Kimley-Horn
and Associates, Inc.

Memorandum

401 B Street
Suite 600
San Diego, CA
92101

To: Faye Gilbert, Caltrans District 8

From: Mychal Loomis

Date: October 27, 2011

Subject: DRAFT Volumes Memorandum, Jackson Street/Dillon Avenue/ Market Street Traffic Signal [PES - CML 5275 (022)]

This is the second of four memos prepared to evaluate the traffic implications of the subject project. A previous memo, dated February 9, 2011, and approved by Caltrans on March 29, 2011, described the proposed methods for peak hour volume estimating and intersection capacity analysis. The current memo has been prepared to present the peak hour volumes estimated using the methods described in the February 9, 2011 memo. A subsequent memo will be prepared to document the capacity analysis results. Following City of Indio and Caltrans review and approval of all three memos, a final memo will be prepared that will integrate the methods, volumes and results into a single document that responds to Caltrans' request for the preparation of a traffic study, as noted in the July 21, 2010 review of the draft Preliminary Environmental Study (PES) form.

Background

The proposed project, located in the eastern portion of the City of Indio, would install a traffic signal at the Jackson Street intersection with Dillon Avenue/Market Street and would provide a wireless interconnection among this intersection and adjacent intersections to the north (Avenue 44) and to the south (Avenue 45). In February 2010, the City of Indio submitted the Draft PES form for Caltrans review, and on July 21, 2010 Caltrans indicated that the preparation of a traffic analysis for the proposed project is required. The proposed study intersections include:

- Jackson Street/Avenue 45
- Jackson Street/Dillon Avenue/Market Street
- Jackson Street/Avenue 44

In February 2011, KHA prepared a memo describing the proposed approach for estimating the peak hour volumes to be used in intersection analysis. This memo, approved by Caltrans on March 29, 2011, proposed to estimate year 2012 and 2035 peak hour turning movement volumes assuming a straight-line traffic growth between the year of the existing counts (2008) and the years to be analyzed (i.e., 2012 and 2035). The difference in ADT volumes along the

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roadway calculated to a 3-percent-per-year growth. Thus, the recommended approach was to apply a 12-percent growth factor to Existing plus Sports Park volumes for 2012 (4-year period), and an 82-percent growth factor for the year 2035 (27-year period). A comment on the previous version of this memo requested that the existing conditions were to be analyzed as 2011 instead of 2008. The traffic counts obtained in 2008 then would have a 9-percent growth factor applied to achieve 2011 (3-year period) volumes to be used in existing conditions analysis.

Traffic Volumes

The following materials used to estimate volumes are attached to this document:

- Existing peak hour turning movement volumes at all three intersections (October 2008 counts taken from Indio Sports Park/Public Safety Complex traffic report (Kunzman and Associates, March 2009))
- Sports Park project traffic assignment (from Kunzman traffic report)
- Existing plus Sports Park Volumes
- Existing Conditions (2011) peak hour volumes (Existing plus Sports Park Volumes X growth factor of 9 percent, new approach recommended since February methods memo)
- Opening year (2012) peak hour volumes (Existing plus Sports Park Volumes X growth factor of 12 percent, per February methods memo)
- Horizon year (2035) peak hour volumes (Existing plus Sports Park Volumes X growth factor of 82 percent, per February methods memo)
- Average Daily Traffic (ADT) volume generation calculations

The ADT shown for Jackson Street on Figure 6 of the Kunzman and Associates study was an estimated volume based on the intersection turning movement volumes. The ADT used in calculations for this project is taken from the CVAG Traffic Census. The volume used for this segment is from 2008 to be consistent with the turning movement volume counts, and is much lower than the ADT used by Kunzman and Associates. However, in their study, Kunzman and Associates noted that their ADTs are conservative estimates while the ADT used in this memo is actual data.

We are prepared to move forward with the traffic and air quality analyses immediately upon Caltrans' approval of these volumes. Please contact me at 619-744-0161 or Mychal.Loomis@kimley-horn.com with any questions or comments.

Copies to:
Tom Rafferty, City of Indio
Joel Montalvo, NAI Consulting
Jean Fares, Kimley-Horn and Associates, Inc.

Attachments:

- Year 2008 turning movement count summaries
- Excerpt from Sports Park Study (Kunzman and Associates)
- Sports Park traffic assignment
- Existing year (2011) volumes
- Opening year (2012) peak hour volumes
- Horizon year (2035) peak hour volumes

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ATTACHMENTS

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St DATE: 10/14/2008 LOCATION: City of Indio

E-W STREET: Ave 44 DAY: TUESDAY PROJECT# 08-3231-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1.5	.5	1	1.5	.5	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	20	54	3	7	87	3	4	22	31	22	40	16	309
7:15 AM	29	95	4	4	91	2	6	22	30	16	41	19	359
7:30 AM	36	111	6	5	96	0	2	19	23	5	45	23	371
7:45 AM	31	106	4	6	104	2	5	17	30	6	29	17	357
8:00 AM	21	102	3	7	119	5	8	25	26	9	18	9	352
8:15 AM	29	87	4	6	97	3	6	20	23	9	20	6	310
8:30 AM	20	79	5	5	86	1	6	15	29	11	19	6	282
8:45 AM	18	65	4	4	72	2	2	23	18	8	15	5	236
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 204	NT 699	NR 33	SL 44	ST 752	SR 18	EL 39	ET 163	ER 210	WL 86	WT 227	WR 101	TOTAL 2576

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	117	414	17	22	410	9	21	83	109	36	133	68	1439
PEAK HR. FACTOR:		0.895			0.842			0.903			0.780		0.970

CONTROL: SIGNALIZED

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St DATE: 10/14/2008 LOCATION: City of Indio

E-W STREET: Ave 44 DAY: TUESDAY PROJECT# 08-3231-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1.5	.5	1	1.5	.5	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	29	165	13	14	118	6	16	18	18	21	22	17	457
4:15 PM	27	184	12	15	116	4	9	25	22	26	23	21	484
4:30 PM	32	162	14	16	132	5	11	23	24	25	29	16	489
4:45 PM	35	144	15	14	130	5	10	18	22	22	25	14	454
5:00 PM	41	128	15	12	152	6	9	22	21	19	24	11	460
5:15 PM	43	130	13	15	146	4	8	23	20	19	21	6	448
5:30 PM	42	125	13	12	152	4	6	21	18	20	22	6	441
5:45 PM	34	113	10	10	141	2	6	16	15	13	20	3	383
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 283	NT 1151	NR 105	SL 108	ST 1087	SR 36	EL 75	ET 166	ER 160	WL 165	WT 186	WR 94	TOTAL 3616

PM Peak Hr Begins at: 415 PM

PEAK VOLUMES =	135	618	56	57	530	20	39	88	89	92	101	62	1887
PEAK HR. FACTOR:		0.907			0.893			0.931			0.911		0.965

CONTROL: SIGNALIZED

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St DATE: 10/14/2008 LOCATION: City of Indio

E-W STREET: Market St DAY: TUESDAY PROJECT# 08-3231-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	8	84	12	18	122	10	3	3	7	27	4	3	301
7:15 AM	5	88	37	30	96	4	3	9	6	18	8	16	320
7:30 AM	7	114	29	24	106	2	2	4	3	18	10	11	330
7:45 AM	7	118	12	15	100	4	1	7	11	21	5	9	310
8:00 AM	14	111	18	10	120	8	1	3	10	24	7	8	334
8:15 AM	8	110	18	13	111	3	1	3	8	24	3	15	317
8:30 AM	5	121	18	3	108	1	1	0	3	16	2	8	286
8:45 AM	11	101	10	8	108	4	3	4	9	3	3	2	266
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 65	NT 847	NR 154	SL 121	ST 871	SR 36	EL 15	ET 33	ER 57	WL 151	WT 42	WR 72	TOTAL 2464

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	33	431	96	79	422	18	7	23	30	81	30	44	1294
PEAK HR. FACTOR:		0.933			0.940			0.789			0.923		0.969

CONTROL: 4-way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St DATE: 10/14/2008 LOCATION: City of Indio

E-W STREET: Market St DAY: TUESDAY PROJECT# 08-3231-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	17	198	15	11	156	4	2	3	14	18	4	10	452
4:15 PM	15	190	12	13	132	6	0	4	22	32	1	11	438
4:30 PM	14	148	33	17	165	4	3	1	13	22	4	9	433
4:45 PM	8	182	14	13	132	4	2	1	10	14	2	9	391
5:00 PM	8	177	10	15	128	4	8	1	13	22	2	12	400
5:15 PM	8	175	21	17	142	2	0	4	4	15	1	15	404
5:30 PM	11	149	15	15	144	6	2	2	8	14	2	15	383
5:45 PM	4	178	10	12	140	4	3	3	7	20	4	6	391
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	85	1397	130	113	1139	34	20	19	91	157	20	87	3292

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES =	54	718	74	54	585	18	7	9	59	86	11	39	1714
PEAK HR. FACTOR:		0.920			0.883			0.721			0.773		0.948

CONTROL: 4-way Stop Sign

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St DATE: 10/14/2008 LOCATION: City of Indio

E-W STREET: Ave 45 DAY: TUESDAY PROJECT# 08-3231-012

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	1	0	1	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	129	28	15	127	0	0	0	1	27	4	2	335
7:15 AM	3	143	29	17	132	0	0	1	1	28	8	7	369
7:30 AM	2	136	25	16	122	0	0	2	1	25	2	2	333
7:45 AM	7	130	27	12	113	2	1	4	4	22	1	5	328
8:00 AM	4	117	22	13	110	1	0	2	1	19	2	4	295
8:15 AM	1	110	12	15	106	2	0	2	7	11	5	8	279
8:30 AM	2	121	13	14	123	1	0	1	3	18	2	10	308
8:45 AM	2	124	13	9	130	0	0	0	2	23	3	15	321
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 23	NT 1010	NR 169	SL 111	ST 963	SR 6	EL 1	ET 12	ER 20	WL 173	WT 27	WR 53	TOTAL 2568

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	14	538	109	60	494	2	1	7	7	102	15	16	1365
PEAK HR. FACTOR:		0.944			0.933			0.417			0.773		0.925

CONTROL: SIGNALIZED

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Jackson St | DATE: 10/14/2008 | LOCATION: City of Indio

E-W STREET: Ave 45 | DAY: TUESDAY | PROJECT# 08-3231-012

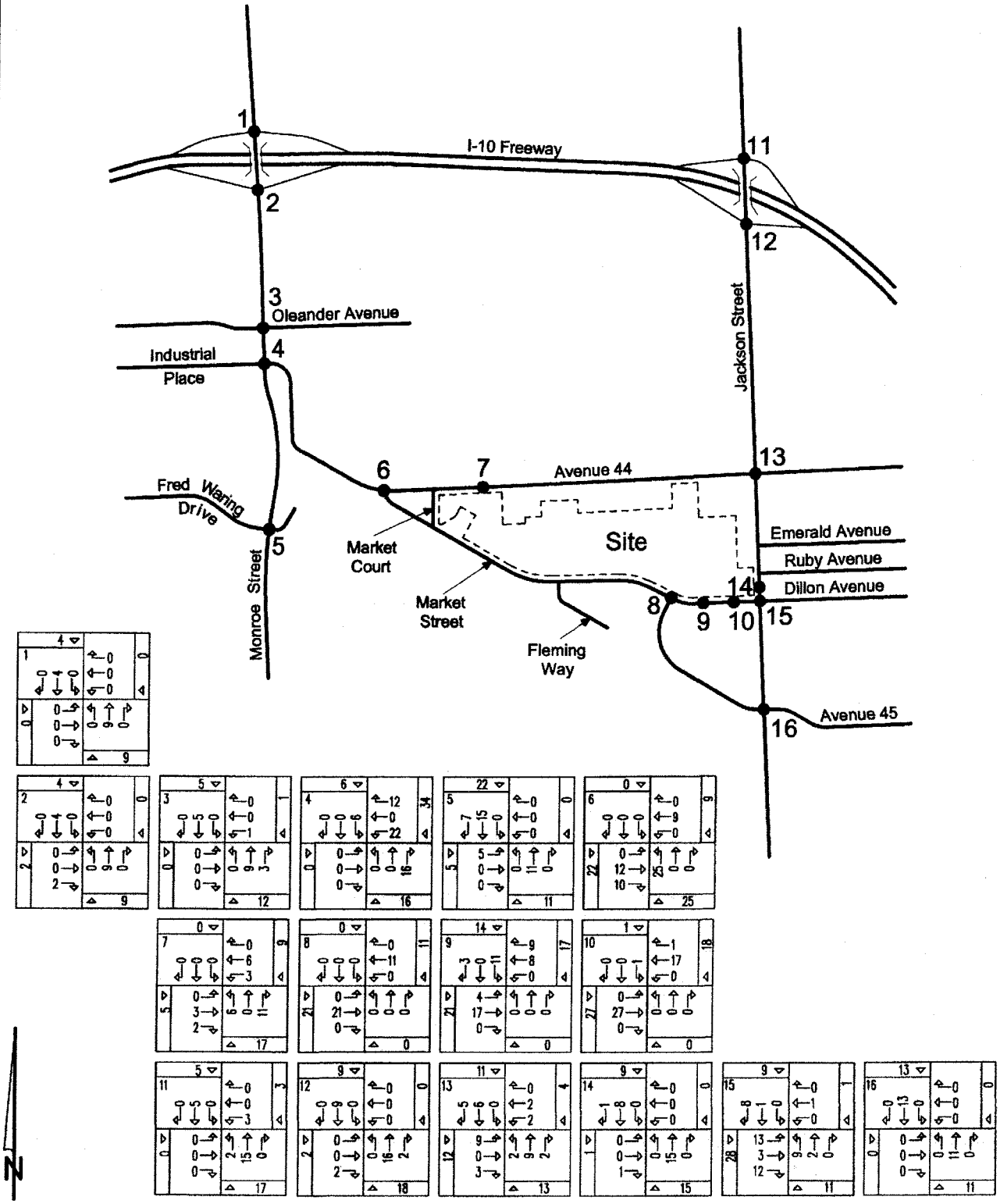
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	1	0	1	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	149	14	10	128	0	1	5	3	35	1	5	354
4:15 PM	2	166	16	10	160	1	0	1	2	30	4	6	398
4:30 PM	1	180	17	9	172	2	1	2	3	27	10	8	432
4:45 PM	1	198	13	8	167	0	0	0	2	21	2	8	420
5:00 PM	0	217	14	2	154	0	0	0	9	17	0	12	425
5:15 PM	1	221	12	4	171	1	1	1	3	18	2	11	446
5:30 PM	1	213	11	5	181	1	0	0	0	16	5	6	439
5:45 PM	1	203	10	4	175	1	1	0	2	13	2	5	417
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 10	NT 1547	NR 107	SL 52	ST 1308	SR 6	EL 4	ET 9	ER 24	WL 177	WT 26	WR 61	TOTAL 3331

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	3	849	50	19	673	2	1	1	14	72	9	37	1730
PEAK HR. FACTOR:		0.964			0.928			0.444			0.952		0.970

CONTROL: SIGNALIZED

Figure 14
Project Morning Peak Hour Turning Movement Volumes

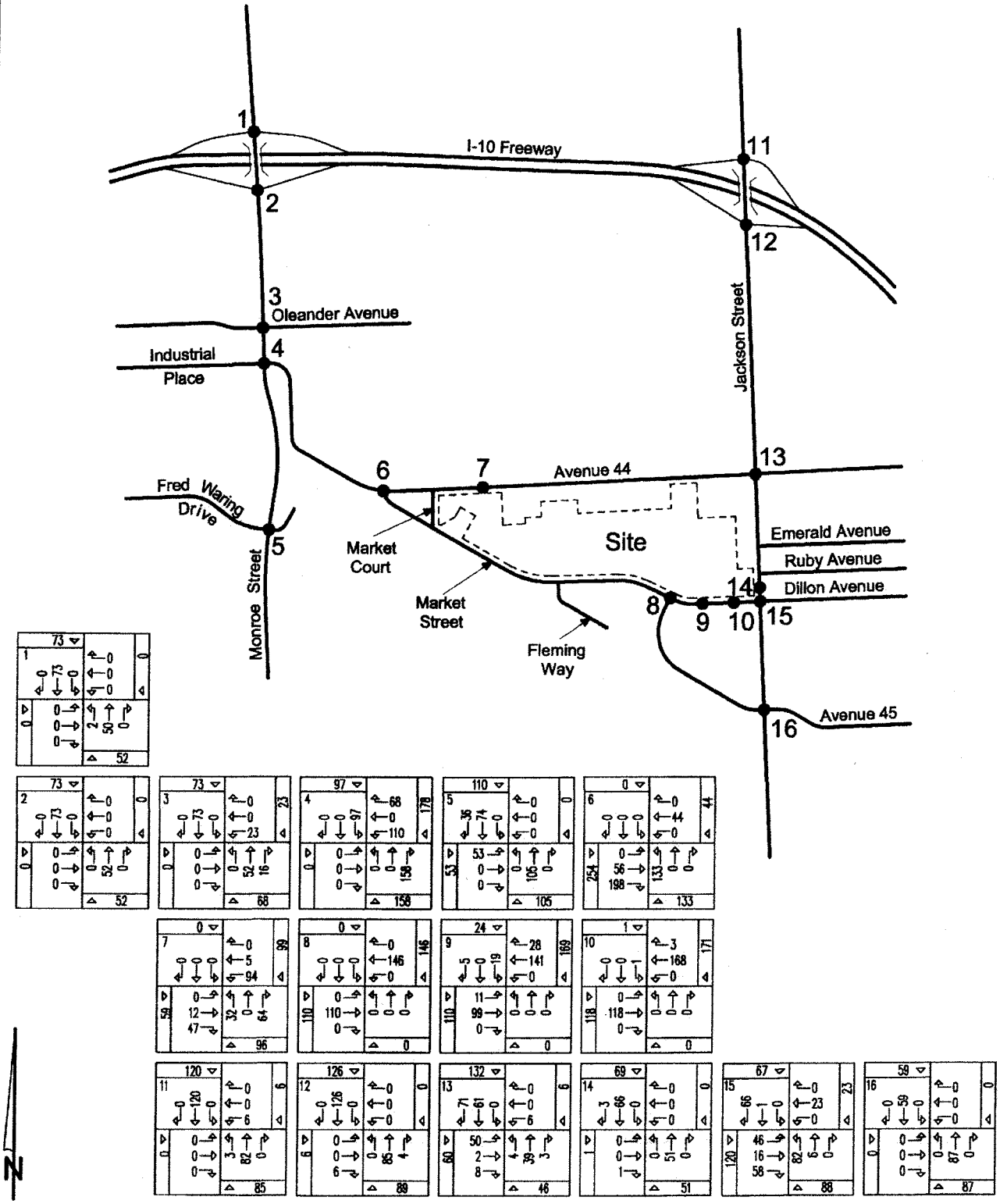


4219c/14

KUNZMAN ASSOCIATES Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 15
Project Evening Peak hour Turning Movement Volumes



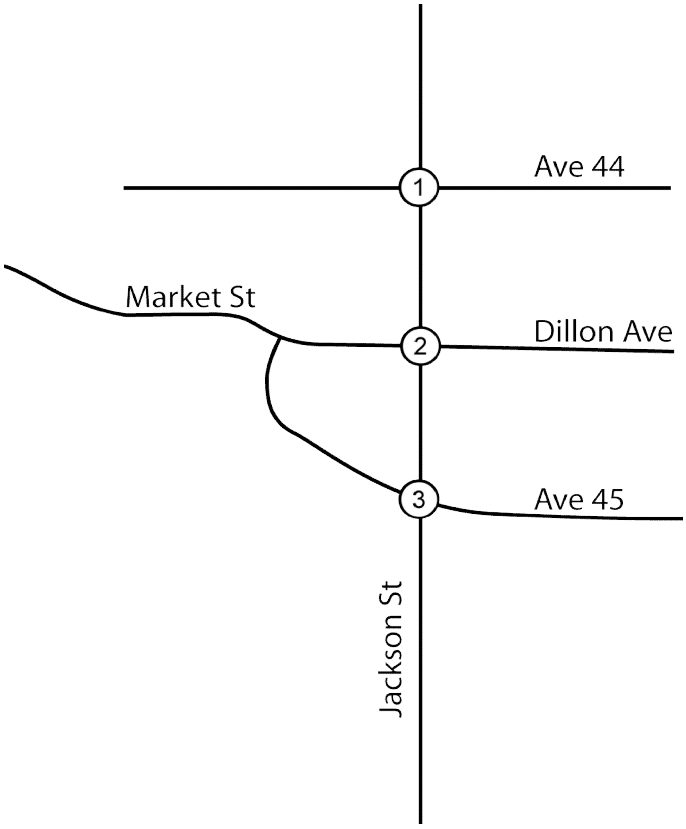
4219c/15

KUNZMAN ASSOCIATES Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1				2				3			
9 / 20				18 / 18				2 / 2			
410 / 530				422 / 585				494 / 673			
22 / 57				79 / 54				60 / 19			
Jackson St				Jackson St				Jackson St			
		68 / 62				44 / 39				16 / 37	
		133 / 101				30 / 11				15 / 9	
		36 / 92				81 / 86				102 / 72	
		Avenue 44		Market St		Dillon Ave				Avenue 45	
21 / 39				7 / 7				1 / 1			
83 / 88				23 / 9				7 / 1			
109 / 89				30 / 59				7 / 14			
		117 / 135				33 / 54				14 / 3	
		414 / 618				431 / 718				538 / 849	
		17 / 56				96 / 74				109 / 50	



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

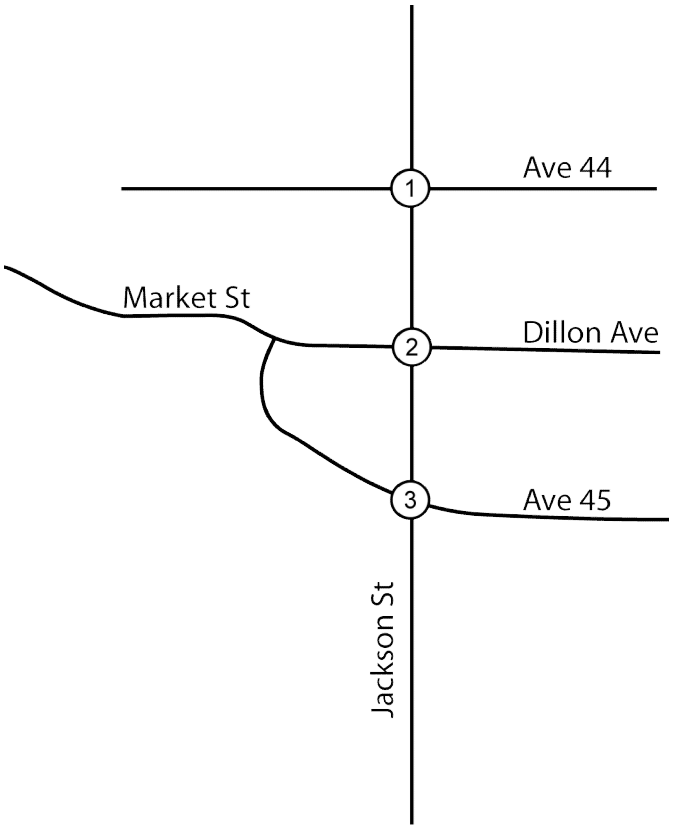
NOT TO SCALE

Kimley-Horn and Associates, Inc.

Traffic Counts (2008) Peak-Hour Traffic Volumes

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1				2				3		
5 / 71	6 / 61	Jackson St	2 / 0 2 / 6	8 / 66	1 / 1	Jackson St	1 / 23	13 / 59	Jackson St	
			Avenue 44	Market St			Dillon Ave			Avenue 45
9 / 50 0 / 2 3 / 8			2 / 4 9 / 39 2 / 3	13 / 46 3 / 16 12 / 58			9 / 82 2 / 6			11 / 87



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Kimley-Horn and Associates, Inc.

Indio Sports Park Trip Assignment - Study Intersections

K:\SND_ENV\099233002 - Jackson Street - Indio\Traffic Report\Excel\[099233002TA01.xlsm]Sports Park Assign Figure 1-12

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1						
		14 / 91	416 / 591	22 / 57	Jackson St	
						68 / 62
						135 / 101
						38 / 98
						Avenue 44
30 / 89						
83 / 90						
112 / 97						
						119 / 139
						423 / 657
						19 / 59

2						
		26 / 84	423 / 586	79 / 54	Jackson St	
						44 / 39
						31 / 34
						81 / 86
						Dillon Ave
20 / 53						
26 / 25						
42 / 117						
						42 / 136
						433 / 724
						96 / 74
Market St						

3						
		2 / 2	507 / 732	60 / 19	Jackson St	
						16 / 37
						15 / 9
						102 / 72
						Avenue 45
1 / 1						
7 / 1						
7 / 14						
						14 / 3
						549 / 936
						109 / 50

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Kimley-Horn and Associates, Inc.

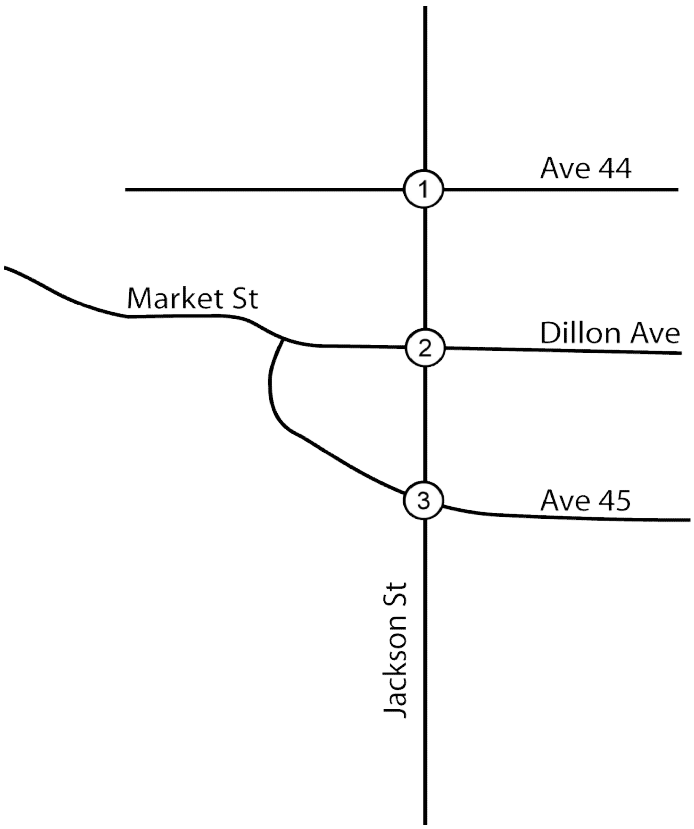
Existing Year (2008) Plus Sports Park Peak-Hour Traffic Volumes

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1						
		15 / 99	453 / 644	24 / 62	Jackson St	
						74 / 68
						147 / 110
						41 / 107
						Avenue 44
33 / 97						
90 / 98						
122 / 106						
						130 / 152
						461 / 716
						21 / 64

2						
		28 / 92	461 / 639	86 / 59	Jackson St	
						48 / 43
						34 / 37
						88 / 94
Market St						Dillon Ave
22 / 58						
28 / 27						
46 / 128						
						46 / 148
						472 / 789
						105 / 81

3						
		2 / 2	553 / 798	65 / 21	Jackson St	
						17 / 40
						16 / 10
						111 / 78
						Avenue 45
1 / 1						
8 / 1						
8 / 15						
						15 / 3
						598 / 1020
						119 / 55



Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Kimley-Horn and Associates, Inc.

Existing Conditions (2011) Peak-Hour Traffic Volumes

K:\SND_ENV\099233002 - Jackson Street - Indio\Traffic Report\Excel\[099233002TA01.xlsm]Ex Figure 1-12

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1							2							3			
	16 / 102	466 / 662	25 / 64	Jackson St	76 / 69	151 / 113	43 / 110	29 / 94	474 / 656	88 / 60	Jackson St	49 / 44	35 / 38	91 / 96	2 / 2	568 / 820	67 / 21	Jackson St	18 / 41	17 / 10	114 / 81
					Avenue 44						Market St	Dillon Ave							Avenue 45		
34 / 100	93 / 101	125 / 109	133 / 156	474 / 736	21 / 66			22 / 59	29 / 28	47 / 131	47 / 152	485 / 811	108 / 83		1 / 1	8 / 1	8 / 16	16 / 3	615 / 1048	122 / 56	

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Kimley-Horn and Associates, Inc.

Opening Year (2012) Peak-Hour Traffic Volumes

Jackson Street/Dillon Avenue/Market Street Traffic Signal

1

25 / 166	757 / 1076	40 / 104
Jackson St		

124 / 113	246 / 184	69 / 178
Avenue 44		

55 / 162	151 / 164	204 / 177

217 / 253	770 / 1196	35 / 107

2

47 / 153	770 / 1067	144 / 98
Jackson St		

80 / 71	56 / 62	147 / 157
Dillon Ave		

36 / 96	47 / 46	76 / 213
Market St		

76 / 248	788 / 1318	175 / 135

3

4 / 4	923 / 1332	109 / 35
Jackson St		

29 / 67	27 / 16	186 / 131
Avenue 45		

2 / 2	13 / 2	13 / 25

25 / 5	999 / 1704	198 / 91

Legend

X / Y = AM / PM PEAK HOUR TURNING VOLUMES

NOT TO SCALE

Kimley-Horn and Associates, Inc.

Horizon Year (2035) Peak-Hour Traffic Volumes

K:\SND_ENV\099233002 - Jackson Street - Indio\Traffic Report\Excel\[099233002TA01.xlsm]BO Figure 1-12

1. Traffic data table

Road Segment	**2012 No Build**			**2012 Build**		
	ADT	**Truck ADT**	**LOS**	**ADT**	**Truck ADT**	**LOS**
Jackson Street from Ave 45 to Ave 44	16,005	640	A	16,005	640	A
Dillon Avenue East of Jackson Street	3,920	235	A	3,920	235	A

Road Segment	**2035 No Build**			**2035 Build**		
	ADT	**Truck ADT**	**LOS**	**ADT**	**Truck ADT**	**LOS**
Jackson Street from Ave 45 to Ave 44	26,000	1,040	C	26,000	1,040	C
Dillon Avenue East of Jackson Street	6,370	380	A	6,370	380	A

Kimley-Horn and Associates, Inc.

Sheet No. 1 of 2

Job 099233002 Subject Jackson/Dillon/Mkt Job No.

Designed by SCB Date 7/5/11 Checked by Date

ADT VOLUME PROJECTIONS FOR SCAG SUBMITTAL

Jackson St, Ave. 45 to Ave. 44

2012 ADT / Truck ADT

Per Traffic memo 1 (Feb. 9, 2011),

(Existing + Sports Park) x 1.12 =

(13,700 + 590) x 1.12 = 16,005 ADT

Truck ADT = ADT x Existing Truck percentage =

16,005 x 4% (a) = 640 ADT (trucks)

2035 ADT / Truck ADT

Per Traffic memo 1 (Feb 9, 2011)

(Existing + Sports Park) x 1.82 =

(13,700 + 590) x 1.82 = 26,000 ADT

Truck ADT = ADT x Existing Truck percentage =

26,000 x 4% (a) = 1,040 ADT (trucks)

Dillon Av, east of Jackson
(highest east/west leg volume)

2012 ADT / Truck ADT

Existing ADT = 3,300 (b)

Sports Park ADT = 3,926 x 5% (c) = 196

Existing + Sports Park = 3,500

(a) Attachment 1 - HPMS Truck Data
(b) Attachment 2 - Sports Park Figure 6
(c) Attachment 3 - Sports Park Traffic Gen. and Dist.

3,500 x 1.12 = 3,920 ADT

Trucks based on HPMS data for Market (Attachment 1)

3,920 x 6% = 235 ADT (trucks)

2035 ADT / Truck ADT

3,500 x 1.82 = 6,370 ADT

6,370 x 6% = 382 ADT (trucks)

→ LOS (ADT - based)

Estimated using street classifications and v/c LOS thresholds contained in Table 2 of Sports Park Traffic Report (d)

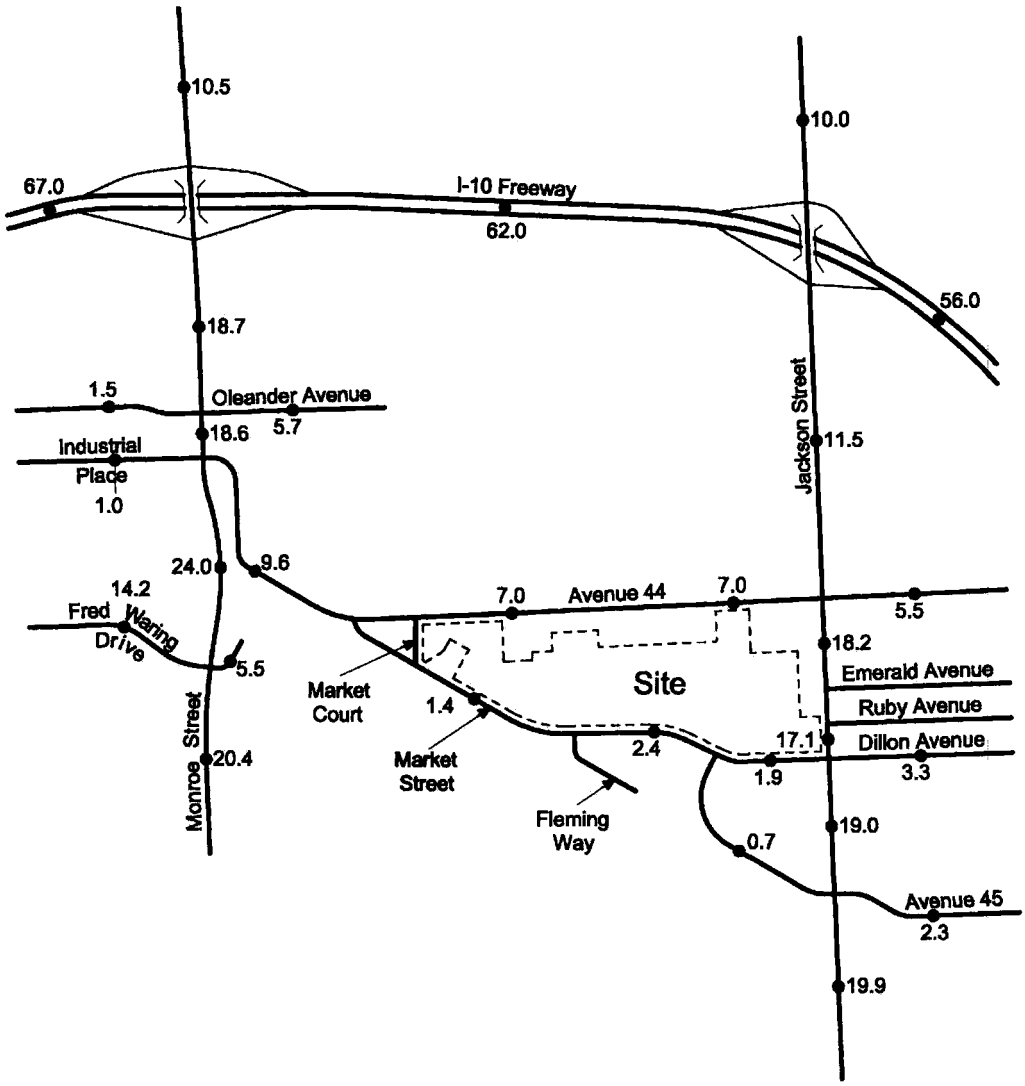
(d) See Table 2 — Street Class. and LOS Thresholds Attachment 4

IND

										% single		% combo					
08Z862145000	IND	GOLF CENTER PKWY	AVE 45	HWY 111	0.560	12100	2	7	45	3	3	3	3	8	50	44000	2030
	IND	GORE ST	AVE 41	AVE 42	0.500	2200	4	90	45	1	1	0	0	9	50	8000	2030
08W283100000	IND	HJORTH ST	AVE 50	AVE 48	1.000	2900	2	88	50	3	3	1	1	9	55	5000	2030
08WK04100000	IND	HOOVER AVE	INDIO BLVD	FRED WARING DR	0.150	3400	4	88	35	0	0	0	0	9	65	7000	2030
	IND	HOOVER AVE	FRED WARING DR	MONROE ST	0.450	4000	2	79	35	0	0	0	0	9	50	7000	2030
08Z872000000	IND	HWY 111	JEFFERSON ST	MADISON ST	1.000	25300	6	100	50	4	4	2	2	8	50	70000	2030
	IND	HWY 111	MADISON ST	MONROE ST	1.320	22800	4	28	45	4	4	2	2	8	50	55000	2030
	IND	HWY 111	MONROE ST	RUBIDOUX ST	0.300	24400	6	80	35	4	4	2	2	8	50	54000	2030
08Z872200000	IND	HWY 111	RUBIDOUX ST	INDIO BLVD	1.240	16200	4	31	35	5	5	3	3	8	50	35000	2030
08Z867100000	IND	INDIO BLVD	AVE 48	CL 0.2M N/CLINTON S	4.130	22900	4	81	50	5	5	3	3	8	55	45000	2030
08Z867110000	IND	INDIO BLVD	CL 0.2M N/CLINTON S	JEFFERSON ST	1.100	19600	4	92	50	5	5	3	3	9	60	55000	2030
08Z867120000	IND	INDIO BLVD	JEFFERSON ST	URL .5M N/JEFFERSON	0.500	19600	4	90	50	5	5	3	3	9	60	75000	2030
08Z867130000	IND	INDIO BLVD	URL .5M N/JEFFERSON	JEFFERSON ST OC	0.180	19600	4	11	50	5	5	3	3	9	60	75000	2030
08Z868100000	IND	INDIO SPRINGS DR	GOLF CTR PKWY	CABAZON IND RES	0.800	7100	2	90	35	3	3	1	1	8	55	10000	2030
08Z860090000	IND	JACKSON ST	AVE 52	AVE 50	1.000	10700	3	95	50	2	2	2	2	9	55	28000	2030
08Z860110000	IND	JACKSON ST	AVE 50	0.25 M N/O AVE 50	0.250	13400	3	85	50	2	2	2	2	9	55	28000	2030
	IND	JACKSON ST	0.25 M N/O AVE 50	DR CARREON BLVD	1.000	14600	4	85	45	2	2	2	2	8	55	32000	2030
08Z860115000	IND	JACKSON ST	DR CARREON BLVD	HWY 111	0.500	13400	4	85	40	2	2	2	2	8	60	24000	2030
08Z860116000	IND	JACKSON ST	HWY 111	REQUA AVE	0.180	19200	4	85	40	2	2	2	2	8	55	45000	2030
08Z860116500	IND	JACKSON ST	REQUA AVE	AVE 45	0.350	19200	4	85	40	2	2	2	2	8	55	61000	2030
08Z860117000	IND	JACKSON ST	AVE 45	AVE 44	0.450	19200	4	85	40	2	2	2	2	8	55	44000	2030
08Z860118000	IND	JACKSON ST	AVE 44	.1M N/KENNER AVE	0.350	14300	2	85	40	3	3	2	2	9	50	41000	2030
08Z860119000	IND	JACKSON ST	.1M N/KENNER AVE	I-10	0.320	14300	2	85	40	3	3	2	2	9	50	42000	2030
08Z860120000	IND	JACKSON ST	I-10	AVE 42	0.340	19900	6	95	45	4	4	2	2	8	60	62000	2030
08Z860125000	IND	JACKSON ST	AVE 42	.90M N/AVE 42	0.900	6400	4	90	45	2	2	1	1	9	65	21000	2030
08Z860130000	DELETED	DELETED	DELETED	DELETED													
08W565125000	IND	JEFFERSON ST	0.15 N/O HWY 111	AVE 50	1.650	28800	6	90	55	3	3	2	2	8	55	65000	2030
08W565125100	IND	JEFFERSON ST	AVE 38	VARNER RD	1.530	11000	2	95	45	1	1	0	0	8	55	30000	2030
08W565142000	IND	JEFFERSON ST	INDIO BLVD	WESTWARD HO DR	2.050	23100	6	90	50	4	4	3	3	9	50	60000	2030
08Z869100000	IND	JOHN NOBLES DR	MONROE ST	ARABIA ST	0.500	3100	2	95	35	0	0	0	0	9	55	5000	2030
08WK06100000	IND	LAS PALMAS DR	HWY 111	MONROE ST	0.170	4000	2	90	30	3	3	1	1	10	55	5000	2030
08Z856100000	IND	MADISON ST	MILES AVE	HWY 111	1.000	8600	2	100	40	0	0	0	0	8	55	15000	2030
	IND	MADISON ST	HWY 111	0.35M S/O AVENUE 49	1.350	7700	4	90	45	0	0	0	0	9	50	36000	2030
	IND	MADISON ST	0.35M S/O AVENUE 49	AVE 52	1.150	5200	2	60	50	0	0	0	0	10	55	34000	2030
08Z856120000	IND	MADISON ST	FRED WARING DR	INDIO BLVD	0.630	2200	4	90	35	2	2	0	0	10	65	33000	2030
08Z856130000	IND	MADISON ST	AVE 40	AVE 38	1.000	1300	2	100	45	0	0	0	0	10	50	7000	2030
08WK09100000	IND	MANILA AVE	VAN BUREN ST	.16 E/VAN BUREN ST	0.160	500	2	70	25	0	0	0	0	10	50	1000	2030
	IND	MARKET ST	AVE 44	JACKSON ST	1.000	2500	2	93	40	4	4	2	2	10	55	10000	2030
08Z849090000	IND	MILES AVE	DUNE PALMS RD	ELM ST	1.820	9600	4	95	50	3	3	2	2	8	55	35000	2030
08Z849103000	IND	MILES AVE	CLINTON ST	MONROE ST	0.500	8200	4	79	45	3	3	2	2	9	55	21000	2030
08Z849105000	IND	MILES AVE	MONROE ST	SMURR ST	0.960	4600	2	76	25	0	0	0	0	8	55	18000	2030
08Z858085000	IND	MONROE ST	AVE 52	AVE 50	1.000	7700	2	100	50	3	3	2	2	9	50	30000	2030
08Z858100000	IND	MONROE ST	AVE 50	HWY 111	2.030	18700	4	90	50	3	3	2	2	9	55	30000	2030
08Z858110000	IND	MONROE ST	HWY 111	HOOVER AVE	0.850	23900	4	95	40	4	4	3	3	8	50	35000	2030
08Z858112000	IND	MONROE ST	HOOVER AVE	OLEANDER AVE	0.500	20800	4	95	40	4	4	3	3	8	55	45000	2030
08Z858113000	IND	MONROE ST	OLEANDER AVE	0.20 M N/O OLEANDER AVE	0.200	19200	4	95	40	4	4	3	3	8	60	39000	2030
	IND	MONROE ST	0.20 M N/O OLEANDER AVE	I-10	0.250	19200	2	95	40	4	4	3	3	8	60	41000	2030
08Z858115000	IND	MONROE ST	I-10	AVE 42	0.320	9700	6	100	40	4	4	4	4	10	65	40000	2030
08Z858120000	IND	MONROE ST	AVE 42	AVE 40	1.000	2700	4	90	40	5	5	15	15	8	65	32000	2030
08Z858130000	IND	MONROE ST	CL N/O AVE 40	AVE 40	0.250	1600	2	80	55	5	5	25	25	10	65	12000	2030
08Z859100000	IND	OASIS ST	AVE 48	HARTFORD AVE	0.700	5800	4	85	40	1	1	1	1	10	55	22000	2030
08Z859110000	DELETED	DELETED	DELETED	DELETED													

Attachment 1- HPMS Truck Data (2009)

Figure 6
Existing Average Daily Traffic Volumes



Legend

19.9 = Vehicles Per Day (1000's)

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KUNZMAN ASSOCIATES

OVER 30 YEARS OF EXCELLENT SERVICE

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Attachment 2 - Sports Park Fig. 6

Table 4

Project Traffic Generation - Opening Year (2012)[1]

Land Use	Quantity	Units[2]	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Aquatic Facility[3]	323	PS	0.02	0.14	0.15	0.15	0.46	0.62	4.000
Football Fields[4]	2	Field	1.00	1.00	2.00	56.25	56.25	112.50	225.00
Softball Fields[5]	4	Field	1.00	1.00	2.00	69.75	7.75	77.50	232.50
Tennis Courts	2	Court	1.00	1.00	2.00	1.94	1.94	3.88	31.04
Basketball Courts[6]	2	Court	1.00	1.00	2.00	11.00	11.00	22.00	176.00
Fire Station	18.000	TSF	0.81	0.11	0.92	0.12	0.85	0.97	6.97
Police Department[7]									
- Police Headquarters	155	EMP	0.09	0.09	0.18	0.35	0.15	0.50	4.39
- Maintenance Facility	5.000	TSF	0.81	0.11	0.92	0.12	0.85	0.97	6.97
Trips Generated									
Aquatic Facility[3]	323	PS	5	45	50	50	150	200	1,292
Football Fields[4]	2	Field	2	2	4	113	113	226	450
Softball Fields[5]	4	Field	4	4	8	279	31	310	930
Tennis Courts	2	Court	2	2	4	4	4	8	62
Basketball Courts[6]	2	Court	2	2	4	22	22	44	352
Subtotal			15	55	70	468	320	788	3,086
Fire Station	18.000	TSF	15	2	17	2	15	17	125
Police Department[7]									
- Police Headquarters	155	EMP	14	14	28	54	23	77	680
- Maintenance Facility	5.000	TSF	4	1	5	1	4	5	35
Subtotal			18	15	33	55	27	82	715
Total			48	72	120	525	362	887	3,926

[1]Source: Institute of Transportation Engineers, Trip Generation, 8th Edition, 2008, Land Use Categories 110 and 490. Trip Generation has been approved by the City of Indio Transportation Department Staff.

[2]PS = Parking Spaces; TSF = Thousand Square Feet; EMP = Employee

[3]Aquatic Center

Morning Peak Hour In/Out Total = (48 students + 1 instructor + 1 lifeguard) = 50

Morning Peak Hour Inbound/Outbound = 90%/10%

Evening Peak Hour In/Out Total = (190 patrons + 1 chief life guard + 4 life guards + 4 junior guards + 1 facility manager) = 200

Daily = (323 parking spaces with 4 trips per day) = 1,292

[4]Football

Morning Peak Hour In/Out Total = The football fields are not projected to generate traffic during the morning peak hour. 1 vehicle entering and exiting is assumed.

Evening Peak Hour In/Out Total = (((((20 persons per team + 2 coaches) X (2 teams)) + (1 referee)) X (1.25 factor for friends, family, concession staff) X (2 In/Out) = 112.50

Evening Peak Hour Inbound/Outbound = 90%/10% - Complete Shift Change

Daily = ((112.50 persons per field) X (2 games per day)) = 225.00

[5]Softball

Morning Peak Hour In/Out Total = The softball fields are not projected to generate traffic during the morning peak hour. 1 vehicle entering and exiting is assumed.

Evening Peak Hour In/Out Total = (((((14 persons per team + 1 coach) X (2 teams)) + (1 umpire)) X (1.25 factor for friends, family, concession staff) X (2 In/Out) = 77.50

Evening Peak Hour Inbound/Outbound = 90%/10% - First Game

Daily = ((77.50 persons per field) X (3 games per day)) = 232.50

[6]Basketball

Morning Peak Hour In/Out Total = The basketball courts are not projected to generate traffic during the morning peak hour. 1 vehicle entering and exiting is assumed.

Evening Peak Hour In/Out Total = ((((5 persons per team) X (2 teams)) X (1.10 factor for friends, family, concession staff)) X (2 In/Out))= 22.00

Evening Peak Hour Inbound/Outbound = 90%/10% - Complete Shift Change

Daily = (((22.00 persons per court) X (4 games per day)) X (2 In/Out)) = 176.00

[7]Police Headquarters

Captain Mark Miller of the City of Indio Police Department provided the projected total employee and daily employee numbers for Opening Year 2012, Year 2022, and Year 2032. City staff aided in the morning peak hour, evening peak hour, and daily traffic calculations.

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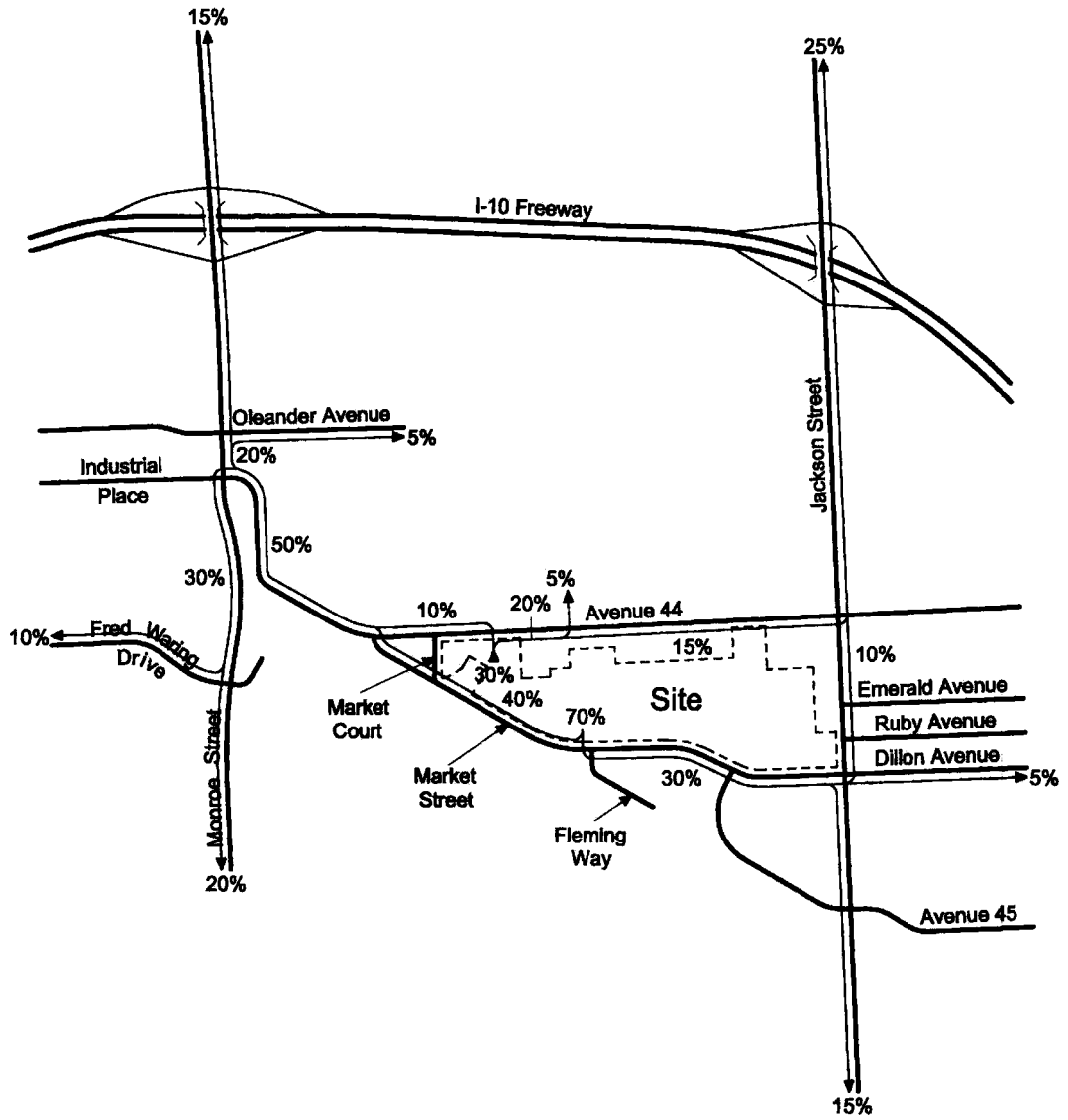
Attachment 3 - Sports Park Traffic Gen and Dist

Figure 9
Project Traffic Distribution - Park



Legend

10% = Percent To/From Project

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Table 2

Existing Volume to Capacity Ratios

Roadway	Segment	Number of Lanes	Maximum Capacity (LOS E)	Average Daily Traffic	Volume to Capacity Ratio	Level of Service[1]	2012	2035
Monroe Street	north of I-10 Freeway WB Ramps[2]	2U	13,000	10,500	0.81	D		
	south of I-10 Freeway EB Ramps[3]	2U	13,000	18,700	1.44	F		
	north of Oleander Avenue	4D	35,900	18,700	0.52	A		
	between Oleander Avenue and Industrial Place/Avenue 44	4D	35,900	18,600	0.52	A		
	between Industrial Place/Avenue 44 and Fred Waring Drive	4D	35,900	24,000	0.67	B		
	south of Fred Waring Drive	4D	35,900	20,400	0.57	A		
Jackson Street	north of I-10 Freeway WB Ramps	6D	53,900	10,000	0.19	A		
	south of I-10 Freeway EB Ramps	2D	17,950	11,500	0.64	B		
	north of Avenue 44	4D	35,900	11,500	0.32	A		
	between Avenue 44 and Police Access	4D	35,900	18,200	0.51	A		
	between Police Access and Market Street/Dillon Avenue	4D	35,900	17,100	0.48	A		
	between Market Street/Dillon Avenue and Avenue 45	4D	35,900	19,000	0.53	A	0.45/A	0.72/C
	south of Avenue 45	4D	35,900	19,900	0.55	A		
Oleander Avenue	west of Monroe Street	2U	13,000	1,500	0.12	A		
	east of Monroe Street	2U	13,000	5,700	0.44	A		
Industrial Place/Avenue 44	west of Monroe Street	2U	13,000	1,000	0.08	A		
	east of Monroe Street	4D	35,900	9,600	0.27	A		
	west of Market Street	4U	25,900	9,600	0.37	A		
	east of Market Street	4U	25,900	7,000	0.27	A		
	west of Jackson Street	4U	25,900	7,000	0.27	A		
	east of Jackson Street	4U	25,900	5,500	0.21	A		
Market Street/Dillon Avenue	east of Avenue 44	2U	13,000	1,400	0.11	A		
	west of Avenue 45	2D	17,950	2,400	0.13	A		
	east of Avenue 45	2D	17,950	2,400	0.13	A		
	west of Jackson Street	2U	13,000	1,900	0.15	A		
	east of Jackson Street	2U	13,000	3,300	0.25	A	0.30/A	0.49/A
Fred Waring Drive	west of Monroe Street	6D	53,900	14,200	0.26	A		
	east of Monroe Street	2U	13,000	5,500	0.42	A		
Avenue 45	south of Market Street/Dillon Avenue	2D	17,950	700	0.04	A		
	west of Jackson Street	2U	13,000	400	0.03	A		
	east of Jackson Street	4U	25,900	2,300	0.09	A		

[1]LOS = Level of Service, which is based on maximum capacity (LOS E).

Level of Service A = Volume to Capacity Ratio of 0.000 - 0.600

Level of Service B = Volume to Capacity Ratio of 0.600 - 0.700

Level of Service C = Volume to Capacity Ratio of 0.701 - 0.800

Level of Service D = Volume to Capacity Ratio of 0.801 - 0.900

Level of Service E = Volume to Capacity Ratio of 0.901 - 1.000

Level of Service F = Volume to Capacity Ratio of 1.00 and up

[2]Roadway is currently under construction to provide a Widened Arterial (6D) from Avenue 42 to the I-10 Freeway WB Ramps with project completion in 2009.

[3]The interchange is within the Jurisdiction of the California Department of Transportation. The City of Indio is considering short term improvements to widen to two lanes divided and these improvements may be constructed in 2010.

Attachment 4 - Street Class & LOS Thresholds