-5)	37	0	0	37	37	24/24/0	Homes being constructed individually Original Tract 14496-5 was 73 units
Los Estados LQ Joint Venture 760-564-1315	TR 23813 App'd 9/20/88 Final map recorded	Re-subdivision of 10.45+ acres in TT 14496 into 40 detached condo lots. Located in the area between Quintana and Fernando, along Vista Bonita extended (re-subdivision of Tract 14496-4)	40	0	0	40	40	40/40/0	Original Tract 14496-4 was approved for 52 units Tract complete
Enclave Mountain Estates LQ Joint Venture 760-564-1315	TR 25237 App'd 3/20/90 Final map recorded	Re-subdivision of 26.81 acres (TR 14496-6 & 7) of Tract 14496, from 127 condos into 54 SF estate lots, located on the north side of Fernando, +1/4 mile west of Eisenhower Dr	54	0	0	54	54	11/11/0	Improvements complete, individual home construction underway.
William Murray & Assoc 760-363-3363	TR 28335-R App'd 7/2/96 Final map recorded	Reversion to acreage of the 3 lots in TR 26251, into one 3.3 acre parcel at the terminus of Loma Vista	N/A	N/A	N/A	N/A	N/A	0	Expires 7/2/98
KSL Land Corporation Chevis Hosea 760-564-1088	TT 28545 App'd 9/16/97	Division of 62.5 acres into 132 lots for a resort spa use, 119 condominium rental units and various existing hotel facilities, generally around the La Quinta Hotel area	119	0	0	119	0	0	Part of Amd't #4 to the Specific Plan

SPECIFIC PLAN RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
DUNA LA QUINTA

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET SF UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
KSL Recreation Larry Lichliter 760-564-1088	TR 20158 App'd 7/17/84 Final map recorded	Division of 8.7 acres into 54 condominiums southwesterly of Washington St. & 50th Ave	0	54	0	54	54	10/10/0	10 units completed to date
	TR 20218 App'd 7/17/84 Final map recorded	Division of 4.32 acres into 16 condominiums at southwest corner of 50th Ave. & Washington St.	0	16	0	16	16	16/16/0	Project complete
	TR 18767 App'd 12/4/84 Final map recorded	Division of 19 acres into 77 condominiums, south side of 50th Ave., east of Eisenhower Dr.	0	77	0	77	77	77/77/0	Project complete
	PM 24837 App'd 8/23/89 Final map recorded	Land sale division of TT 23292 into 3 parcels on 95 acres	N/A	N/A	N/A	N/A	N/A	N/A	Map recorded
Fairway Homes Ayers Group 714-540-6040	TR 25389 App'd 2/6/90 Ext #1 app'd 10/1/91 Ext #2 app'd 2/16/93	Resubdivision of TT 24837 into 254 SF lots, generally south & east of 50th and Park Avenues	254	0	0	254	254	108/108/0	Tract 25389-1 and 2 consist of 140 lots Remaining acreage expired 2/6/96

11.11-15

SPECIFIC PLAN-RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
PGA WEST
(PAGE 1 OF 3)

PROJECT NAME	CASE REFERENCE & NO. DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET SF UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
KSL Recreation Larry Lichliter/Chevis Hosea 760-564-1088	TR 25499 App'd 3/6/90 Ext. #1 app'd 4/21/92 Ext. #2 app'd 5/18/93	Remainder is *16.5 acres, 4 condo lots, 67 units *Excludes portions re-subdivided by TR 27332, 27757, 27766, 28118, 28150, 28340 and 28410. Revision to original map approved 409 units.	0	67	0	67	409	67/67/0	Original map was 88.5 ac., 33 condo lots, 308 units
	TR 25397 App'd 2/6/90 Final map recorded	Re-subdivision of 17.4 ac. portion of TR 20717-2 from 51 condos into 30 single family estate lots	30	0	0	30	30	10/8/2	Individual custom homes
	TR 24801 App'd 10/3/89 Final map recorded	Division of 32 acre portion of TT 21642 into 8 condo lots for 105 units, along east side of Lake Cahuilla	0	105	0	105	105	108/108/0	Includes 67 detached condo units
	TR 20717 App'd 6/5/85 Final maps recorded	Original approval for division of 130 acres into 528 condos & 19 estate lots. Located on the south side of 54th Ave., west & east of PGA Blvd. Approvals for TR 25397, 26953 and 27762 reduce approved total unit count of 596 to 509.	19	528	0	547	596*	488/488/0	488 units exist in 20717, as currently configured, due to re-subdivisions *Staff approval of 12/85 as per conditions
	TR 21381 App'd 3/18/86 Final map recorded.	Division of 42 acres into 138 condo units, being the 2nd phase of development for PGA West, south of TR 20717	0	138	0	138	*142	142/142/0	*Unit changes/increase app'd by Plan. Comm. on 8/9/88. Tract completed
	TR 21846 App'd 9/16/86 Rev #1 app'd 11/1/88 Rev #2 app'd 11/7/89 Final maps recorded.	Original approval was for division of 105 acres into 22 residential lots to construct 308 condo units at PGA West. Subsequent revisions put total at 434.	0	308	0	434	*434	287/260/0	*1st revision was for 59 more units, 2nd revision for additional 67 units. 17 permits issued but never built
	TR 22432 App'd 5/19/89 Final map recorded	Division of 48.2 acres into 14 residential lots for the construction of 257 condo units within PGA West.	0	257	0	257	257	220/220/0	Final map recorded, tract completed
	TR 24317 App'd 5/16/89 Final map recorded.	Condo subdivision of 3 lots for 111 units (portion of TT 21640) within PGA West at the northwesterly portion of the project area. Encompasses 22.8 acres	0	111	0	*98	111	48/48/0	*Plotted for 98 units. Area added by Amd't #2 to SP 83-002
	TR 25500 App'd 12/19/89 Amd't #1 appd 7/31/90 Final maps recorded.	Condo subdivision of 41.8 acres into 18 lots for 295 condos. Amendment #1 increased map to 46.8 acres, 20 lots & 346 condos. TT 28149 & 28341 reduce this map to 6 acres and 178 units	0	178	0	178	*346	101/101/0	Portion of TT 21643. *346 units originally approved
	TR 26953 App'd 9/17/91 Final map recorded	Re-subdivision of 5.1 acres of Tract 20717 into 3 lots to allow 21 air space condos on west side of Oak Hill, 800-feet south of Arnold Palmer Drive	0	21	0	21	21	20/20/0	19 units are part of current model complex
	TR 28149 App'd 6/6/95 Final map recorded	Division of 20.2 acres into 88 SF lots (portion of TR 25500)	88	0	0	88	88	33/33/0	Deletes 56 units from orig. Tract 25500 approval

11.11-16

SPECIFIC PLAN - RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
PGA WEST
(PAGE 2 OF 3)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S.F. UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
KSL Recreation Larry Lichlter/Chevis Hosea 760-564-1088	TR 28150 App'd 7/18/95 Final map recorded	Division of 3.6 acres into 14 SF lots (portion of TR 25499)	14	0	0	14	14	9/9/0	Unit count consistent with approval for TR 25499
	TR 27332 App'd 3/17/92 Final map recorded	Resubdivision of 7 acres into 5 condo lots for 42 units, at Interlachen & 58th Ave	0	42	0	*37	42	37/36/1	Deleted 22 units under approval for TR 25499 *Less TR 27767, 27757
	TR 27762 App'd 7/6/93 Final map recorded	Division of 2 condo lots into 18 SF lots, along north side of Shoal Creek in PGA West.	18	0	0	18	0	4/4/0	Portion of Tracts 20717 and 24317
	TR 27757 App'd 5/3/93 Final map recorded.	Division of 2 condo lots into 3 parcels, east side of Interlachen in PGA West.	3	0	0	3	3	0	Portion of Tract 27332 Deletes 3 units from 27332
	PM 27766 App'd 5/3/93 Final map recorded	Division of 1 condo lot into 2 parcels, east side of Interlachen in PGA West.	2	0	0	2	2	0	Portion of Tract 27332 Deletes 2 units from 27332
	TR 28118 App'd 2/21/95 Final map recorded	Division of 17.6 acres in 35 SF lots & 4 common lot areas along Hermitage Road within PGA West.	31	0	0	31	35	34/24/10	Portion of Tract 25499, deleted 55 units, TPM 28489 eliminates 4 lots from original approval
	TR 21640 App'd 9/2/86 Final map recorded.	Division of 125 acres into lots for future residential & golf course development.	0	0	0	0	0	0	Lots being sold for housing development
	TR 21641 App'd 5/5/87 Final map recorded	Division of 48.6 acres into 15 lots for land ownership transfer within PGA West	0	0	0	0	0	0	Lots being sold for housing development
	TR 21642 App'd 3/7/89 Final map recorded	Division of 293.5 acres into 20 residential lots, 6 golf course lots & 1 maintenance facility lot	0	0	0	0	0	0	Lots being sold for housing development
	TR 21643 App'd 4/4/89 Final map recorded.	Division of 391.6 acres into 30 residential lots & 8 golf course lots within PGA West.	0	0	0	0	0	0	Lots being sold for housing development
	TPM 28194 App'd 7/5/95	Division of 34 acres, including portion of PM 24995 into 3 parcels for golf, tennis & residential	N/A	N/A	N/A	N/A	N/A	9/9/0	Residential parcel includes models for KSL product
	TT 28259 App'd 12/19/95	Subdivision of 14 ac into 22 SF lots, along PGA Blvd and south of the existing tennis club	22	0	0	22	22	0	Expires 12/19/98 per AB 771 TR 28259-1 recorded
	TT 28340 App'd 6/18/96	Subdivision of 38 ac into 117 SF lots; south of PGA Blvd along Jack Nicklaus, Riviera & Merion	117	0	0	117	117	44/18/26	Resubdivides a portion of TR 25499

11.11-17

SPECIFIC PLAN - RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
PGA WEST
(PAGE 3 OF 3)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET. S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST.	COMMENTS
KSL Recreation Chevis Hosea/Larry Lichliter 760-564-1088	TR 28341 App'd 6/18/96 Final map recorded	Subdivision of 16.4 ac into 56 SF lots, south side of Southern Hills & along Braeburn Drive	56	0	0	56	56	0	Includes an unplotted portion of TR 25500
	TPM 28489 App'd 4/17/97 Effective 7/1/97	Subdivision of 1.1 ac into 4 SF lots, within TR 28118 along Hermitage Street	4	0	0	4	4	0	Reduces original TR 28118 by 4 lots
	TT 28444 App'd 5/20/97	Subdivision of 36 4 ac into 69 SF lots, along Weiskopf Drive	69	0	0	69	69	0	No previous maps filed on this site
McComick Consolidated, Inc 619-535-3940	TT 28410 App'd 6/17/97	Subdivision of 17 ac into 69 SF lots, generally along Cedar Crest, Medinah, Interlachen and Colonial Streets	69	0	0	69	69	0	Area was plotted for 65 condos under TR 25499

11.11-18

SPECIFIC PLAN-RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
RANCHO LA QUINTA (FORMERLY "THE PYRAMIDS")

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT UNDER CONST	COMMENTS
T.D Desert Development Tom Cullinan 760-777-7747	PM 20469 App'd 12/18/84 Final map recorded	Division of approximately 693 acres into 17 parcels for golf and residential lot divisions	N/A	N/A	N/A	N/A	N/A	N/A	Development Agreement in effect See SP 84-004.
	TR 27840 App'd 9/21/93 Amd't #1 app'd 3/15/94	Division of approximately 55 acres into 127 SF lots, southeast of Washington Street and 48th Avenue	130	0	0	130	130	101/101/0	Amendment added 3 lots (Originally 127)
	TR 27835 App'd 1/18/94 Final map recorded	Division of +36 acres into 7 residential airspace condo lots, a golf clubhouse lot, parking and other miscellaneous parcels	0	92	0	92	92	16/16/0	Lots 1-6 show 92 units Lot 9 units not specified
	TR 27952 App'd 7/19/94	Division of 55 SF lots and misc. common area lots on 21 7 acres.	55	0	0	55	55	42/42/0	
	TR 25154 App'd 12/5/89 Ext. #1 app'd 1/21/92 Final map recorded.	Subdivision of 27 5 acres into 98 SF lots, at northeast corner of Date Palm and Sagebrush	98	0	0	98	98	11/11/0	Infrastructure completed Purchased by RLQ in 1997
	TT 28343 App'd 6/4/96.	Division of 23 5 acres into 74 SF lots.	74	0	0	74	74	36/26/10	
	TT 28640 In process	Division of 23 acres into 76 SF lots, adjacent to the east boundary of TR 25154	76	0	0	76	0	0	

11.11-19

SPECIFIC PLAN RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS
OAK TREE WEST

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
KSL Recreation Larry Lichliter 760-564-1088	PM 24889 App'd 10/17/89 Final map recorded.	Division of 426 acres into 108 parcels for sale & development purposes. Located generally between Calle Rondo & Jefferson St north side of realigned Avenue 52	N/A	N/A	N/A	N/A	N/A	N/A	Subdivision for condo lot sales
	TR 24890 App'd 10/17/89 Ext. #1 app'd 10/15/91 Ext. #2 app'd 10/20/92 Amd't #1 app'd 5/4/93	Division of 404 acres of TT 24889 into 562 residential lots, with a variance to R-2 development standards to allow zero lot line and reduced lot widths.	562	0	0	562	562	95/93/2	TR 24890-1 to -9 recorded. Remainder of tract expired 10/17/95 per SB 428
Marvin Homes 760-771-2567	SDP 97-613 App'd 9/24/97	Approval for new units in TR 24890-5, with reductions in lot count from 51 to 34 to increase lot sizes for larger units	34	0	0	-17	N/A	0	Property line adjustments being processed to re-map lots. Total lot count for TR 24890 reduced to 545

11.11-20

SPECIFIC PLAN RELATED
PARCEL, TRACT MAP AND OTHER APPROVALS:
THE GREEN/TRAVERTINE

PROJECT NAME	CASE REFERENCE & NO. DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F. UNITS	CONDO UNITS	APT. UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS: ISSUED/BUILT/ UNDER CONST.	COMMENTS
The Green Mainiero/Smith and Assoc 760-320-9811	PM 28617 In process	Division of 331 acres into 4 parcels, comprising the entire Green Specific Plan area.	UNK	UNK	UNK	UNK	UNK	0	Specific plan is approved for 277 total units

NON-SPECIFIC PLAN TENTATIVE PARCEL MAPS
APPROVED OR IN PROCESS

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
The Estancias Chuck Strother 760-568-2718	PM 26525 App'd 1/15/91 Final map recorded	Division of 4 25 acres into 3 SF lots, on the south side of 50th Ave , +1/2 mile west of Jefferson Street	3	0	0	3	0	2/2/0	Refer to TT 26524
Dutch Parent Advanced Eng Group 760-340-6660	PM 27131 App'd 2/13/92 Amd't #1 app'd 12/19/96 Final map recorded	Division of 156 acres into 4 parcels for development, plus a designated remainder parcel, northeast corner of Washington Street and Fred Waring Drive. Parcel 2 incorporates TR 28457 and 28458, consisting of 231 SF lots	231	UNK	UNK	0	231	0	Amendment #1 allows independent development of Parcel 2, which is made up of TR 28457 & 28458
Winchester Asset Mgm't Craig Bryant 760-340-3575	PM 27727 App'd 5/4/93 Amd't # 1 app'd 7/26/93 Final map recorded	Division of 200 acres into 4 parcels, incorporating the gravel/aggregate pit south of Lake Cahuilla Includes TR 27728 and 28189, which comprise 71 total SF lots Amendment #1 reconfigured lots	70	0	0	70	70	12/12/0	Filed with TT 27728, GPA 93-043 & CUP 93-005 TR 28189 re-subdivided 6 lots into 11
	PM 28650 In process	Division of 7.2 acres into 4 parcels adjacent to the Quarry project, at the N/E corner of Tom Fazio and Quarry Lane	4	0	0	4	0	0	
Amcor Realty Fund Robert Wright 760-398-9520	TPM 28392 App'd 7/15/96	Division of 12 acres into two parcels and one street lot, for the Terracina Apartments project (see CUP 96-023, PP 96-571)	0	0	116	N/A	116	116/116/0	Expires 7/15/98
George Deverian 714-489-9544	PM 28373 App'd 4/25/96 Final map recorded.	Division of .65 ac into 2 lots for residential construction at the north east corner of Washington St & Avenida La Fonda	2	0	0	2	2	1/1/0	Final Parcel Map waived and recorded
Tradition Club Assoc Keith Int'l/Kris Schulze 760-346-9844	PM 28612 In process	Division of 1 98 ac (Lot 43) into 4 lots for residential development	UNK	UNK	UNK	UNK	0	0	App'd at Director's hearing Portion of TR 28470-1

11.11-21

ACTIVE RESIDENTIAL PLOT PLANS,
SITE DEVELOPMENT AND USE PERMITS

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
The Quarry Winchester Asset Mgm't 760-340-3575	CUP 93-005 App'd 5/4/95	Use permit application for 65 SF lots & 18 hole golf course encompassing the gravel pit, south of Lake Cahuilla Portion of TR 27728 re-subdivided to increase total lot count to 70 (see TR 28189).	70	0	0	70	70	12/12/0	See also TT 27728 Golf course complete TR 28189 added 5 smaller lots.
City of La Quinta 760-777-7125 Williams Development 760-346-6800	CUP 94-014 PP 94-524 App'd 6/21/94	91 senior apartment units on 9 3 acres, along the north side of Tampico, +1000 west of Washington Street Area includes TR 28019, 60 SF lots, with affordable status	0	0	91	91	91	91/91/0	See SP 94-024. Construction complete.
Terracina Apt's. Keith International Mark Sambito 760-346-9844	CUP 96-023 PP 96-571 App'd 4/2/96	Approval for 116 apartment units on 11.6 acres, a deviation from min sq ft. and parking req'ts's, along the west side of Washington Street, 700 feet north of Calle Tampico	0	0	116	116	116	116/116/0	Construction began Fall 1996, completion due in Summer 1997
Tradition Club Assoc Keith Int'l/Kris Schulze 760-346-9844	CUP 96-031 App'd 4/1/97	CUP to allow construction of tee boxes and related structures in upper slope areas zoned HC Site area is bounded by 52nd Ave., Avenida Bermudas, and the Santa Rosa Mountain outcrops	N/A	N/A	N/A	N/A	N/A	N/A	Part of TR 28470 (Traditions), use relates to golf holes

11.11-22

ACTIVE RESIDENTIAL
ZONING PROPOSALS/APPROVALS

*NOTE: Preannexation zonings not listed
approval dates are not effective dates

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS: ISSUED/BUILT/ UNDER CONST	COMMENTS
KSL Recreation Larry Lichliter 760-564-1088	Change of Zone 90-054 App'd 12/3/91	Zone change from R-1 to R-2 on 265 acres.	N/A	N/A	N/A	N/A	N/A	N/A	See SP 90-015 Area now zoned RL
	Change of Zone 90-055 App'd 12/3/91	Zone change from R-1, C-P-S & A-1-10 to R-2 & C-P-S on 327 acres.	N/A	N/A	N/A	N/A	N/A	N/A	See SP 90-016 Area now zoned RL and CN
	Change of Zone 90-056 App'd 12/3/91	Zone change from R-1-10 to R-2 on 220 acres	N/A	N/A	N/A	N/A	N/A	N/A	See SP 90-017 Area now zoned RL
Winchester Asset Mgm't Craig Bryant 760-340-3575	Change of Zone 93-075 App'd 8/3/93	Zone change on 360 acres, from HC to R-1-20,000 & R-5, encompassing the gravel pit area south of Lake Cahuilla, for the Quarry Project.	N/A	N/A	N/A	N/A	N/A	N/A	See also GPA 93-043, TT 27728 Now zoned RL and OS
Quarry Green Travertine	Change of Zone 94-077 App'd 6/6/95	Zone change for the Green & Travertine projects, from H-C to R-1 & R-2	N/A	N/A	N/A	N/A	N/A	N/A	Area now zoned RL and OS
	Change of Zone 95-078 App'd 7/18/95	Zone change on 3.6 acres w/in the Quarry, from R-1-20,000 to R-1-10,000 for Tr 28189	N/A	N/A	N/A	N/A	N/A	N/A	Area now zoned RL
Keith International Mike Rowe 760-346-9844	Change of Zone 95-079 App'd 10/3/95	Zone change on portions of a 156 acre site, from R-1, R-2 & C-P to R-1, R-2, C-P & OMS, at the N/E corner of Fred Waring Dr & Washington St.	N/A	N/A	N/A	N/A	N/A	N/A	Related cases. GPA 95-050, TPM 27131 Now zoned RL, RM, CC and CO
City of La Quinta 760-777-7125	Zoning Ord Amend 96-050 App'd 7/22/96 Effective 9/5/96	Amend Title 9 (Planning & Zoning) to add new zoning text and map designations Citywide.	N/A	N/A	N/A	N/A	N/A	N/A	All previous zoning references have been changed
Brian Murphy/Lynn Kunkle 619-756-0467	Change of Zone 96-080 In process	CZ from PR (Park) to RL (Low Density Residential) to allow potential subdivision of 20.3 ac into 70 lots, bounded by Montezuma, the Bear Creek flood channel, Calle Chillon and Calle Ensenada.	N/A	N/A	N/A	N/A	N/A	N/A	Filed with GPA 96-053 Cases not yet scheduled, on hold per applicant
Tradition Club Assoc Keith Intl /Kris Schulze 760-346-9844	Change of Zone 96-081 App'd 4/1/97	CZ from RL and FP to GC on golf course portions of TT 28470 to allow golf course development Site area is bounded by 52nd Ave, Avenida Bermudas, and the Santa Rosa Mountain outcrops.	N/A	N/A	N/A	N/A	N/A	N/A	
KSL Recreation Chevis Hosea 760-564-1088	Change of Zone 97-083 App'd 9/16/97	CZ from RL and RM to TC on 17 6 and 12 6 acres, respectively, to allow 119 resort residential units and a 20,200 s f spa at the LQ Hotel, and maintenance and residential uses at the S/E corner of Eisenhower and 50th Ave, within the original LQ Cove Golf Club Specific Plan	N/A	N/A	N/A	N/A	N/A	N/A	
Winchester Asset Mgm't Craig Bryant 760-340-3575	Change of Zone 97-084 In process	CZ from GC to RL on Lot 92 of TR 28470-1 (to become Lot 33 of TT 28611), as part of the Tradition	N/A	N/A	N/A	N/A	N/A	N/A	Scheduled for PC on 10/14/97, CC on 11/18/97

INDIVIDUAL TRACT MAPS
IN PROCESS

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Tradition Club Assoc Keith Intl /Kris Schulze 760-346-9844	TT 28611 In process	Resubdivide 21 residential lots in TR 28470-1 into 32 lots, and add one estate lot, for a total of 12 units over original approval	12	0	0	12	12	0	Increases total lot count in TR 28470 to 256, pending approval Scheduled for PC on 10/14/97, CC on 11/18/97

11.11-24

APPROVED
INDIVIDUAL TRACT MAPS
(PAGE 1 OF 4)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Palm Royale Colin Spring 760-360-6313	TR 18915 App'd 11/11/89 Final map recorded	Division of 60 acres into 354 condominiums around 18 hole executive golf course at the S/E corner of Washington St. & Fred Waring	0	354	0	354	354	306/306/0	10 units adjacent to clubhouse completed
Laguna De La Paz Roger Snellenberger 760-777-7767	TR 20052 App'd 6/19/84 Final maps recorded	Division of 100 acres for the purpose of development of 396 condominiums-single family oriented around a 6 acre lake at the N/W corner of Washington St. & Eisenhower	272	124	0	396	396	390/390/0	Final phase complete
Century-Crowell Dennis Cunningham 909-381-6007	TR 23269 App'd 8/2/88 Final map recorded	Division of +72 acres into 255 SF lots, located at the southeast corner of Fred Waring & Adams	255	0	0	255	255	244/243/1	Final map shows 250 lots and 1 well site lot
LQ Vistas/Highlands Topaz LQ Del Rey	TR 23935 App'd 2/7/89 Ext #1 app'd 4/16/91 Ext #2 app'd 5/19/92 Final map recorded	Division of +50 acres into 196 SF lots at the S/W corner of Miles & Dune Palms	196	0	0	196	196	189/157/32	Topaz at La Quinta
	Tentative Tract 25363 App'd 6/5/90 Ext #1 app'd 9/15/92 Ext #2 app'd 7/26/93	Subdivision of 75 SF lots on +20 acres, located +900 feet south of Miles, +660 feet east of Adams Street	75	0	0	75	75	54/54/0	Lots reduced due to retention requirements Final map recorded
	Tentative Tract 26188 App'd 3/5/91 Ext #1 app'd 6/15/93 Final map recorded	Subdivision of +10 acres into 39 SF lots, located on the south side of Miles Avenue, between Adams St. & Dune Palms.	39	0	0	39	39	30/30/0	
	Tentative Tract 27899 App'd 2/1/94 Ext #1 app'd 6/4/96	Subdivision of 30 acres into 111 SF lots Southeast corner Miles & Adams	111	0	0	111	111	0	Re-subdivision of expired TT 23519 Expires 2/1/98 per AB 771
Starlight Dunes Starlight Estates, Inc 760-398-2075	TT 23773 App'd 3/21/89 Map expired 3/21/96 Re-filed map app'd 10/1/96	Division of 45 6 acres into 154 SF lots, at the northwest corner of Fred Waring and Adams Street A refiling of original map has been submitted for expired 28 ac. portion (101 lots).	154	0	0	154	154	47/47/0	New units approved for Starlight Estates Phased final maps im process
LQ Del Oro Deane Homes 760-321-8004	TR 23971 App'd 3/7/89 Expired 3/7/96.	Division of 70+ acres into 228 SF lots, at the northeast corner of Miles & Washington	228	0	0	228	228	33/33/0	Phase I complete
Acacia/LQ Del Rey Rick Snyder 714-282-5800	TR 23268 App'd 4/5/88 Final map recorded	Division of +48 acres into 201 SF lots, located along the north side of Miles Avenue, +600 feet west of Adams Street alignment	201	0	0	201	201	188/188/0	Only individual lots remain
Quinterra Snellenberger & Assoc 760-777-7767	TR 23913 App'd 11/15/88 Final map recorded	Subdivision of 33 45 acres into 116 SF lots Located near the northeast corner of Miles Avenue & Adams Street.	116	0	0	116	116	111/111/0	
Cactus Flower	TR 22982 App'd 6/7/88 Final map recorded	Division of 40 acres into 137 SF lots, located at the southeast corner of Fred Waring & Dune Palms	137	0	0	137	142	133/133/0	Cactus Flower project complete Four lots comprise retention basins

11.11-25

APPROVED
INDIVIDUAL TRACT MAPS
(PAGE 2 OF 4)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Cactus Flower Phase II Snellenberger & Assoc. 760-777-7767	TR 24208 App'd 6/6/89 Final map recorded	Division of 20 acres into 68 SF lots on the east side of Dune Palms, 1/4 mile south of Fred Waring Drive	68	0	0	68	68	67/67/0	Extension of Tract 22982 Completed
Lake La Quinta/A G Spanos 619-283-3964 Marquessa/Landrex, CA 760-564-5458	TR 24230 App'd 7/5/89 Final map recorded	Division of 48 acres into 1 multi-family lot & 3 commercial parcels at the northeast corner of Washington & Avenue 48	0	UNK	UNK	120-160	120-160	0	Multi-family type un-known. TT 26152 filed for single family lot portion only
Spinnaker Cove/Century Homes	TR 26152 App'd 7/31/90 Final map recorded	Subdivision of 103 5 acres into 281 lots for SF custom lots, at the northwest corner of 48th Avenue & Adams Street.	281	0	0	281	281	134/133/1	Within TT 24230, partial resubdivision to adjust multiple lot lines
Desert Pride INCO Homes 909-736-0700	TR 23995 Change of Zone 89-039 App'd 9/6/89 Ext #1 app'd 12/3/91 Ext #2 app'd 11/17/92	Division of 132.5 acres into 303 SF lots, 3 multi-family lots & 1 commercial parcel at the south east corner of Miles Avenue and Washington Street See SP 88-012	300	0	0	300	300	35/20/15	TR 23995-1 (40 lots) & -2 (31 lots) recorded. Map expires 9/6/99 per Sec 66452 6, SMA
Rancho Ocotillo I & II Williams Development 760-345-7541	TR 24517 App'd 6/6/89 Final map recorded	Division of 27.6 acres into 91 SF lots. located at the southeast corner of Adams Street & Fred Waring Drive	91	0	0	91	91	91/91/0	Final 11 units issued in January
	TR 25290 App'd 1/2/90 Final map recorded	Division of 9 6 acres into 31 SF lots, adjacent to & east of TT 24517	31	0	0	31	31	30/30/0	Adjacent to Rancho Ocotillo (TR 24517)
Painted Cove Chateau Estates 760 773-9888	TR 25429 App'd 12/19/89 Final map recorded.	Subdivision of 36 2 acres into 83 SF lots & 1 future development lot On the south side of 50th Avenue at Park Street	83	0	0	83	83	39/34/5	Infrastructure completed, units under way.
Richard Deman 760-346-4789	TT 25691 App'd 4/17/90 Ext. #1 app'd 5/19/92 Ext. #2 app'd 6/1/93 Ext #3 app'd 7/2/96	Subdivision of 39 SF lots on +10 acres, on the N side of Miles, 1/4 mile west of Jefferson	39	0	0	39	39	0	Expires 4/17/98 per AB 771.
Sonrisa Oliphant & Williams 760-836-0155	TT 25953 App'd 7/31/90 Ext #1 app'd 10/6/92 Ext. #2 app'd 9/19/95 Ext. #3 in process	Subdivision of 38 4 acres into 144 SF lots at the NW corner of Miles Avenue and Dune Palms	144	0	0	144	144	0	Expires 7/31/97 per AB 771 Map purchased by Williams Dev't
Bajada 760-773-9888	TR 26016 App'd 6/5/90 Final map recorded	Subdivision of 5 3 acres into 18 SF lots at the southwest corner of Park Street & 50th Avenue	18	0	0	18	18	18/12/6	Project area improvements installed

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APPROVED
INDIVIDUAL TRACT MAPS
(PAGE 3 OF 4)

PROJECT NAME	CASE REFERENCE & NO DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET S F UNITS	CONDO UNITS	APT UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
Amcor Realty Robert Wright 760-398-9520	TT 26148 App'd 12/4/90 Ext #1 app'd 1/5/93 Ext #2 app'd 3/5/96	Subdivision of 14 acres into 55 SF lots, at the NE corner of 50th Avenue and Washington St	55	0	0	55	55	0	Expires 12/4/97 per AB 771
The Estancias Chuck Strother 760-360-9312	TR Tract 26524 App'd 12/18/90 Final map recorded	Subdivision of +38 acres into 44 SF lots, located along the south side of 50th Avenue between Park Street & Dune Palms	44	0	0	44	44	8/8/0	TPM 26525 also part of this project, listed under Approved Parcel Maps
LQ 33 Partnership Winchester Asset 760-340-3575	TT 26444 App'd 12/4/90 Ext #1 app'd 6/15/93 Ext #2 app'd 2/6/96	Subdivision of 98 SF lots on 32 acres and one retention lot, approximately 1400 feet south of 53rd Ave., east side of Jefferson Street.	98	0	0	98	98	0	Expires 12/4/97 per AB 771
Werner 760-398-4865	TT 26768 App'd 4/7/92 Ext. #1 app'd 7/2/96	Division of approx 20 acres into 21 SF estate lots on the west side of Monroe Street, ¼ mile north of Airport Blvd.	21	0	0	21	21	0	Expires 4/7/98 per AB 771
The Estates Qualico Dev 760-568-1370	TR 26769 App'd 6/18/91 Final map recorded	Subdivision of 20 acres into 14 SF lots, located on the west side of Monroe Street, ½ mile north of Airport Blvd	14	0	0	14	14	7/7/0	
A & H Desert Prop 760-771-1519	TT 26853 App'd 7/2/93	Subdivision of 19 acres into 52 SF lots, located on the north side of 58th Avenue, ¼ mile west of Madison Street.	52	0	0	52	52	0	Expires 7/2/98 per AB 771
Elliot/Poliak Trust Don Christopher 760-346-6677	TT 27224 App'd 1/21/92 Ext. #1 app'd 3/19/96	Subdivision of 40 acres into 98 SF lots on east side of Madison Street between 54th & 55th Avenues	98	0	0	98	98	0	Expires 1/21/98 per AB 771
Thomas Hansch 760-431-9400	TT 26718 App'd 1/5/93	Subdivision of 39 acres into 125 SF lots, on east side of Jefferson St., 1700 feet south of 50th Avenue	125	0	0	125	125	0	Expires 1/5/98 per SB428, AB 771
Kanlian Ranch 760-564-4567	TT 26855 App'd 1/5/93 Expires 1/5/98	Subdivision of 23.5 acres into 73 SF lots, revised from 65, located on the east side of Jefferson Street, 600 feet south of 50th Avenue.	73	0	0	73	73	0	Ties in with TT 26718 Expires per SB 428, AB 771
Kleine/Woodbridge The Kleine Co 760-776-4840	Tentative Tract 28034 App'd 11/15/94 Final map recorded.	Subdivision of 19 25 acres into 25 SF lots, located on the north side of 58th Avenue, west of Madison St.	25	0	0	25	25	1/1/0	
The Quarry 760-777-1100	TR 27728 App'd 5/4/93 Final map recorded	Subdivision of 200 acres into 65 SF lots and golf course/common areas, encompassing the gravel pit south of Lake Cahuilla	65	0	0	65	65	7/7/0	See also GPA 93-043, CZ 93-075, CUP 93-005 & TPM 27727
	TR 28189 App'd 7/18/95 Ext #1 app'd 6/4/96 Final map recorded	Re-subdivision of 6 SF lots w/in TR 27728 into 11 smaller lots.	11	0	0	11	11	5/5/0	Net gain of 5 lots in total Quarry project area

11.11.27

APPROVED
INDIVIDUAL TRACT MAPS
(PAGE 4 OF 4)

PROJECT NAME	CASE REFERENCE & NO. DATE OF PLAN APPROVAL	DESCRIPTION LOCATION	DET. S F UNITS	CONDO UNITS	APT. UNITS	UNITS PROPOSED	UNITS APPROVED	PERMITS ISSUED/BUILT/ UNDER CONST	COMMENTS
EZ Okie Roger Snellenberger 760-777-7766	Tentative Tract 28457 App'd 3/18/97 Ph. 1 & 2 maps recorded	Vesting tentative proposed for 33 1 acres of a 62-acre parcel, subdividing 116 SF lots. Located on the north side of Fred Waring, approx. 1/4 mi west of Adams Street.	116	0	0	116	116	21/0/21	TR 28457-1 (27 lots) and TR 28458-2 (23 lots) are recorded.
EZ Okie Roger Snellenberger 760-777-7766	Tentative Tract 28458 App'd 3/18/97	Vesting tentative proposed for 28.9 acres of a 62-acre parcel, subdividing 115 SF lots. Located on the north side of Fred Waring, approx. ½ mi west of Adams Street	115	0	0	115	115	0	
Brian Murphy/Lynn Kunkle 619-756-0467	Tentative Tract 28409 App'd 5/6/97	Subdivision of 9.2 acres into 19 SF lots and private street system, located along the n'west edge of the Montezuma and east side of the Bear Creek channel, between Avenida Juarez and Morales	19	0	0	19	19	0	
Tradition Club Assoc. Keith Intl /Kris Schulze 760-346-9844	Tentative Tract 28470 App'd 4/1/97 Ph. 1 map recorded	Resubdivision of existing TR 27613, into 242 SF estate lots and 18-hole golf course. Site area is bounded by 52nd Ave., Avenida Bermudas, and the Santa Rosa Mountain outcrops. Also see CUP 96-031 and CZ 96-081.	242	0	0	242	242	0	TR 28470-1 recorded; portions being re-mapped by TT 26811 and TPM 26812 for 257 total lots.

11.11-28

$3.00

CITY OF LA QUINTA

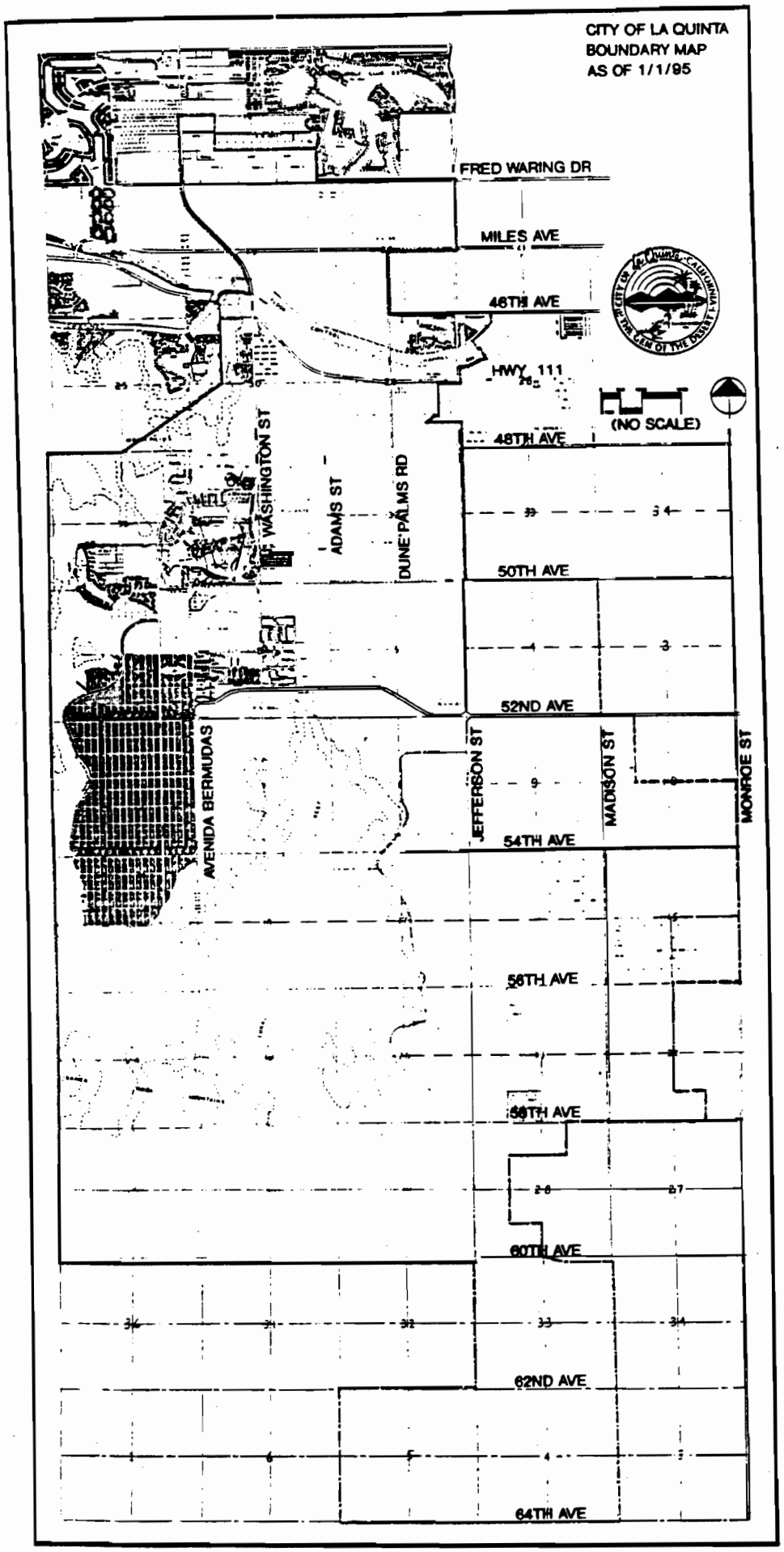
COMMERCIAL DEVELOPMENT STATUS REPORT

Revised as of October 1, 1997

City of La Quinta
Community Development Department
P. O. Box 1504
78-495 Calle Tampico - La Quinta, California 92253

Phone: (760) 777-7125

comdev97.tbl


CITY OF LA QUINTA
BOUNDARY MAP
AS OF 1/1/95
FRED WARING DR
MILES AVE
46TH AVE
HWY 111
(NO SCALE)
48TH AVE
WASHINGTON ST
ADAMS ST
DUNE PALMS RD
50TH AVE
52ND AVE
AVENIDA BERMUDAS
JEFFERSON ST
MADISON ST
MONROE ST
54TH AVE
56TH AVE
58TH AVE
60TH AVE
62ND AVE
64TH AVE

CITY OF LA QUINTA
COMMERCIAL DEVELOPMENT SUMMARY*

PROJECT NAME AND CASE NUMBER		APPROVED		BUILT OR UNDER CONSTRUCTION		REMAINING	
		RETAIL	OFFICE	RETAIL	OFFICE	RETAIL	OFFICE
1.	Plaza La Quinta; Hwy. 111 & Washington	*89,710	49,490	74,000	39,000	15,710	10,490
2.	Simon Motors Simon Drive/Hwy. 111	43,600	0	43,600	0	0	0
3.	Dolly Cunard's; Cadiz & Bermudas	1,200	0	1,200	0	0	0
4.	Plaza Tampico; Tampico & Desert Club	50,922	39,078	0	39,078	50,922	0
5.	Bank of the Desert; Estado & Bermudas	0	3,050	0	3,050	0	0
6.	LQ Meat Market; Tampico & Bermudas	2,000	0	2,000	0	0	0
7.	Circle K Food Store Tampico & Bermudas	2,600	0	2,600	0	0	0
[illegible]	Sandbar Restaurant; Tampico & Bermudas	2,000	0	2,000	0	0	0
9.	Executive Offices; Calle Estado	0	6,000	0	6,000	0	0
10.	Real Estate Office; Calle Estado	0	1,500	0	1,500	0	0
11.	LQ Real Estate; Estado & Bermudas	0	1,900	0	1,900	0	0
12.	Commercial Building; 78-105 Calle Estado	0	3,070	0	3,070	0	0
13.	Deli/Market; La Fonda & Bermudas	2,000	0	2,000	0	0	0
14.	Chiropractor; Avenida La Fonda	0	1,000	0	1,000	0	0
15.	Robi's Restaurant; Avenida La Fonda	2,200	4,000	2,200	4,000	0	0
16.	Chez Monique's; La Fonda & Desert Club	2,000	0	2,000	0	0	0
17.	Shatzi's Grill; Eisenhower & Montezuma	2,300	0	2,300	0	0	0

PROJECT NAME AND CASE NUMBER		APPROVED		BUILT OR UNDER CONSTRUCTION		REMAINING	
		RETAIL	OFFICE	RETAIL	OFFICE	RETAIL	OFFIC
18.	Ace Hardware Store; Tampico & Bermudas	6,400	0	6,400	0	0	0
19.	Retail & Office Building; Tampico & Navarro	1,800	1,800	1,800	1,800	0	0
20.	Historical Museum; Avenida Montezuma	0	2,000	0	2,000	0	0
21.	Historic Kiener Building; Avenida Montezuma	0	3,500	0	3,500	0	0
22.	Teddy's Tex-Mex; Montezuma & Bermudas	1,500	0	1,500	0	0	0
23.	Alliance Service Station; Montezuma & Bermudas	1,500	0	1,500	0	0	0
24.	Post Office; Avenida Bermudas	0	4,360	0	4,360	0	0
25.	El Ranchito Restaurant; Calle Estado	1,900	0	1,900	0	0	0
26.	The Village Offices; 78-080 Calle Estado	0	6,300	0	6,300	0	
27.	Plaza De La Fuente; Bermudas & Cadiz	0	3,250	0	3,250	0	0
28.	Jeanine's Hair Design; Desert Club Drive	858	0	858	0	0	0
29.	Sandwich/Sewing Shop; Avenida La Fonda	865	0	865	0	0	0
30.	Anchovy's Pizza, Calle Estado	1,500	0	1,500	0	0	0
31.	Bogan Villas; Calle Estado	3,440	3,440	3,440	3,440	0	0
32.	LQ Garden Cafe; Calle Barcelona	4,800	0	4,800	0	0	0
33.	Two Angel's Inn Caleo Bay Dr., Lake LQ	9,800	0	9,800	0	0	0
34.	La Quinta Hotel Resort and Club + Conference/Ballroom/Restaurants	43,300	44,700	43,300	44,700	0	0
	A. Resort Spa	20,200	0	20,200	0	0	0
35.	Quarry Clubhouse 1 Quarry Lane	3,627	300	3,627	300	0	

PROJECT NAME AND CASE NUMBER		APPROVED		BUILT OR UNDER CONSTRUCTION		REMAINING	
		RETAIL	OFFICE	RETAIL	OFFICE	RETAIL	OFFICE
36.	Cliffhouse Restaurant 78-250 Hwy. 111	10,250	0	10,250	0	0	0
37.	**PGA West Clubhouse** **Facilities: *(Includes cart barns)**						
A.	Tennis Clubhouse	10,000	0	10,000	0	0	0
B.	Resort (Stadium)	*42,000	0	*42,000	0	0	0
1.	Restaurant (public)	(7,000)	0	(7,000)	0	0	0
2.	Restaurant (private)	(1,200)	0	(1,200)	0	0	0
3.	Pro Shop	(4,000)	0	(4,000)	0	0	0
C.	Private (Palmer)	*65,000	0	*65,000	0	0	0
38.	Tradition Clubhouse SDP 96-599	16,905	0	16,905	0	0	0
39.	La Quinta Village Center N/W corner Washington & Tampico	73,623	5,710	69,833	0	3,790	5,710
40.	La Quinta Civic Center City Hall	0	33,000	0	33,000	0	0
41.	La Quinta Boys and Girls Club Park and 50th Ave.	0	24,000	0	24,000	0	0
42.	La Quinta Senior Center 78-450 La Fonda	0	10,600	0	10,600	0	0
43.	**Washington Square** **(SP 89-011)**	**775,000**	**0**	**212,085**	**0**	**562,915**	**0**
A.	Eagle Hardware	(212,085)	0	(212,085)	0	0	0
44.	**111 La Quinta Center** **(SP 89-014)**	**600,930**	**16,635**	**268,572**	**16,635**	**332,358**	**0**
A.	AAA of So. CA	0	(8,000)	0	(8,000)	0	0
B.	Wal-mart	(127,154)	0	(127,154)	0	0	0
C.	ARCO - AM/PM	(2,000)	0	(2,000)	0	0	0
D.	Albertson's	(42,630)	0	(42,630)	0	0	0
E.	Carl's Jr.	(3,400)	0	(3,400)	0	0	0
F.	Lube Shop	(4,200)	0	(4,200)	0	0	0
G.	Taco Bell	(2,000)	0	(2,000)	0	0	0
H.	McDonald's	(2,400)	0	(2,400)	0	0	0

PROJECT NAME AND CASE NUMBER		APPROVED		BUILT OR UNDER CONSTRUCTION		REMAINING	
		RETAIL	OFFICE	RETAIL	OFFICE	RETAIL	OFFICE
I.	Red Robin	(7,280)	0	(7,280)	0	0	0
J.	Blockbuster Video/ Domino's Pizza	(7,000)	0	(7,000)	0	0	0
K.	Eisenhower Immediate Care Facility	0	(8,635)	0	(8,635)	0	0
L.	Shangri-La Restaurant	(5,040)	0	(5,040)	0	0	0
M.	LQ Car Wash	(12,147)	0	(12,147)	0	0	0
N.	Caal Theatres	(30,000)	0	0	0	(30,000)	0
O.	Radio Shack/Chief Auto	(6,525)	0	(6,525)	0	0	0
P.	Boston Market	(3,200)	0	(3,200)	0	0	0
45.	Desert Sands Unified School District (PUP 95-016)	0	164,000	0	164,000	0	0
46.	LQ Medical Offices 43-576 Washington	0	24,400	0	0	0	24,400
47.	**Jefferson Square (SP 96-027)**	**218,000**	**0**	**132,516**	**0**	**85,484**	
A.	Home Depot	(129,700)	0	(129,700)	0	0	0
B.	Jack-in-the-Box	(2,816)	0	(2,816)	0	0	0
48.	Warren Group (SDP 96-598)	85,800	0	85,800	0	0	0
49.	Lapis Energy (SP 96-028)	78,073	3,037	0	0	78,073	3,037
50.	Centre at La Quinta (SP 97-029)	675,000	UNK	0	0	675,000	UNK
	TOTALS	2,952,603	460,120	1,148,351	416,483	1,804,252	43,637

* Based on approved, existing and remaining occupancies.

\+ Includes restaurants, 15,000 and 37,000 square foot ballrooms, and conference facilities.

Sources:

- City of La Quinta Building & Safety Department (Building Permit records) and estimates of square footage.
- Community Development Department files for approved project plans.
- Totals are based on Planning approvals and/or actual footage, as available. Buildings existing prior to City incorporation have been estimated.

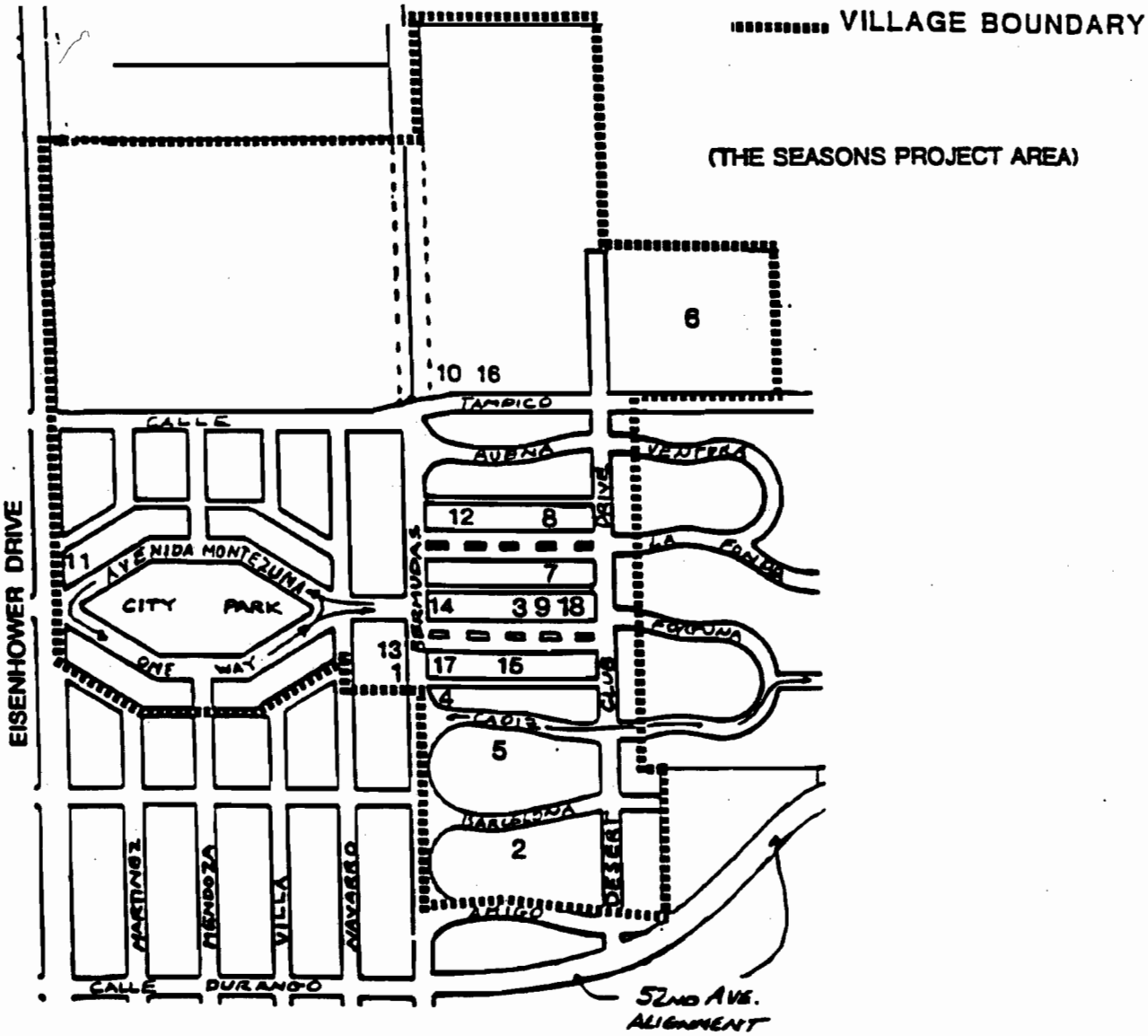
HOTEL DEVELOPMENT SUMMARY
STATUS REPORT

	Project	Hotel Units Approved	Hotel Units Built/ Under Construction	Hotel Units Remaining
1.	La Quinta Hotel	752	641/0	111
2.	Two Angels Inn	11	0/11	0
TOTALS		763	641/11	111

*Amendment to increase total room count to 722 approved 11/21/89. Approved amendment to La Quinta Cove Golf Club specific plan reduces hotel unit count to 633, and adds 119 resort residential condominiums, which accounts for total units approved.

THE VILLAGE AT LA QUINTA

EXISTING/APPROVED PROJECTS



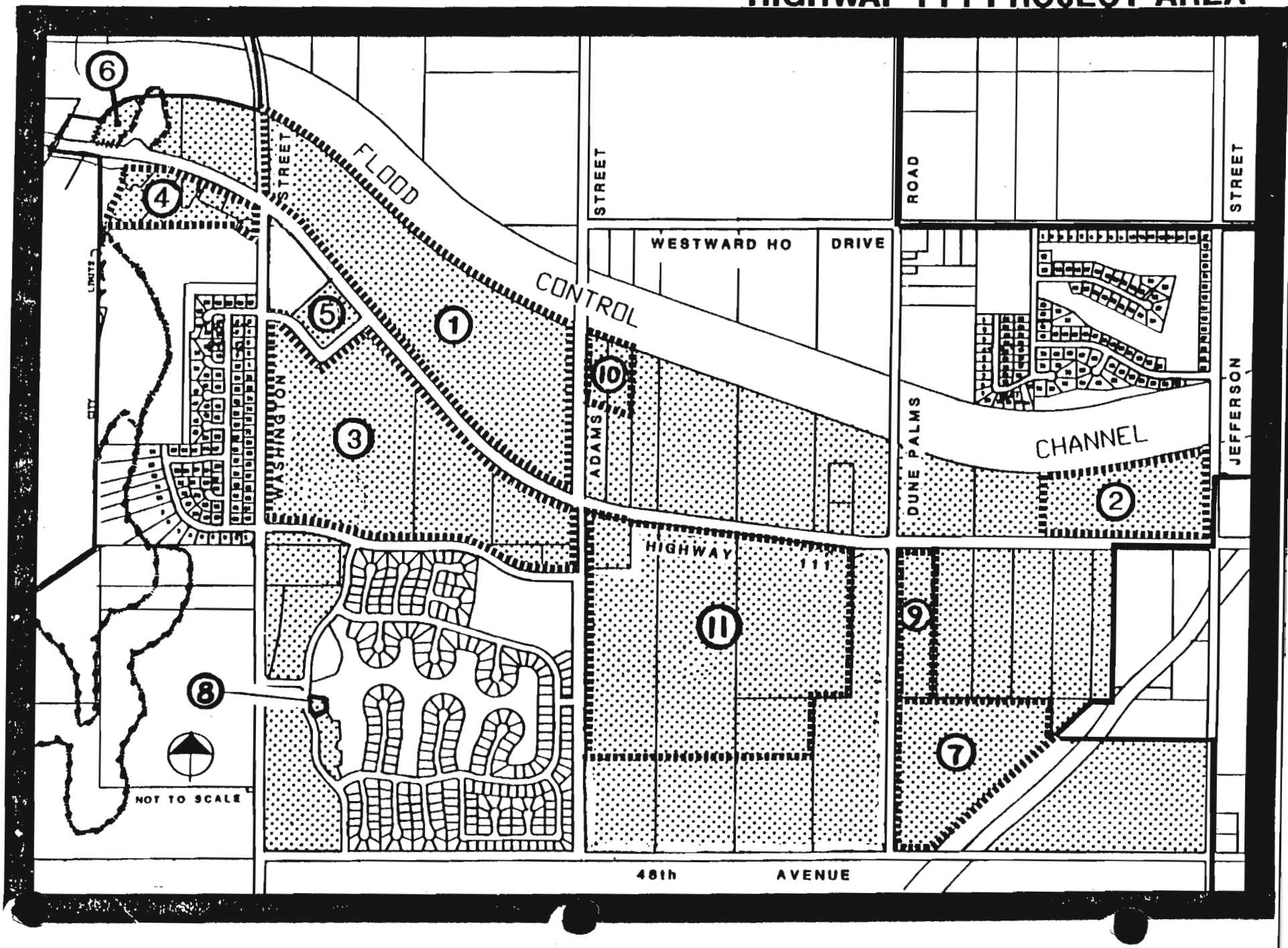
1. CHAMBER OF COMMERCE
2. LA QUINTA GARDEN CAFE
3. VILLAGE OFFICES AND LA QUINTA BRANCH LIBRARY
4. PLAZA DE LA FUENTE
5. DOLLY CUNARD'S
6. PLAZA TAMPICO
7. ROBI'S RESTAURANT
8. LA QUINTA ARTS FOUNDATION
9. ANCHOVY'S PIZZA
10. LA QUINTA MEAT MARKET/CIRCLE K
11. SCHATZI'S GRILL
12. SEWING SHOP
13. LA QUINTA POST OFFICE
14. VALLEY INDEPENDENT BANK
15. EL RANCHITO RESTAURANT
16. SANDBAR RESTAURANT
17. LA QUINTA REAL ESTATE
18. BOGAN VILLAS - OFFICE/RETAIL

HIGHWAY 111 CORRIDOR DEVELOPMENTS

	CASE # / DEVELOPER	SIZE/ACREAGE	MAJOR TENANT
1.	SP 89-014 111 La Quinta Center TDC Development	617,565 s.f. - 60 acres (see listing for other tenancies)	Wal-Mart, Albertsons are major tenants
2.	SP 96-027; TPM 28469 Jefferson Square	218,300 s.f. - 21.7 acre development	Home Depot & other retail (tenants unknown)
3.	SP 87-011 Washington Square	775,000 s.f. - 65.4 acres	Eagle Hardware is 1st tenant - 212,085 s.f.
4.	Plaza La Quinta	139,200 s.f. - 10.7 acres (90% completed)	Von's Market, Downey Savings, Beer Hunter
5.	Simon Motors Fred Simon	34,600 s.f. - 3.9 acres (existing building)	Cadillac, Buick, Pontiac, GMC Trucks
6.	PP 89-417 Cliffhouse Restaurant	10,250 s.f. on 2 acres (existing restaurant)	10,000 s.f. office space approval expired
7.	Desert Sands Unified (PUP 95-016)	164,000 s.f. administrative service center on 25 acres	Under construction
8.	CUP 95-020 Two Angels Inn - Harris	9,800 s.f. (11 units) bed and breakfast on ± 1 acre	Under construction
9.	Lapis Energy Corp. SP 96-028, CUP 96-029	81,100 s.f. development of mini-storage warehousing, gas station/mini-mart and auto-based uses.	Tenancy undetermined - Includes 3,000 s.f. office/manager's unit
10.	William Warren Group CUP 96-030; SDP 96-598	85,800 s.f. self-storage facility	Includes office and manager's unit
11.	Stamko Development Co. SP 97-029; TPM 28525	400,000 s.f. retail center and 9 potential auto dealer pad sites	Dealer pads are approx. 275,000 s.f.

REFER TO ATTACHED HIGHWAY 111 AREA PROJECT MAP

HIGHWAY 111 PROJECT AREA



GENERAL PLAN, ZONING & SPECIFIC PLAN APPROVALS
PAGE 1 OF 2

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL S.F.	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
LQ Hotel Golf Club KSL Land Corp. 760-564-1088	Specific Plan 121-E Amd't #1 app'd 9/20/88 Amd't #2 app'd 11/21/89 Amd't #3 app'd 7/5/95 Amd't #4 app'd 9/16/97	Approval for 916 units and 752 hotel rooms on 638 acres, at 50th Avenue on the west side of Eisenhower Dr. Amd't #4 app'd by CC 9/16/97	N/A	N/A	752/916	N/A	N/A	N/A	Amd't #2 allowed 80 additional hotel units, allowing 722 total; Amd't #3 approved 37,000 s.f. ballroom; Amd't #4 loses 8 existing hotel units, adds 119 resort condos, 20,200 s.f. spa and 19,440 s.f. relocated maintenance facility.
Duna La Quinta KSL Land Corp. 760-564-1088	Specific Plan 83-001 Approved 5/15/84 Amd't #1 app'd 4/16/85 Amd't #2 app'd 11/5/85 Amd't #3 app'd 6/17/86 Amd't #4 app'd 12/17/91	App'd for development of 861 units on 180 acres oriented around portions of the La Quinta Dunes Course, and 90,000 sq. ft. of commercial and office space, generally bounded by 50th Ave. to the north, Eisenhower Dr. to the west and Adams Street to the east.	UNK	UNK	0/471	90,000	90,000	39,078 (office)	Residential SP 94-026 approved within original area of this specific plan, deleting apartment phase. Commercial 6 acres (Plaza Tampico) will require refiling for development of remaining footage, with an unspecified office/retail ratio.
PGA West KSL Land Corp. 760-564-1088	Specific Plan 83-002 App'd 5/15/84 Amd't #1 app'd 9/20/88 Amd't #2 app'd 6/6/89 Amd't #3 app'd 8/6/96	Long-term approval for 5,000 dwellings on 1685 acres, 1000 hotel units, 20 acre retail/office/commercial and golf/tennis facilities, all oriented around 4 golf courses, generally bounded by 54th Ave. to the north, 53rd Ave. to the south, and Madison St. to the east.	UNK	UNK	1,000/5,000	UNK	0	0	See related tract map & use approvals. Amd't #2 app'd to increase hotel units to 1000. Amd't #3 updated the Plan's dev't standards.
Oak Tree West KSL Land Corp. 760-564-1088	Specific Plan 85-006 Amd't #1 app'd 10/17/89	Specific Plan for 2,245 units & 27 golf holes, with a 26,000 s.f. office site, all on 1,025 acres. Bounded by 54th Ave., Jefferson Street, Coral Reef mountains and 50th, Ave.	N/A	N/A	0/2,245	N/A	N/A	N/A	Amend #1 deleted 36.5 acre commercial site & revised golf club house location and design.
Washington Square George Marzicola 760-775-7519	Specific Plan 87-011 Change of Zone 87-028 App'd 3/21/89 Amd't #1 app'd 7/16/91	Approval for a retail project of 775,000 s.f., located south and east of Simon Drive, along Washington St. and Highway 111.	UNK	UNK	UNK	775,000	775,000	212,085	Amendment approved 775,000 square feet of building area. Eagle Hardware (SDP 97-605) initial tenant under construction.
111 LQ Center Transpacific Dev't Co. 562-403-2122	Specific Plan 89-014 Approved 3/20/90 Amd't #2 app'd 7/2/96	Approval for a regional retail center on 60 acres, at the northeast corner of Hwy 111 & Washington Street.	600,930	16,635	0	617,565	617,565	285,207	Walmart, Albertson's & other tenancies completed. See summary listing.
The Grove KSL Land Corp. 760-564-1088	Specific Plan 90-016; GPA 90-031, CZ 90-056 App'd 12/3/91	Specific Plan on 327 acres, with a 21 acre commercial site & 1208 units bounded by Jefferson St., 50th Ave & All-American Canal.	UNK	UNK	0/1,208	UNK	N/A	N/A	No activity since approval date. Last consistency review was 12/95.

GENERAL PLAN, ZONING & SPECIFIC PLAN APPROVALS
PAGE 2 OF 2

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL S.F.	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Travertine Corp. Winchester Asset 760-340-3575	Specific Plan 94-026; GPA 95-049, CZ 94-077 App'd 6/6/95	Specific Plan for 2,300 units, a 27.2 acre resort hotel and a 10 acre commercial site, south of 60th, north of 64th & east of realigned Jeff. St.	UNK	UNK	UNK/ 2,300	UNK	N/A	0	Footage and hotel rooms will be determined when submitted for review.
Jefferson Square Keith Companies International 760-346-9844	Specific Plan 96-027; CUP 96-028, TPM 28469 App'd 9/17/96	Specific Plan for a 218,300 s.f. community commercial center on 21 acres, at the N/W corner of Highway 111 & Jefferson St.	218,300	UNK	N/A	218,300	218,300	129,800	Home Depot is 129,800 S.F. under construction.
Lapis Energy Corp. John Gabbard 760-942-2762	Specific Plan 96-028; CUP 96-029, TPM 28422, SDP 96-590 App'd 2/4/97 Amd't #1 in process	Specific Plan for an 81,110 s.f. automotive service and self storage project, at the S/E corner of Dune Palms and Highway 111.	78,100	2,000	0/1	81,100	81,100	0	Includes 1,022 s.f. on-site manager's quarters for self-storage; 11,000 s.f. auto repair, 2,500 s.f. fitel station. Amd't proposes 1 add'l storage bldg. and minor revisions.
Stamko Dev't. Co. Mainiero/Smith & Assoc. Marvin Roos 760-320-9811	Specific Plan 97-029; CUP 97-034, TPM 28525, SDP 97-603 App'd 7/15/97	Specific Plan for a regional auto mall and retail shopping on 87 acres, between Adams St., Dune Palms Rd. and Highway 111.	PH. 3 400,000	UNK	0	PH. 3 400,000	0	0	Phases 1 & 2 propose nine auto dealer pads of 4 to 5 acres. Phase 3 consists of 400,000 s.f. retail center.
The Pairings Thomas Bienek 760-342-1858	Specific Plan 97-030; CUP 97-035, SDP 97-612 In process	Specific Plan for an 80 tee lighted golf driving range with ancillary retail and restaurant facilities, on 21 acres at the N/E corner of Adams St. and 48th Ave.	16,230	1,000	0	17,230	0	0	Continued by PC on 10/14/97.

CITY INITIATED SPECIFIC PLANS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET:			COMMENTS
						PROPOSED	APPROVED	CONST	
Village Specific Plan City of La Quinta Wallace Nesbit 760-777-7069	Specific Plan 87-009 App'd 2/2/88 Amd't #3 app'd 2/15/94 Amd't #4 in process	Specific Plan to guide development in the 77 net acre Village area, roughly bounded by Tampico, Eisenhower, Desert Club and 52nd Ave.	N/A	N/A	N/A	N/A	N/A	N/A	Amendment #2 added 5.5 acres to total area. Amendment #3 revised park area circulation to one way. Staff assessing potential revisions as part of Amd't #4.
111 Specific Plan City of La Quinta Fred Baker 760-777-7065	Specific Plan 87-008 In process	Policy formation for design & development of the Hwy 111 corridor. The Plan applies to Hwy 111 generally between Washington, Jefferson, 48th Ave. & the Whitewater Channel.	N/A	N/A	N/A	N/A	N/A	N/A	No adopted plan to date. General landscape/architectural guidance policies have been adopted.

LA QUINTA COVE GOLF RESORT AND CLUB (SP 121-E)
COMMERCIAL PROJECTS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
KSL Land Corp. Greg Burkhart 760-564-4111	PP 95-555 App'd 7/5/95	Addition of a 37,000 sq. ft. conference room, containing a 16,000 sq. ft. ballroom/banquet area, at the north end of the LQ Hotel complex.	N/A	37,000	N/A	37,000	37,000	37,000	Completed. Additional parking in underground garage.
KSL Land Corp. Chevis Hosea 760-564-1088	CUP 96-024 App'd 6/4/96	Expand area of existing golf maintenance facility for storage and parking purposes, 77-500 Calle Tampico.	N/A	N/A	N/A	0	0	0	No building expansion/addition proposed.
	SDP 97-607 App'd 9/16/97	Development of a 20,200 s.f. resort/spa facility on .8 acres, west side of Obregon at the hotel..	20,200	0	0	20,200	20,200	20,200	Goes to CC on 8/5/97, as part of Amd't #4 applications.
	SDP 97-608 App'd 9/16/97	Development of a 19,440 s.f. maintenance facility on property at the S/E corner 50th and Eisenhower.	N/A	N/A	N/A	19,440	19,440	0	Facility proposed to replace all existing maintenance operations and employee parking areas.
	TT 28545 App'd 9/16/97	Division of 61.4 acres into 12 lots, for development of 119 resort condos on 10.2 acres, west and east sides of Obregon.	0	0	119	N/A	N/A	N/A	Units can be rented commercially as hotel units, or as residential. Map divides parcels for uses associated with Amd't #4.

DUNA LA QUINTA SPECIFIC PLAN (SP 83-001)
COMMERCIAL PROJECTS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
LQ Med. Group Benjamin & Assoc. 213-458-3048	TPM 27109 App'd 8/22/91 Final map recorded	Division of approx. 6 acres into 2 parcels, northeast corner of Desert Club Drive & Calle Tampico (site of PP 85-217)	N/A	N/A	N/A	N/A	N/A	N/A	Previously TPM 22604. Portion of SP 83-001. See TPM 28435.
	PP 85-217 Amd't #1 app'd 7/8/86 Amd't #2 app'd 2/14/89 EXPIRED 2/14/91	101,000 gross/87,184 net s. f. of office/ retail on 6 acres, including a medical office, at the NW corner of Tampico & Desert Club. (Approval expired and listed for reference only).	19,166 Net	68,018 Net	0	101,000 Gross	101,000 Gross	39,078 Net	First 2 buildings exist. Amendment #2 re-assigned remaining uses. New approval needed for balance of site; SP approval still in effect for total 90,000 s.f. of unknown retail/office space ratio.
LQ Med./Comm. Plaza, Ltd. 310-796-1484	TPM 28435 App'd 11/7/96	Division of approx. 2 acres into two parcels for ownership purposes, at 78-150 Calle Tampico.	N/A	N/A	N/A	N/A	N/A	N/A	Division of Parcel 1 of TPM 27109.

PGA WEST (SP 83-002)
COMMERCIAL PROJECTS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET:			COMMENTS
						PROPOSED	APPROVED	CONST	
KSL Land Corp. 760-564-1088 Palmer Course Clubhouse	Plot Plan 85-147 App'd 6/11/85	Construction of separate golf & tennis facilities on 20 acres, for a 10,000 s.f. tennis complex and a 65,000 gross sq. ft. golf clubhouse.	N/A	N/A	N/A	N/A	N/A	N/A	Completed in 1987. Acquired by KSL in July 1994.
TPC Stadium Course Golf Clubhouse	Plot Plan 89-409 App'd 5/9/89	Replacement of temporary clubhouse with a 42,000 gross s.f. permanent facility, located at the existing terminus of PGA Blvd.	N/A	N/A	N/A	N/A	N/A	N/A	Clubhouse completed in 1990.
Resort Core Area	Parcel Map 24995 App'd 9/20/89 Final map recorded	Division of resort core into revised development parcel boundaries for future commercial projects.	N/A	N/A	N/A	N/A	N/A	N/A	Part of KSL acquisition.
	Parcel Map 28194 App'd 7/5/95 Final map recorded	Further division of PM 24995 into 3 parcels to reconfigure tennis & residential areas, along S/E side of PGA Boulevard.	N/A	N/A	N/A	N/A	N/A	N/A	
PGA West Residential Ass'n., Inc. Ms. Kelly McGalliard 760-771-1234	SDP 97-615 In process	Establish a 16,000 s.f. homeowner's association office and equipment storage building at the N/E'ly corner of Southern Hills and Winged Foot.	0	16,000	0	16,000	0	0	Located on Lot 17 of TR 25499.

WASHINGTON SQUARE SPECIFIC PLAN (SP 87-011)
COMMERCIAL PROJECTS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Washington Square Washington 111, Ltd. Jack Franks 714-631-3559	TPM 27031 App'd 7/16/91 Vesting map app'd 2/18/92 Ext. #1 app'd 9/19/95 Ext #2 app'd 7/2/96 Ext #3 app'd 7/1/97	Division of 65 acres into 8 parcels based on Amendment #1 to original specific plan, S/E of Simon Drive.	UNK	UNK	N/A	775,000	775,000	0	Washington Square approved to increase square footage and revise layouts. Expires 7/16/98 per AB 771.
Eagle Hardware Tom Sconzo 206-455-3203	SP 87-011, Amd't #2 App'd 7/1/97	Amend approved Washington Square specific plan to conform with,existing General Plan policies and to allow development as proposed by SDP 97-605.	N/A	N/A	N/A	N/A	N/A	N/A	Relates to landscape setbacks required, approval processing, and other update items. No add'l s.f. or land use proposed.
	SDP 97-605 App'd 7/1/97	Development approval for a 212,085 s.f. home improvement/garden center on 13.4 acres, on the Hwy 111 frontage of the specific plan.	212,085	0	0	212,085	212,085	212,085	Preliminary project grading underway.

JEFFERSON PLAZA SPECIFIC PLAN (SP 96-027)
COMMERCIAL PROJECTS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Home Depot, U.S.A. Greg George 714-738-5200	CUP 96-028 App'd 9/17/96	To allow construction of a 24,100 s.f. outdoor display area as part of Home Depot (Phase I, SP 96-027), at Jefferson & Highway 111.	129,800	0	0	129,800	129,800	129,800	Indoor portion of Home Depot: 105,700 s.f.
	TPM 28469 App'd 1/27/97	Division of 41 acres into 3 parcels for SP 96-027.	N/A	N/A	N/A	N/A	N/A	N/A	
Jack-in-the-Box Daniel Hatch 714-738-5200	SDP 97-606 App'd 7/22/97	Construction of a 2,816 s.f. fast-food restaurant with drive-through on Pad 3.	2,816	0	0	2,816	2,816	0	Was cont'd by PC from 6/24/97 to 7/22/97.

ONE -ELEVEN LA QUINTA SPECIFIC PLAN (SP 89-014)
COMMERCIAL PROJECTS
(PAGE 1 OF 2)

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Transpacific Dev't. 111 LQ Center 562-403-2122	Plot Plan 90-434 App'd 4/17/90	Approval of two major & peripheral shops in the 111 La Quinta Center, at the west and east ends of the Specific Plan area.	213,380	0	0	213,380	213,380	213,380	Majors are Alberton's & Walmart. All building areas completed.
	Tentative Parcel Map 25865 App'd 5/1/90 Final map recorded.	Division of 62.3 acres into 15 parcels; north side of Hwy. 111 between Adams & Washington.	N/A	N/A	N/A	N/A	N/A	N/A	Covers entire SP 89-014 site.
	Tentative Parcel Map 27783, 27784 and 27785 App'd 7/13/93	Division of portions of site into various parcels with waiver of final map.	N/A	N/A	N/A	N/A	N/A	N/A	Expires 7/13/98 per AB 771.
	Plot Plan 92-488 App'd 7/14/92	Approval for construction of two majors and adjacent shops in northeasterly portion of the Specific Plan area.	91,110	0	0	91,110	91,110	0	Adjacent and west of Walmart location. Plot plan expired 7/14/94.
Carl's Jr. Frank Oley 916-922-1118	CUP 92-004 App'd 1/19/93	Approval for Carl's Jr. drive-thru, approx. 600 feet east of Hwy.111 & Washington Street intersection.	3,400	0	0	3,400	3,400	3,400	Completed.
The Lube Shop Gary Knutson 760-328-1111	Plot Plan 92-494 App'd 2/2/93 Ext. #1 app'd. 2/22/94	Approval of drive-thru auto lube/oil change/car wash facility along the west side of Adams Street.	4,200	0	0	4,200	4,200	4,200	Completed.
AAA of So. Calif. 213-741-4544	Plot Plan 91-468 App'd 12/3/91	Construction of administration office on Pad M, at the N/E corner of Washington Street & Hwy 111.	0	8,000	0	8,000	8,000	8,000	Completed.
ARCO Co. 714-857-0771	Plot Plan 92-482 App'd 7/7/92	Construction of gas station and convenience mart, in the northeasterly portion of SP 89-014.	2,000	0	0	2,000	2,000	2,000	Completed.
Morite of Calif. Michael Allen 760-345-0669	PP 93-497 App'd 6/22/93	Construction of Red Robin Restaurant on 7,310 s.f. pad at 78-722 Highway 111.	7,280	0	0	7,280	7,280	7,280	Completed.
Stonington Prop. E.S. Scarcello 714-650-1714	PP 93-498 App'd 7/13/93	Construction of a retail building on pad area at 78-692 Highway 111, for Domino's Pizza and Blockbuster Video.	7,000	0	0	7,000	7,000	7,000	Completed.
Taco Bell/Fancher Scott Cuffner 714-258-1808	CUP 93-006 App'd 5/18/93	Construction of fast food restaurant/drive thru at 78-932 Highway 111.	2,000	0	0	2,000	2,000	2,000	Completed.

ONE ELEVEN LA QUINTA SPECIFIC PLAN (SP 89-014)
RELATED PROJECTS
(PAGE 2 OF 2)

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
McDonald's Bob Jenkins 619-535-8900	CUP 93-007 App'd 7/6/93	Construction of fast food restaurant on pad at 78-962 Highway 111.	2,400	0	0	2,400	2,400	2,400	Completed.
Shangri La Restaurant Simon Chan 760-347-7719	PP 94-545 App'd 1/31/95	Construction of a sit-down Asian restaurant on Pad J-3a, ±500 feet west of Walmart.	5,040	0	0	5,040	5,040	5,040	Completed.
Eisenhower Hospital Washington/Adams Partnership 310-618-3600	PP 94-533 App'd 10/18/94	Construction of an 8,635 s.f. immediate care facility within the 111 LQ Center, between Simon Drive and Adams Street.	0	8,635	0	8,635	8,635	8,635	Completed.
LQ Car Wash J. I. Jarnigan 760-772-1803	CUP 95-017 App'd 5/2/95	Construction of a 12,147 s.f. car wash/detail facility at the easterly end of the 111 La Quinta Center.	12,147	0	0	12,147	12,147	12,147	Footage includes enclosed & covered areas. Completed.
Metropolitan Theatres Bill Hughes 805-444-1126	PP 95-554 App'd 7/5/95 Ext. #1 app'd 6/24/97	Const. of a 30,000 s.f. 8-screen movie complex, east of Albertson's Supermarket.	30,000	0	0	30,000	30,000	0	Theater approved with 1,721 seats. Approval expires 7/5/98.
Stonington Prop. 714-650-1714	PP 95-559 App'd 8/1/95	Construction of a 6,525 square foot retail building on pad F-3 at the 111 LQ Center, for Chief Auto and Radio Shack.	6,525	0	0	6,525	6,525	6,525	Completed.
Boston West John Baker 714-518-2782	CUP 96-027 App'd 8/13/96	Construction of a 3,200 s.f. restaurant/drive through at Simon Drive and Highway 111.	3,200	0	0	3,200	3,200	3,200	Completed.
Shell Oil Co. A & S Engineering 818-842-3644	CUP 96-034 In process	Construction of a 2,200 s.f. food mart/drive through/gas station, in the 111 La Quinta Center at the N/W corner of Adams St. and Hwy. 111.	2,200	0	0	2,200	0	0	Located on Parcel 8 of PM 25865. Includes a 4,200 s.f. canopy.

OTHER SPECIFIC PLAN RELATED MAPS/USE PERMITS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Lapis Energy Corp. John Gabbard 760-942-2762 SP 96-028	TPM 28422 App'd 2/4/97	Parcel map to create 4 parcels for development of SP 96-028.	N/A	N/A	N/A	N/A	N/A	N/A	Related cases: SP 96-028; CUP 96-029; SDP 96-590.
	CUP 96-029 App'd 2/4/97	Use permit to allow service station, outdoor RV storage and manager's unit, and auto repair uses for SP 96-028.	N/A	N/A	N/A	N/A	N/A	N/A	
	SDP 96-590 App'd 2/4/97 Amd't #1 in process	Approval for a 81,110 s.f. automotive service and self storage project, at the S/E corner of Dune Palms and Highway 111.	111,100	2,000	0/1	113,110	81,110	0	Amendment proposed to allow 1 add'l 30,000 s.f. storage bldg to existing approval for 66,000 s.f.
Stamko Dev't. 310-277-3622 SP 97-029	TPM 28525 App'd 7/15/97	Division of 87.7 acres into 10 parcels to facilitate development of SP 97-029.	N/A	N/A	N/A	N/A	N/A	N/A	See also SDP 97-603.
	CUP 97-034 App'd 7/15/97	Use permit for outdoor sales/display area associated with auto sales use.	275,000	UNK	0/0	275,000	275,000	0	See SP 97-029.
	SDP 97-603 App'd 7/15/97	Development approval for 9 auto dealer sites and 400,000 s.f. retail shopping center, on 87.7 acres	675,000	UNK	0	675,000	675,000	0	275,00 s.f. attributed to auto dealer sites. Retail and dealer centers may include office space.
The Pairings Thomas Bienek 760-342-1858	CUP 97-035 SDP 97-612 In process	Development of an 80 tee lighted golf driving range with ancillary retail and restaurant facilities, on 21 acres at the N/E corner of Adams St. and 48th Ave.	16,230	1,000	0	17,230	0	0	Continued by PC on 10/14/97.

NON-SPECIFIC PLAN RELATED TRACT/PARCEL MAPS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
A.G. Spanos Const., Ray Hanes 619-283-3964	Tentative Tract 24230 App'd 7/5/89 Final map recorded.	Division of +48 acres into 1 multi-family lot, 1 recreation lot, and 3 commercial parcels totaling 20.8 acres, on the NE corner of Washington Street & 48th Ave.	UNK	UNK	UNK	UNK	0	0	Originally included residential tract 26152 (Lake La Quinta).
	TPM 27892 App'd 1/13/94 Final map recorded.	Subdivision of 20.8 acre parcel in TR 24230 into 11 commercial lots, east side of Washington Street, north of 48th Avenue.	UNK	UNK	UNK	N/A	N/A	N/A	Parcels being sold individually. Current development is on Parcel 8; see CUP 95-020.
Dutch Parent N.V. Advanced Eng. Group 760-341-6660	TPM 27131 Approved 2/13/92. Final map recorded.	Division of approx. 142 acres into 4 parcels with a remainder, at the northeast corner of Fred Waring Drive and Washington Street.	UNK	UNK	UNK	UNK	0	0	No commercial development proposals submitted to date.
Genl. Contract Mgm't. Mike Smith 760-772-1979	TPM 27829 App'd 8/19/93	Subdivision of approximately 5.9 acres into 4 parcels and a remainder parcel, east of Jefferson St. & 570 feet south of Avenue 52.	UNK	UNK	UNK	UNK	0	0	Expires 8/19/98 per SB 428, AB 771
LQ Village Partnership 310-547-3326	TPM 27984 App'd 6/22/94 Final map recorded.	Division of 9.25 acres into 6 commercial lots for sale/lease purposes at the N/W corner of Washington St. & Calle Tampico	N/A	N/A	N/A	N/A	N/A	N/A	See PP 91-456 for footage approvals.

COMMERCIAL DEVELOPMENT
OTHER NON-SPECIFIC PLAN-RELATED ACTIVE DEVELOPMENT AND USE PERMITS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Koenig Companies John Koenig 909-949-6743	PP 91-456 App'd 4/16/91 Amd't #1 app'd 12/1/92 Amd't #2 app'd 3/22/94	Construction of shopping center on 9.25 acres at the N/W corner of Calle Tampico & Washington.	73,623	5,710	0	79,333	79,333	69,833	Includes Ralph's supermarket as main tenant. See also PP 94-543, 95-551. Amd't #2 reduced s. f. by 3,312 feet.
First Bank Holden & Johnson 760-340-1980	PP 95-551 App'd 5/2/95 EXPIRED 5/2/97	Approval for construction of a 5,710 S.F. bank building at the LQ Village Center, on Tampico at Washington Street.	0	5,710	0	5,710	5,710	0	Approval expired 5/2/97.
Sesame Restaurant 760-771-4040	PP 94-543 App'd 1/10/95	An upscale sit-down restaurant in the LQ Village Shopping Center on Pad B at the N/W corner of Tampico & Washington.	3,500	0	0	3,500	3,500	3,500	Construction completed.
TS Restaurants 760-942-1442	PP 89-417 App'd 8/29/89.	Construction of Commercial complex with 10,250 sq. ft. restaurant & 10,000 sq. ft. office, located on north side of Hwy 111.	10,250	0	0	20,250	10,250	10,250	Restaurant completed, office portion expired.
La Quinta Civic Ctr. 760-777-7000	PUP 90-007 App'd 1/15/91.	Civic Center project consisting of a City Hall, Arts Foundation building, Senior Center, Library and associated landscaping and retention, on 17 acres.	0	33,000	0	33,000	33,000	33,000	New City Hall opened 7/12/93. Footage is for City Hall only.
LQ Meat Market Augustin Martinez 760-564-1844	CUP 93-008 App'd 11/16/93. Ext #1 app'd 1/17/95	Addition/remodel for existing 1,580 sq. ft. commercial building on .18 acres, at the N/W corner of Bermudas/ Calle Tampico.	2,510	0	0	930	930	2,510	Remodel of pharmacy. 930 additional s.f. approved; work completed.
Bogan Villas 760-564-6478	PP 94-522 App'd 6/14/94	Two story commercial building on .37 acres, north of Calle Estado & west of Desert Club Drive.	3,435	3,435	0	6,876	6,876	6,876	Construction completed. Retail and office s.f. shown as split; ratio not specified in application.
Desert Auto Liquidators Moe Nourkhah 760-398-0035	CUP 95-022 App'd 10/10/95 Review of use due but not yet scheduled/submitted	Used auto sales at 79-410 Highway 111.	1,200	0	0	Existing	Existing	N/A	Use permit requirements completed. P.C. review of use to continue operation was due by 10/10/97; not yet conducted.
Century Homes Dennis Cunningham 909-381-6007	PP 95-549 App'd 3/21/95	Approval for construction of a 2,000 s.f. clubhouse on the recreation lot at 47-400 Caleo Bay in Lake La Quinta.	N/A	N/A	N/A	2,000	2,000	2,000	Original PP 91-466 expired. Project completed.

COMMERCIAL DEVELOPMENT
OTHER NON-SPECIFIC PLAN-RELATED ACTIVE DEVELOPMENT AND USE PERMITS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
Boys & Girls Club of Coachella Valley 760-347-5712	PUP 91-012 App'd 12/10/91.	Construction of approx. 34,000 s.f. clubhouse at the NW corner of 50th Avenue and Park Avenue.	0	24,000	0	24,000	24,000	24,000	Completed.
Anchovies Pizzeria 760-564-8646	PP 92-484 App'd 6/16/92.	Construction of 1,500 s.f. pizza restaurant, on the north side of Calle Estado, 150 ft. west of Desert Club.	1,500	0	0	1,500	1,500	1,500	Completed.
LQ Senior Center 760-777-7000	PUP 92-013 App'd 9/22/92.	Construction of 10,600 s.f. senior center on La Quinta Civic Center site at the southwest corner of Washington St. & Calle Tampico.	0	10,600	0	10,600	10,600	10,600	Completed & dedicated 12/15/94.
Bernardo Gouthier 760-564-6464	PUP 93-016 App'd 10/19/92. Ext #1 app'd 11/28/95	Construct sculpture school and garden on approximately 20 acres, west side of Madison Street, approx. ¼ mile north of 58th Avenue.	0	8,722	2,130	8,852	8,852	0	Includes 3,722 square foot art school and 4,000 square foot gallery. Use permit expired 10/19/96, but City had re-designated site to TC.
The Quarry 760-777-1100	PP 93-501 App'd 7/6/93.	Construction of a 29,800 square foot golf clubhouse at the Quarry project, adjacent to Quarry Lane.	4,427	300	0	29,800	29,800	29,800	Pro shop is 804 square feet. Building completed.
Mr./Mrs. Harold Harris 909-822-0826	CUP 95-020 App'd 7/25/95	Construct an 11-unit, 9800 s.f. bed & breakfast inn; east side of Caleo Bay at Lake LQ Drive (Parcel 8 of PM 27892).	0	0	11/0	9,800	9,800	9,800	Project nearing completion.
DSUSD 760-775-3500	PUP 95-016 App'd 7/11/95	Use permit for a 164K s.f. education service center on 24.5 ac. at Dune Palms & 48th Ave.	0	164,000	0	164,000	164,000	164,000	Under construction.
Pac-Bell Mobile Systems 714-825-8192	CUP 96-025 App'd 9/24/96	Establish PCS antennae & equipment location at the LQ Village Shopping Center.	N/A	N/A	N/A	0	0	0	Relocated equipment to Plaza Tampico.
	CUP 96-026 App'd 9/24/96	Establish PCS antennae/equipment at Simon Motors, 78-611 Hwy. 111	N/A	N/A	N/A	0	0	0	
LQ Medical Woodard Group 760-564-2689	PP 96-579 App'd 7/9/96	Construction of a 24,400 medical office complex to replace existing facility at 43-576 Washington St.	0	24,400	0	24,400	24,400	0	Expires 7/9/98.

COMMERCIAL DEVELOPMENT
OTHER NON-SPECIFIC PLAN-RELATED ACTIVE DEVELOPMENT AND USE PERMITS

PROJECT NAME & APPLICANT	CASE NO. / APPROVAL DATE	DESCRIPTION/ LOCATION	RETAIL	OFFICE/ CONF.	HOTEL/ RES. UNITS	SQUARE FEET: PROPOSED	APPROVED	CONST	COMMENTS
St. Francis of Assisi Robert Ricciardi 760-346-2223	PUP 96-018 App'd 8/13/96	Addition to existing Church to include a parish hall and office space.	N/A	6,114	N/A	6,114	6,114	0	
	SDP 97-614 In process	Resubmittal of expired PUP 96-018'	"	"	"	"	"	"	
William Warren Group The Hobin Co. 760-341-2963	CUP 96-030 App'd 12/10/96	Establish an 85,800 s.f. self storage facility, S/E corner of Adams and the Whitewater Channel.	N/A	UNK	1	85,800	85,800	0	Footage includes storage area, manager's residence and office.
Tradition Club Assoc./ Winchester Asset Mike Rowe 760-340-3575	SDP 96-599 App'd 4/1/97	Site plan for a 16,905 s.f. clubhouse, 4,025 s.f. cart barn, halfway house and maintenance building, for residential TT 28470, S/E corner Bermudas and 52nd Ave.	16,905	UNK	0	20,930	20,930	0	
Royal Palm Plaza FMB Associates 714-497-4251	SDP 97-604 In process	Development of a 106,000 s.f. retail shopping complex on 10 acres, at the N/E corner Fred Waring and Washington.	106,000	UNK	0	106,000	0	0	Portion of Parcel 1, PM 27131. Application on hold pending add'l information from applicant.

APPROVED PROJECT LIST

APRIL 1998

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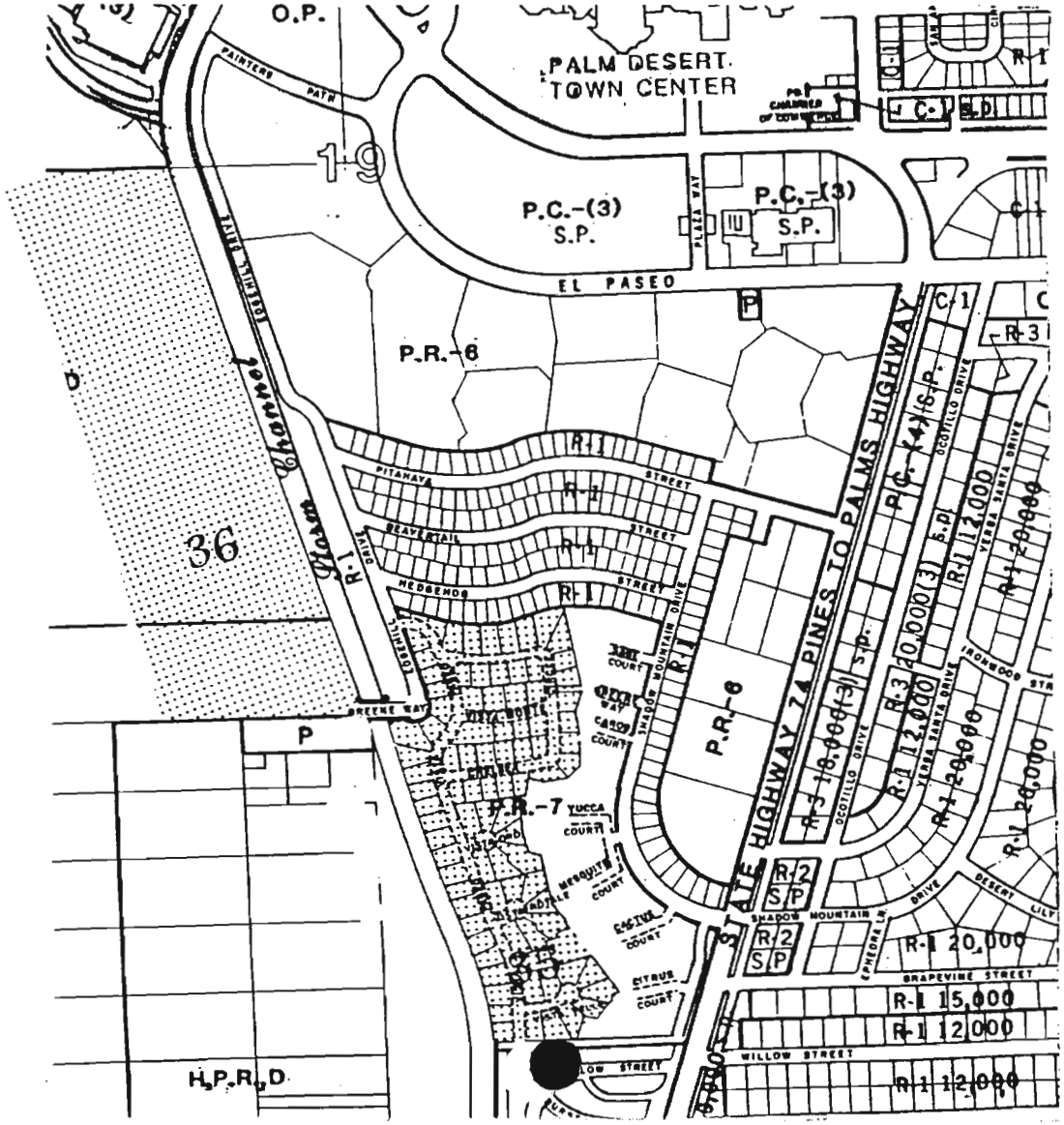
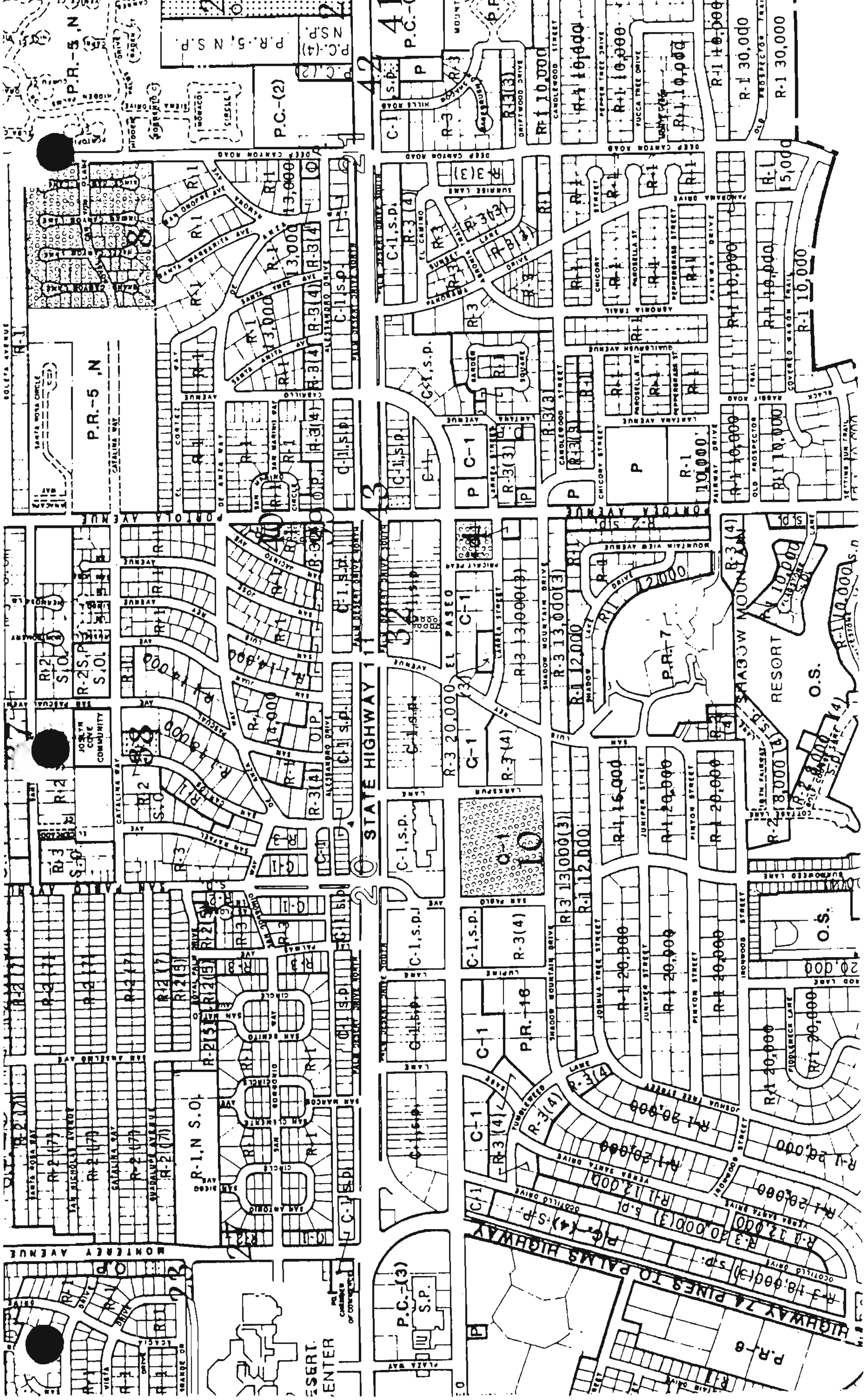
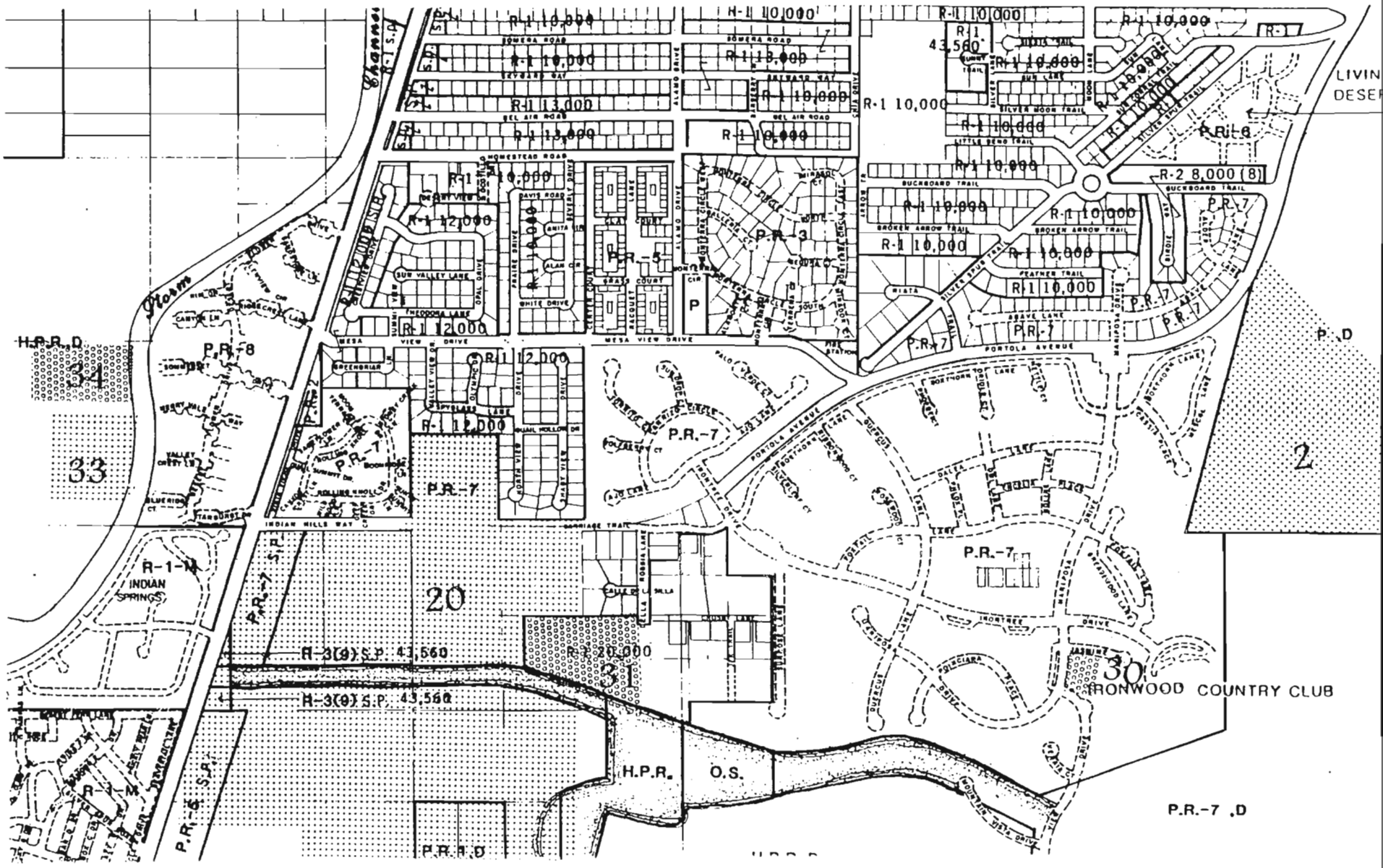
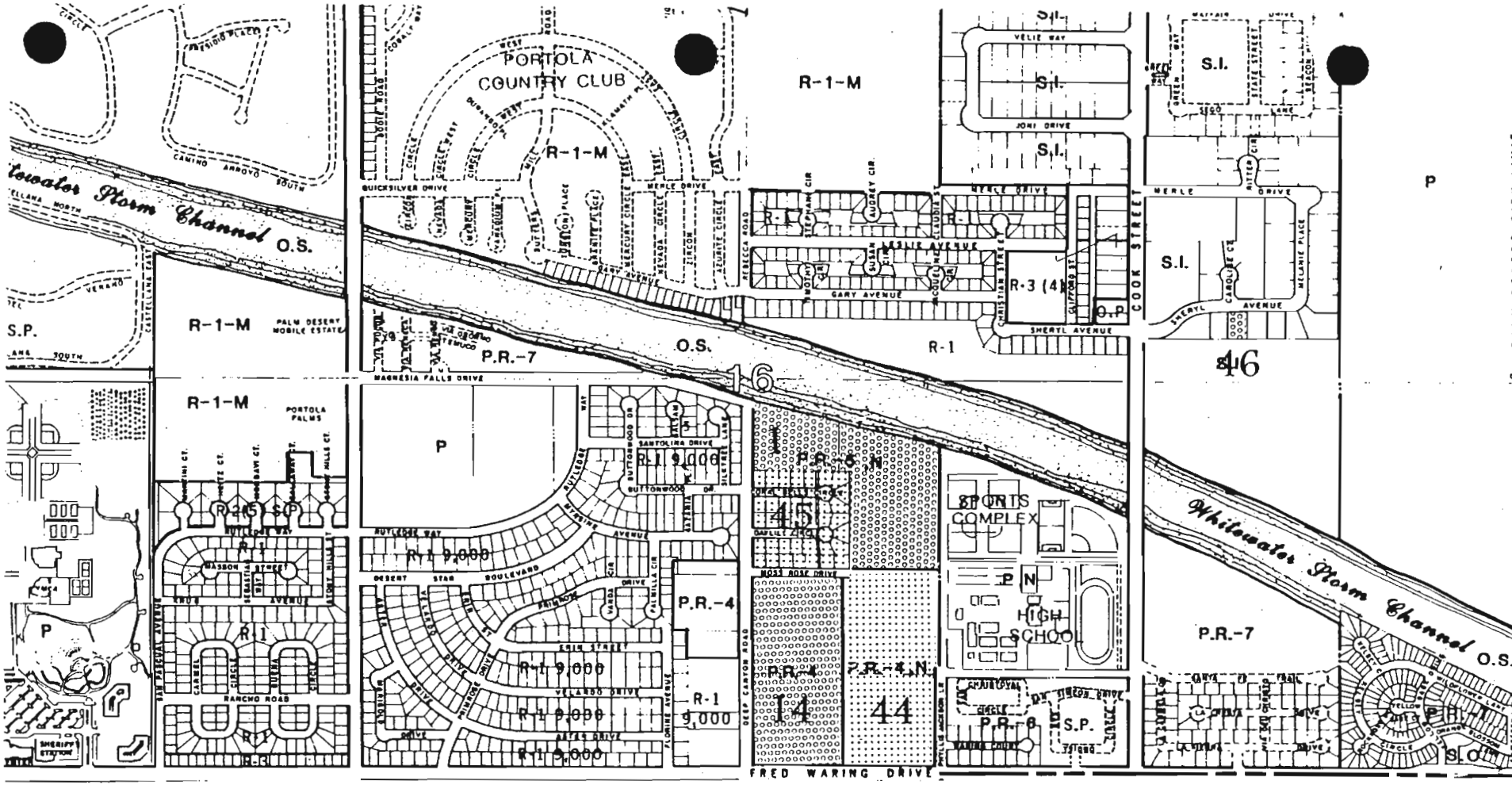
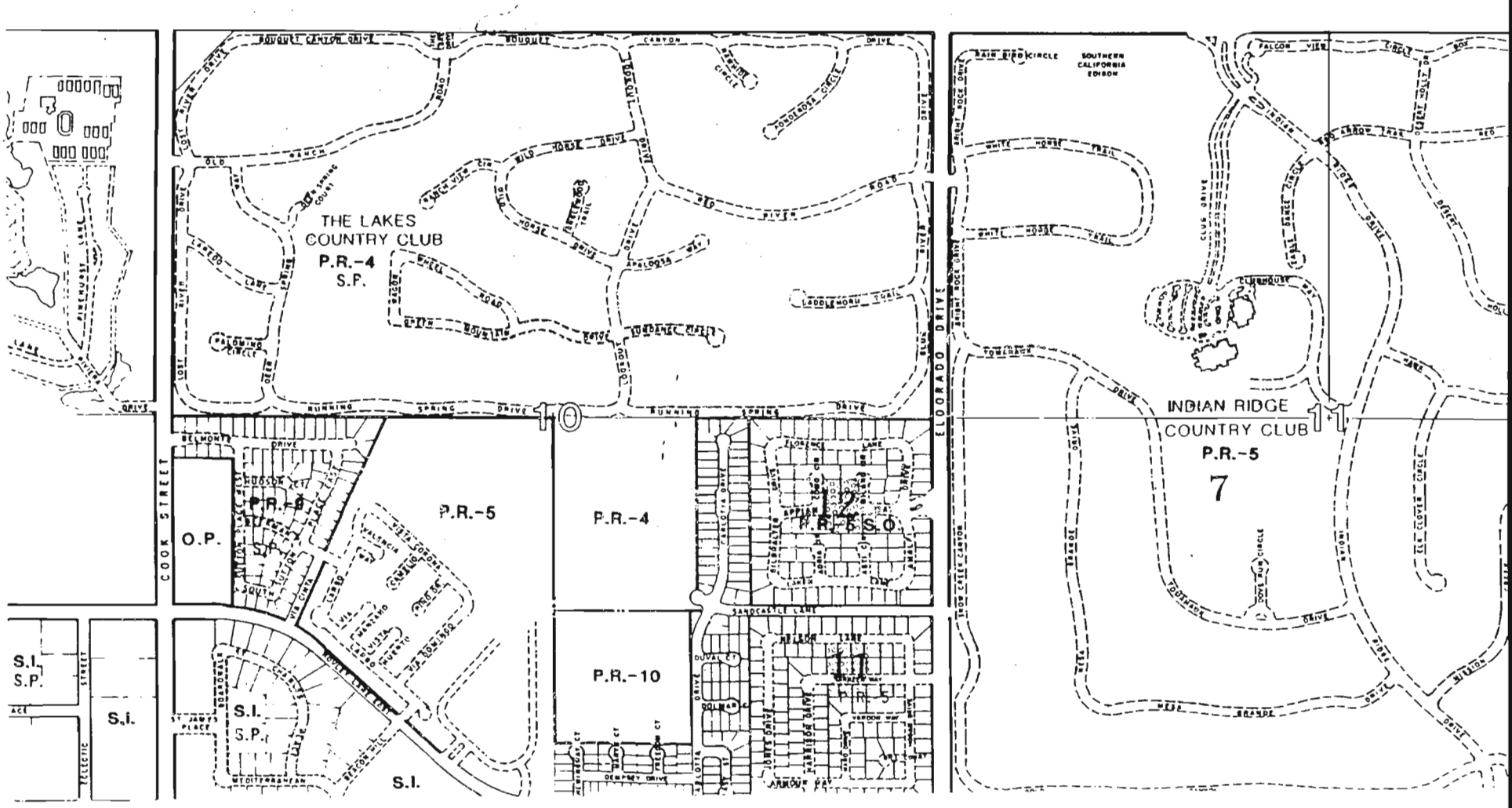
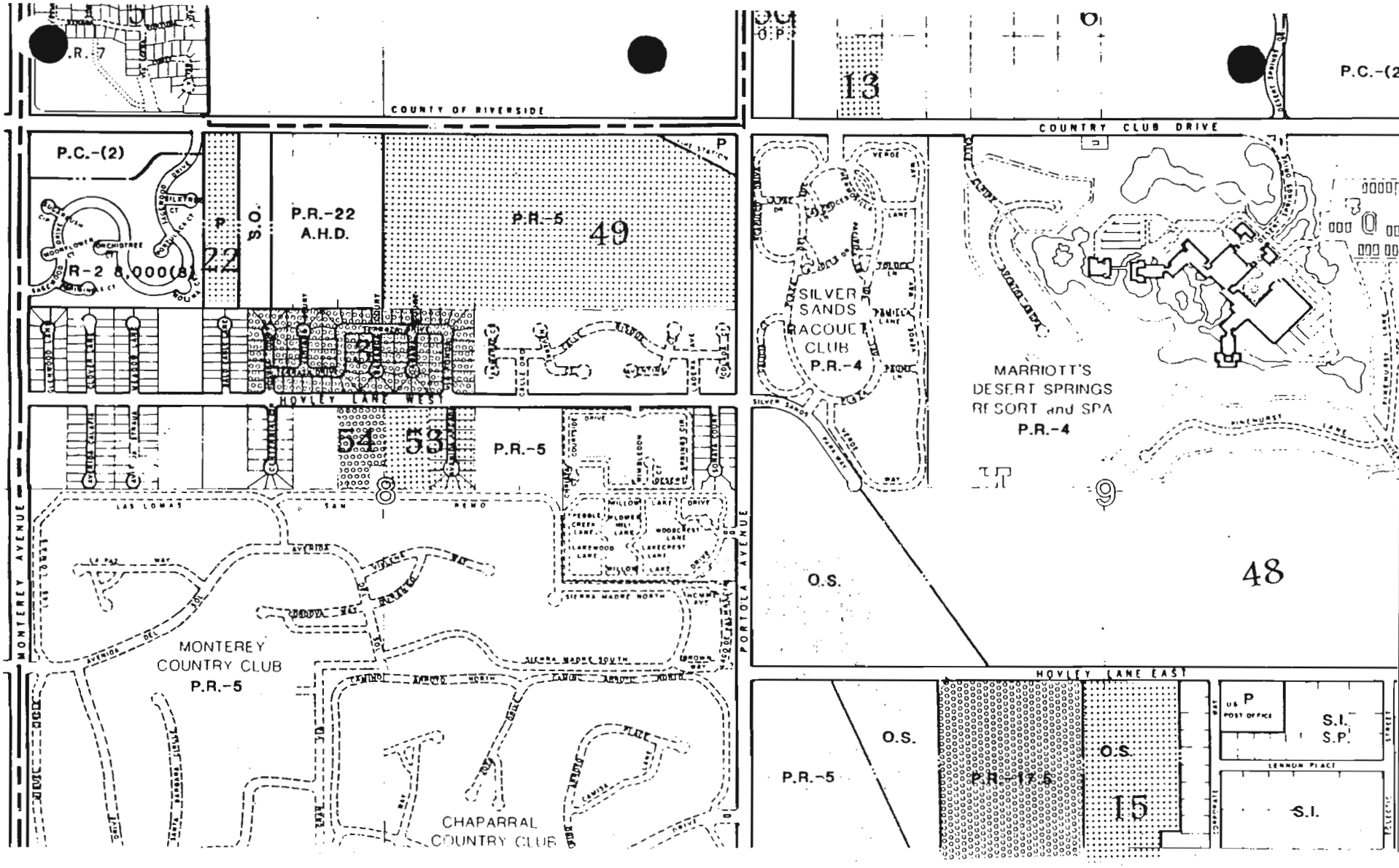

PALM DESERT TOWN CENTER
O.P.
PAINTERS PATH
19
P.C.-(3) S.P.
P.C.-(3) S.P.
EL PASEO
P.R.-6
36
Highway 111
R-1
PITAHAYA STREET
BEAVERTAIL STREET
HEDGEHOG STREET
P.R.-6
P.R.-7
YUCCA COURT
MESQUITE COURT
CACTUS COURT
CITRUS COURT
SHADOW MOUNTAIN DRIVE
BREENE WAY
P
H.P.R.D.
STATE HIGHWAY 74 PINES TO PALMS HIGHWAY
P.C.-(4)
OCOTILLO DRIVE
YUCCA SABEL DRIVE
IRONWOOD
DESERT LILY
R-1 20,000
R-1 12,000
R-1 15,000
R-3
R-2 S/P
GRAPEVINE STREET
WILLOW STREET
R-1 12,000

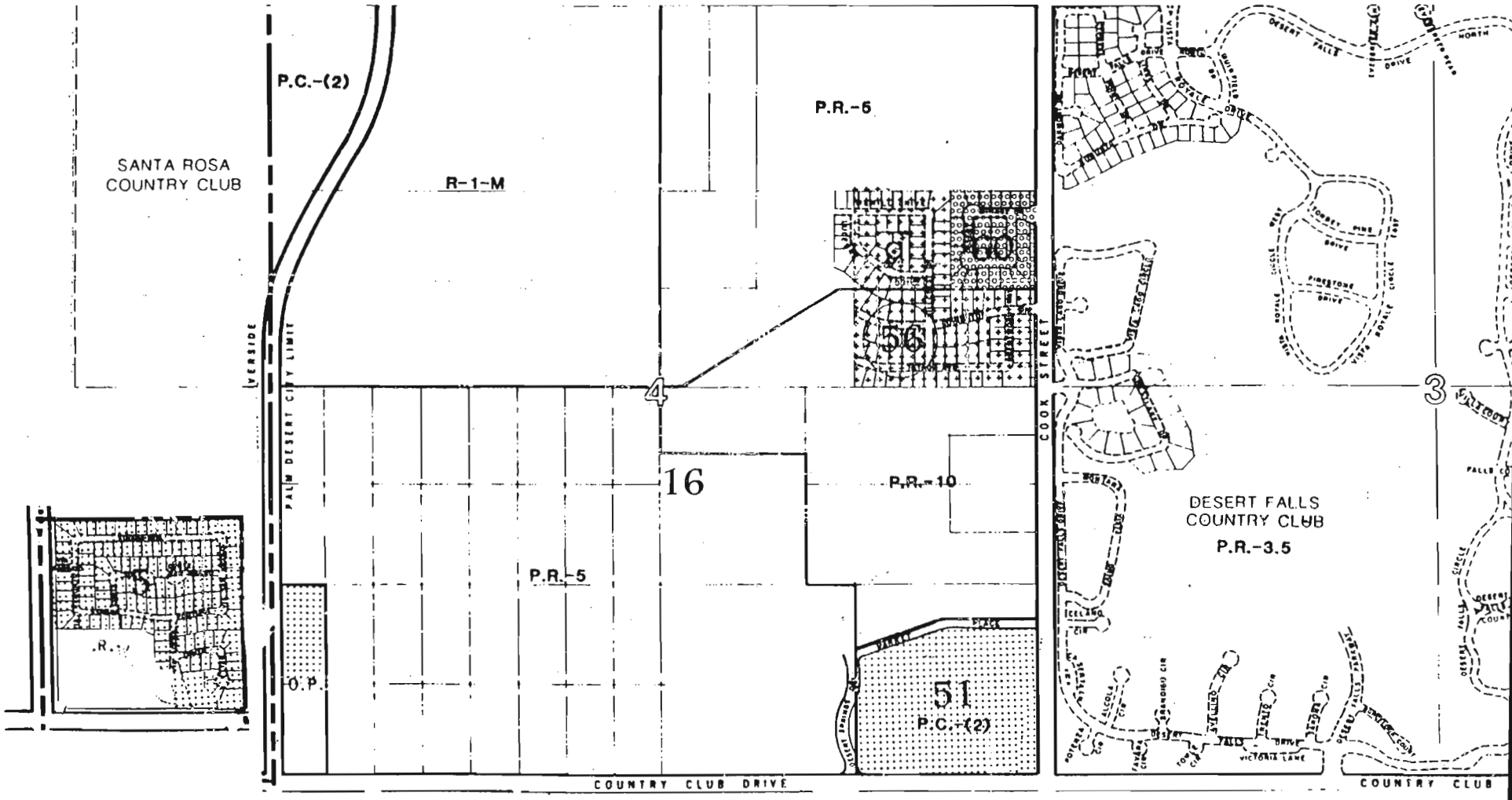

STATE HIGHWAY 111
HIGHWAY 74 PINES TO PALMS HIGHWAY
PORTOLA AVENUE
MONTEREY AVENUE
DEEP CANYON ROAD
EL PASEO
RESORT
O.S.
P.R.-7
P.R.-5 N
C-1
C-1 S.P.
JOSLYN COVE COMMUNITY

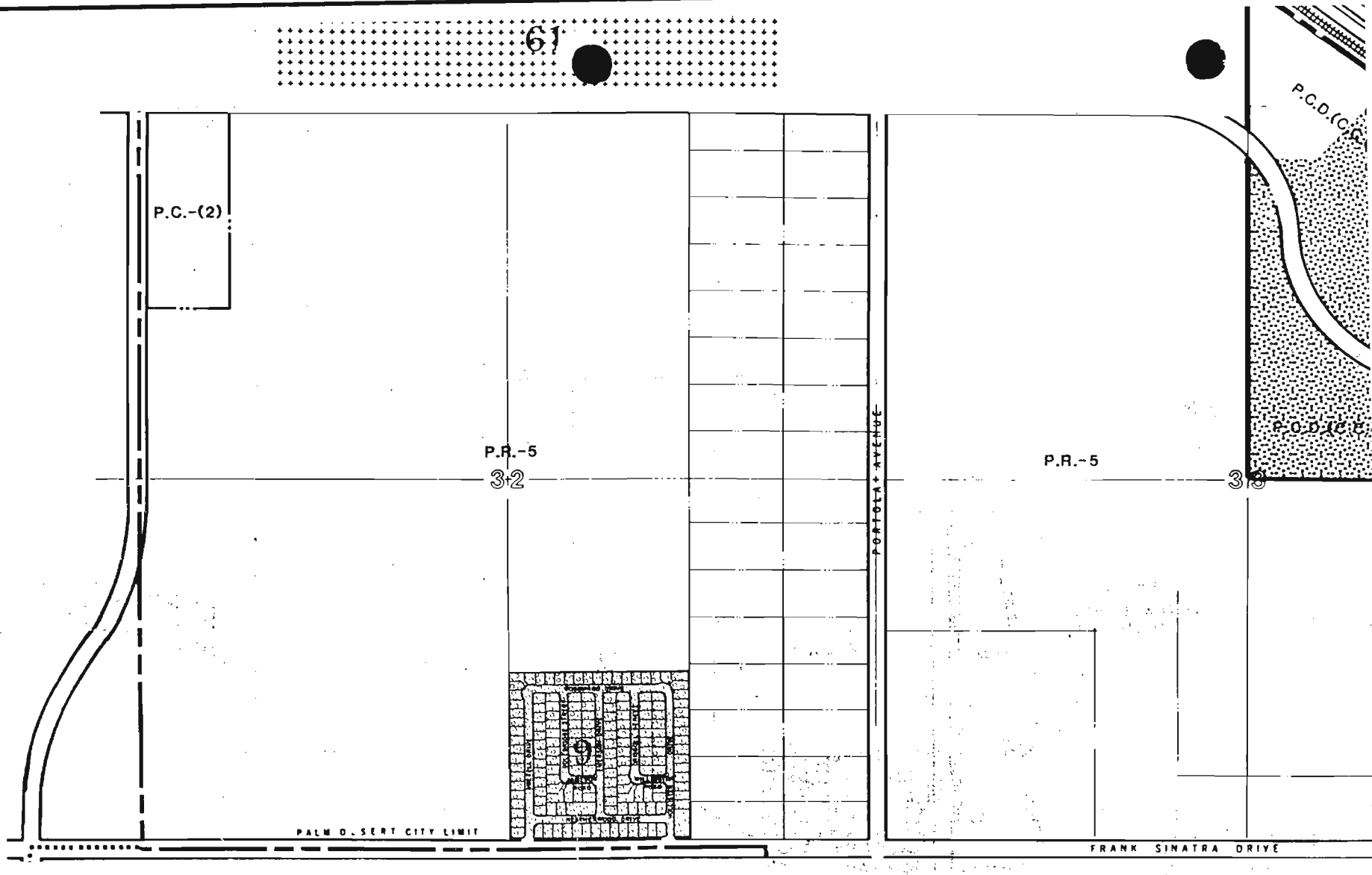

R-1 10,000
R-1 13,000
R-1 12,000
R-1 43,560
R-2 8,000 (8)
P.R.-7
P.R.-8
P.R.-3
P.R.-5
P.R.-6
P.R.-7 S.P.
R-3(0) S.P. 43,560
R-3(0) S.P. 43,560
R-1-M
INDIAN SPRINGS
H.P.R.
O.S.
IRONWOOD COUNTRY CLUB
P.R.-7 ,D
P.D
H.P.R.D
20
30
33
2
34
LIVIN
DESE


PORTOLA COUNTRY CLUB
R-1-M
S.I.
VELIE WAY
JONI DRIVE
MERLE DRIVE
COOK STREET
Whitewater Storm Channel
O.S.
S.P.
CAMINO ARROYO SOUTH
QUICKSILVER DRIVE
REBECCA ROAD
GARY AVENUE
SHERYL AVENUE
MAGNESIA FALLS DRIVE
PALM DESERT MOBILE ESTATES
PORTOLA PALMS
P.R.-7
R-1
R-3 (4)
O.P.
P
R-2(5) S(P)
RUTLEDGE WAY
MASSON STREET
KNUD AVENUE
RANCHO ROAD
SAN PASCUAL AVENUE
SHERIFF STATION
R-1 9,000
SANTOLINA DRIVE
BUTTONWOOD DR
DESERT STAR BOULEVARD
ERIN STREET
VELARDO DRIVE
ARTES DRIVE
P.R.-4
R-1 9,000
DEEP CANYON ROAD
FLORINE AVENUE
ROSS ROSE DRIVE
P.R.-4
P.R.-4 N.
SPORTS COMPLEX
HIGH SCHOOL
P.R.-8
S.P.
FRED WARING DRIVE
16
44
46

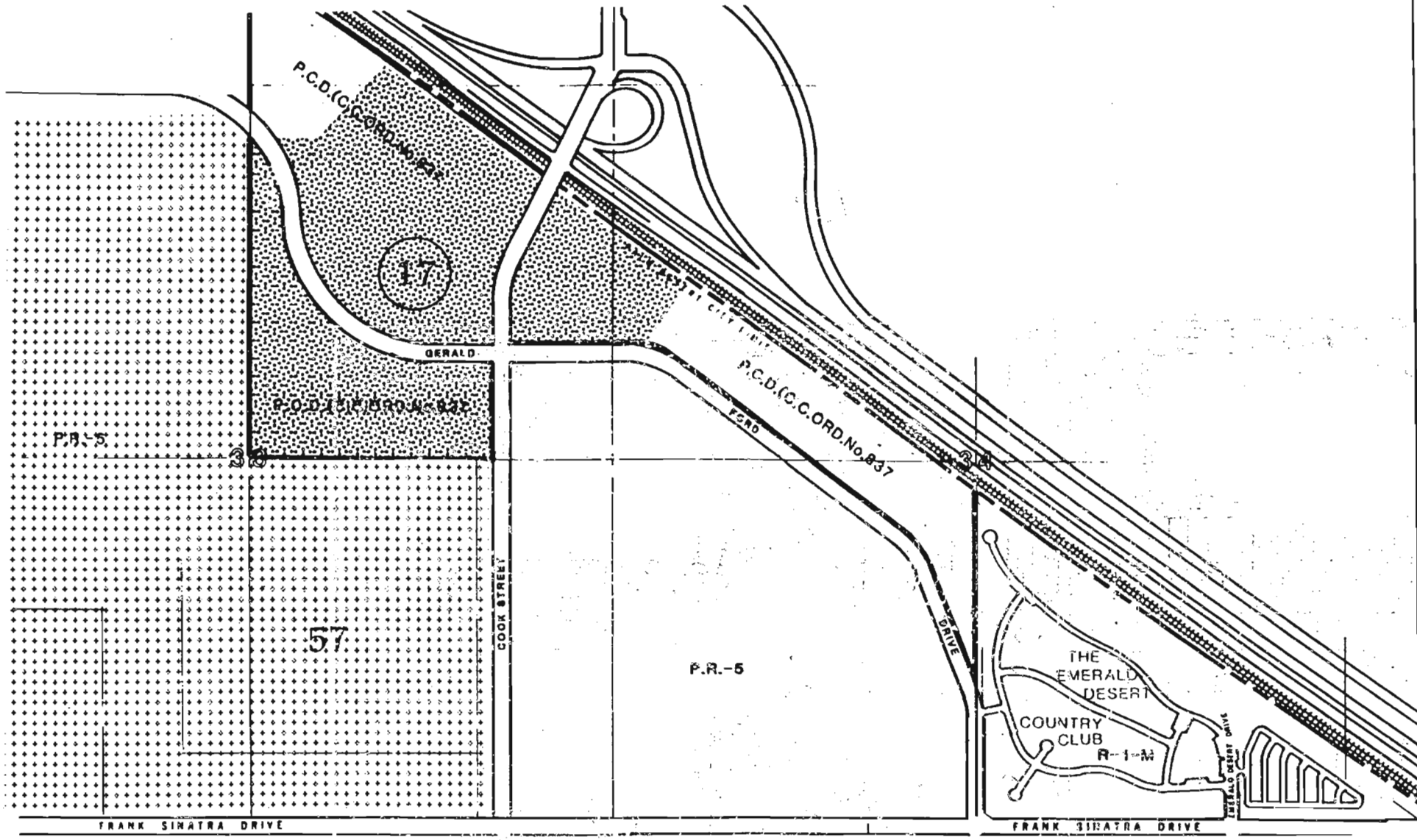

THE LAKES
COUNTRY CLUB
P.R.-4
S.P.
INDIAN RIDGE
COUNTRY CLUB
P.R.-5
7
P.R.-5
P.R.-4
P.R.-10
O.P.
S.I.
S.P.
S.I.
S.I.
S.P.
S.I.
COOK STREET
ELDORADO DRIVE
SOUTHERN
CALIFORNIA
EDISON

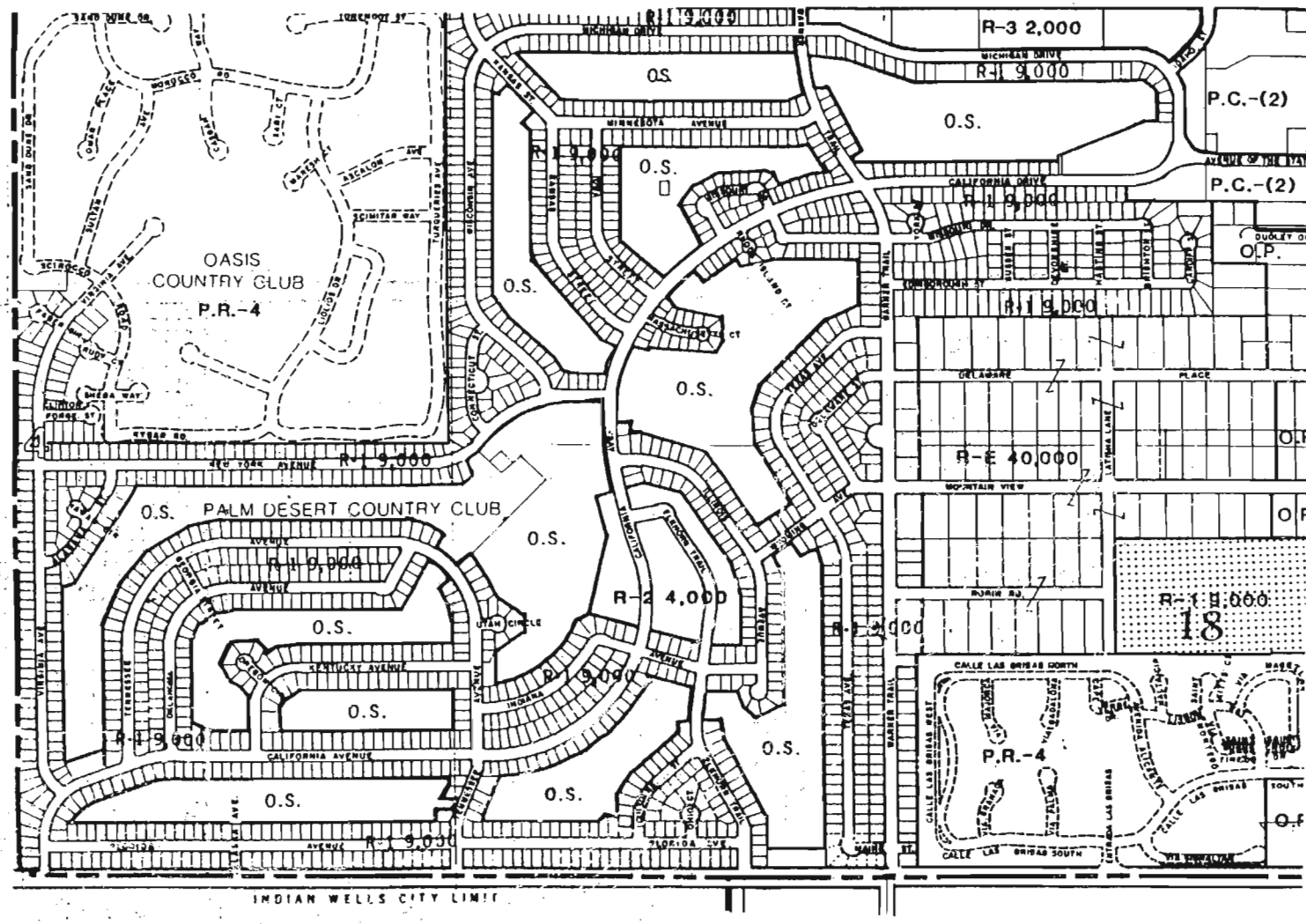

COUNTY OF RIVERSIDE
P.C.-(2)
R-2 8,000(8)
P.R.-22
A.H.D.
P.R.-5
49
HOVLEY LANE WEST
P.R.-5
MONTEREY COUNTRY CLUB
P.R.-5
CHAPARRAL COUNTRY CLUB
MONTEREY AVENUE
PORTOLA AVENUE
COUNTRY CLUB DRIVE
SILVER SANDS RACQUET CLUB
P.R.-4
MARRIOTT'S DESERT SPRINGS RESORT and SPA
P.R.-4
O.S.
48
HOVLEY LANE EAST
P.R.-5
O.S.
P.R.-17.5
O.S.
15
U.S. POST OFFICE
S.I.
S.P.
S.I.

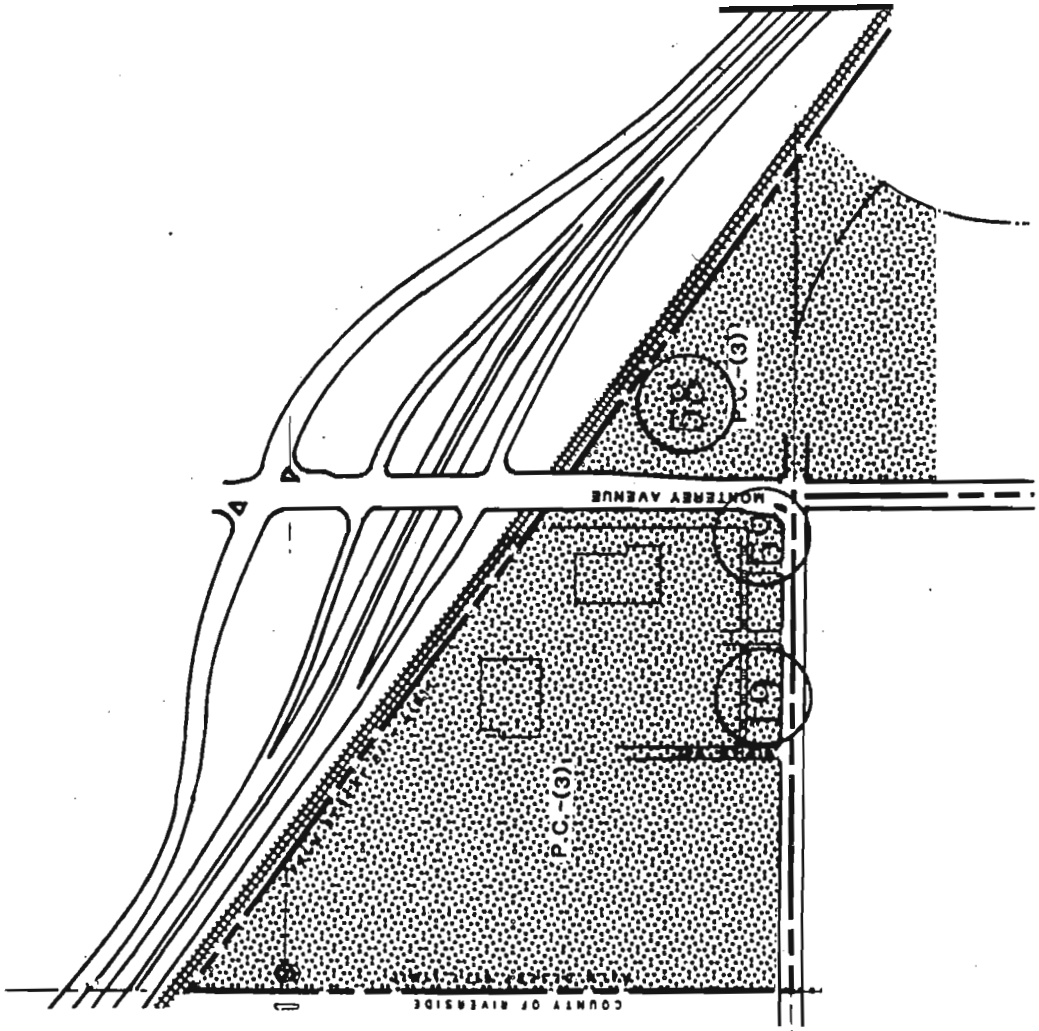

SANTA ROSA
COUNTRY CLUB
P.C.-(2)
R-1-M
P.R.-5
56
4
16
P.R.-10
P.R.-5
O.P.
51
P.C.-(2)
3
DESERT FALLS
COUNTRY CLUB
P.R.-3.5
PALM DESERT CITY LIMIT
COOK STREET
COUNTRY CLUB DRIVE
COUNTRY CLUB


P.C.-(2)
P.R.-5
32
PORTOLA AVENUE
P.R.-5
33
P.C.D.(C.C.
P.O.D.(C.C.
9
PALM DESERT CITY LIMIT
FRANK SINATRA DRIVE

11.11-61


P.C.D.(C.C.ORD.No.837)
17
GERALD
P.C.D.(C.C.ORD.No.837)
P.R.-5
38
57
COOK STREET
P.R.-5
FORD
DRIVE
P.C.D.(C.C.ORD.No.837)
38
THE EMERALD DESERT
COUNTRY CLUB
R-1-M
EMERALD DESERT DRIVE
FRANK SINATRA DRIVE
FRANK SINATRA DRIVE


OASIS
COUNTRY CLUB
P.R.-4
PALM DESERT COUNTRY CLUB
O.S.
R-1 9,000
R-2 4,000
R-3 2,000
R-E 40,000
P.C.-(2)
O.P.
P.R.-4
MICHIGAN DRIVE
MINNESOTA AVENUE
CALIFORNIA DRIVE
NEW YORK AVENUE
KENTUCKY AVENUE
CALIFORNIA AVENUE
FLORIDA AVENUE
MOUNTAIN VIEW
CALLE LAS BRISAS NORTH
CALLE LAS BRISAS SOUTH
INDIAN WELLS CITY LIMIT


COUNTY OF RIVERSIDE
P.C.-(3)
MONTEREY AVENUE
P.C.-(3)
58
59
60