H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Pinnacle Environmental	Project: PI111122-12	
739 Black Point Place	Project Number: 22-5709 / Riverside -Van Buren	Reported:
Clayton, CA 94517	Project Manager: Peter Cloven	15-Nov-22 15:01

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
IA-1 (E211025-01) Vapor Sampled: 09-Nov-22 Received: 11-Nov-22									
Bromoform	ND	1.0	ug/m3	1	EK21409	14-Nov-22	14-Nov-22	EPA TO-15	
1,1,2,2-Tetrachloroethane	ND	0.70	"	"	"	"	"	"	
4-Ethyltoluene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**0.80**	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.9	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.7	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*118 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.8 %*		*77-127*	"	"	"	"	
IA-2 (E211025-02) Vapor Sampled: 09-Nov-22 Received: 11-Nov-22									
Dichlorodifluoromethane (F12)	**2.2**	1.0	ug/m3	1	EK21409	14-Nov-22	14-Nov-22	EPA TO-15	
Chloromethane	**1.8**	0.21	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	0.71	"	"	"	"	"	"	
Vinyl chloride	ND	0.13	"	"	"	"	"	"	
Bromomethane	ND	0.39	"	"	"	"	"	"	
Chloroethane	ND	0.27	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	**2.0**	0.56	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	0.77	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	**0.42**	0.35	"	"	"	"	"	"	
Carbon disulfide	ND	0.32	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.41	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.60	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	**1.2**	0.25	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.55	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	**0.36**	0.16	"	"	"	"	"	"	
Carbon tetrachloride	**0.64**	0.64	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.47	"	"	"	"	"	"	

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Pinnacle Environmental	Project: PI111122-12	
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Clayton, CA 94517	Project Manager: Peter Cloven	15-Nov-22 15:01

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
IA-2 (E211025-02) Vapor Sampled: 09-Nov-22 Received: 11-Nov-22									
Bromodichloromethane	ND	0.68	ug/m3	1	EK21409	14-Nov-22	14-Nov-22	EPA TO-15	
cis-1,3-Dichloropropene	ND	0.46	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.83	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.46	"	"	"	"	"	"	
Toluene	**2.1**	0.76	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.55	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.83	"	"	"	"	"	"	
Dibromochloromethane	ND	1.7	"	"	"	"	"	"	
Tetrachloroethene	ND	0.69	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.78	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.70	"	"	"	"	"	"	
Chlorobenzene	ND	0.47	"	"	"	"	"	"	
Ethylbenzene	ND	0.44	"	"	"	"	"	"	
m,p-Xylene	**1.0**	0.44	"	"	"	"	"	"	
Styrene	ND	0.43	"	"	"	"	"	"	
o-Xylene	ND	0.44	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.70	"	"	"	"	"	"	
4-Ethyltoluene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**0.75**	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.9	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.7	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*76-134*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*78-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.2 %*	*77-127*		"	"	"	"	

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Clayton, CA 94517	Project Manager: Peter Cloven	15-Nov-22 15:01

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
AA-1 (E211025-03) Vapor Sampled: 09-Nov-22 Received: 11-Nov-22									
Dichlorodifluoromethane (F12)	**2.2**	1.0	ug/m3	1	EK21409	14-Nov-22	14-Nov-22	EPA TO-15	
Chloromethane	**1.8**	0.21	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	0.71	"	"	"	"	"	"	
Vinyl chloride	ND	0.13	"	"	"	"	"	"	
Bromomethane	ND	0.39	"	"	"	"	"	"	
Chloroethane	ND	0.27	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	**2.0**	0.56	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	0.77	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	**0.39**	0.35	"	"	"	"	"	"	
Carbon disulfide	ND	0.32	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.41	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.60	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.25	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.55	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.41	"	"	"	"	"	"	
Benzene	**0.32**	0.16	"	"	"	"	"	"	
Carbon tetrachloride	**0.64**	0.64	"	"	"	"	"	"	
Trichloroethene	ND	0.55	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.47	"	"	"	"	"	"	
Bromodichloromethane	ND	0.68	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.46	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.83	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.46	"	"	"	"	"	"	
Toluene	**0.95**	0.76	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.55	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.83	"	"	"	"	"	"	
Dibromochloromethane	ND	1.7	"	"	"	"	"	"	
Tetrachloroethene	ND	0.69	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.78	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.70	"	"	"	"	"	"	
Chlorobenzene	ND	0.47	"	"	"	"	"	"	
Ethylbenzene	ND	0.44	"	"	"	"	"	"	
m,p-Xylene	ND	0.44	"	"	"	"	"	"	
Styrene	ND	0.43	"	"	"	"	"	"	
o-Xylene	ND	0.44	"	"	"	"	"	"	

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Clayton, CA 94517	Project Manager: Peter Cloven	15-Nov-22 15:01

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
AA-1 (E211025-03) Vapor Sampled: 09-Nov-22 Received: 11-Nov-22									
Bromoform	ND	1.0	ug/m3	1	EK21409	14-Nov-22	14-Nov-22	EPA TO-15	
1,1,2,2-Tetrachloroethane	ND	0.70	"	"	"	"	"	"	
4-Ethyltoluene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.61	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.9	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.7	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*112 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*84.3 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK21409 - TO-15										
Blank (EK21409-BLK1)				Prepared & Analyzed: 14-Nov-22						
Dichlorodifluoromethane (F12)	ND	1.0	ug/m3							
Chloromethane	ND	0.21	"							
Dichlorotetrafluoroethane (F114)	ND	0.71	"							
Vinyl chloride	ND	0.13	"							
Bromomethane	ND	0.39	"							
Chloroethane	ND	0.27	"							
Trichlorofluoromethane (F11)	ND	0.56	"							
1,1-Dichloroethene	ND	0.40	"							
1,1,2-Trichlorotrifluoroethane (F113)	ND	0.77	"							
Methylene chloride (Dichloromethane)	ND	0.35	"							
Carbon disulfide	ND	0.32	"							
trans-1,2-Dichloroethene	ND	0.40	"							
1,1-Dichloroethane	ND	0.41	"							
2-Butanone (MEK)	ND	0.60	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.25	"							
1,1,1-Trichloroethane	ND	0.55	"							
1,2-Dichloroethane (EDC)	ND	0.41	"							
Benzene	ND	0.16	"							
Carbon tetrachloride	ND	0.64	"							
Trichloroethene	ND	0.55	"							
1,2-Dichloropropane	ND	0.47	"							
Bromodichloromethane	ND	0.68	"							
cis-1,3-Dichloropropene	ND	0.46	"							
4-Methyl-2-pentanone (MIBK)	ND	0.83	"							
trans-1,3-Dichloropropene	ND	0.46	"							
Toluene	ND	0.76	"							
1,1,2-Trichloroethane	ND	0.55	"							
2-Hexanone (MBK)	ND	0.83	"							
Dibromochloromethane	ND	1.7	"							
Tetrachloroethene	ND	0.69	"							
1,2-Dibromoethane (EDB)	ND	0.78	"							
1,1,1,2-Tetrachloroethane	ND	0.70	"							
Chlorobenzene	ND	0.47	"							

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK21409 - TO-15										
Blank (EK21409-BLK1)				Prepared & Analyzed: 14-Nov-22						
Ethylbenzene	ND	0.44	ug/m3							
m,p-Xylene	ND	0.44	"							
Styrene	ND	0.43	"							
o-Xylene	ND	0.44	"							
Bromoform	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	0.70	"							
4-Ethyltoluene	ND	0.50	"							
1,3,5-Trimethylbenzene	ND	0.50	"							
1,2,4-Trimethylbenzene	ND	0.50	"							
1,3-Dichlorobenzene	ND	0.61	"							
1,4-Dichlorobenzene	ND	0.61	"							
1,2-Dichlorobenzene	ND	0.61	"							
1,2,4-Trichlorobenzene	ND	1.9	"							
Hexachlorobutadiene	ND	2.7	"							
Surrogate: 1,2-Dichloroethane-d4	*248*		*"*	*214*		*116*	*76-134*			
Surrogate: Toluene-d8	*211*		*"*	*208*		*102*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*283*		*"*	*363*		*77.9*	*77-127*			
LCS (EK21409-BS1)				Prepared & Analyzed: 14-Nov-22						
Dichlorodifluoromethane (F12)	118	1.0	ug/m3	101		117	59-128			
Vinyl chloride	64.8	0.13	"	52.0		125	64-127			
Chloroethane	66.2	0.27	"	53.6		123	63-127			
Trichlorofluoromethane (F11)	134	0.56	"	113		118	62-126			
1,1-Dichloroethene	71.0	0.40	"	80.8		87.9	61-133			
1,1,2-Trichlorotrifluoroethane (F113)	142	0.77	"	155		91.7	66-126			
Methylene chloride (Dichloromethane)	73.2	0.35	"	70.8		103	62-115			
trans-1,2-Dichloroethene	65.9	0.40	"	80.8		81.5	67-124			
1,1-Dichloroethane	75.0	0.41	"	82.4		91.0	68-126			
cis-1,2-Dichloroethene	63.4	0.40	"	80.0		79.3	70-121			
Chloroform	98.1	0.25	"	99.2		98.9	68-123			
1,1,1-Trichloroethane	114	0.55	"	111		102	68-125			
1,2-Dichloroethane (EDC)	86.8	0.41	"	82.4		105	65-128			
Benzene	50.0	0.16	"	64.8		77.2	69-119			

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK21409 - TO-15										
LCS (EK21409-BS1)				Prepared & Analyzed: 14-Nov-22						
Carbon tetrachloride	136	0.64	ug/m3	128		106	68-132			
Trichloroethene	99.1	0.55	"	110		90.5	71-123			
Toluene	67.4	0.76	"	76.8		87.7	66-119			
1,1,2-Trichloroethane	102	0.55	"	111		91.4	73-119			
Tetrachloroethene	122	0.69	"	138		88.7	66-124			
1,1,1,2-Tetrachloroethane	159	0.70	"	140		114	67-129			
Ethylbenzene	65.2	0.44	"	88.4		73.8	70-124			
m,p-Xylene	63.6	0.44	"	88.4		72.0	61-134			
o-Xylene	74.6	0.44	"	88.4		84.4	67-125			
1,1,2,2-Tetrachloroethane	139	0.70	"	140		99.5	65-127			
Surrogate: 1,2-Dichloroethane-d4	*244*		*"*	*214*		*114*	*76-134*			
Surrogate: Toluene-d8	*208*		*"*	*208*		*100*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*316*		*"*	*363*		*87.1*	*77-127*			

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Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

All soil results are reported in wet weight.

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs through PJLA, accreditation number 69070 for EPA Method TO-15, EPA Method 8260B and H&P 8260SV.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743 & 2745.

H&P is approved by the State of Louisiana Department of Environmental Quality under the National Environmental Laboratory Accreditation Conference (NELAC) certification number 04138

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 11/09/2022
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Pinnacle Environmental, Inc	Project Name / #: 22-5709
Lab Client Project Manager: Peter Cloven	Project Location: Riverside - Van Buren
Lab Client Address: P.O. Box 904	Report E-Mail(s): pcloven@pei-env.com
Lab Client City, State, Zip: Clayton, CA, 94517	
Phone Number: (925)673-5500	

Sample Receipt (Lab Use Only)

Date Rec'd: 11/11/22	Control #: 220711.01
H&P Project #: PI111122-12	
Lab Work Order #	
Sample Intact: ☒ Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 40204	Temp: RT
Outside Lab:	
Receipt Notes/Tracking #: 1Z93TT6190 4905 5571	
Lab PM Initials: MB	

Reporting Requirements

☒ Standard Report ☐ Level III ☐ Level IV
☐ Excel EDD ☐ Other EDD: _____
☐ CA Geotracker Global ID: _____

Turnaround Time

☒ **Standard** (7 days for preliminary report, 10 days for final report)
☐ **Rush** (specify): _____

Sampler Information

Sampler(s): Peter Cloven
Signature:
Date: 11/09/2022

Additional Instructions to Laboratory:

* ***Preferred VOC units (please choose one):***
☐ µg/L ☒ µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa, Tedlar, Tube, etc.	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☐ 8260SV ☒ TO-15	VOCs Short List / Project List ☐ 8260SV ☐ TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15	TPHv as Gas ☐ 8260SVm ☐ TO-15m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☐ IPA ☐ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2				
IA-1	Office	11/7/22	16:23	IA	6L	857	-1.91	X													
IA-2	Patio		16:29	IA		872	-2.37	X													
AA-1	Fence		16:34	AA		569	-4.53	X													

Approved/Relinquished by:	Company: Pinnacle Env. Inc.	Date: 11/9/22	Time:	Received by: UPS	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by: H&P	Company:	Date: 11/11/22	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

H&P

Air Sampling into Summa (Indoor, Outdoor, Ambient)

Site Address: _____ Date: 11/09/2022

Project Name: Riverside - Van Buren Arrival Time: 8:20

Sample Collector: _____ Departure Time: _____

	Sample Information					Sample Start		Sample Check		Sample Check		Sample End		Field Notes
	Sample ID	Date	Summa ID #	Flow Controller ID #	Flow Rate (hrs or cc/min)	Start Time	Initial Vacuum (" Hg)	Check Time	Check Vacuum (" Hg)	Check Time	Check Vacuum (" Hg)	End Time	End Vacuum (" Hg)	
1	IA-1	11/9/22	857	F130		8:20	32 Hg	3:34	8 Hg			4:23	6 Hg	
2	IA-2	11/9/22	872	F184		8:28	31 Hg	3:36	4 Hg			4:29	3 Hg	
3	~~AA-3~~	11/9/22	569	F120		8:34	35 Hg	3:37	12 Hg			4:34	10 Hg	
4														
5														
6														
7														
8														
9														
10														

Weather Conditions

Weather Summary: Sunny / partly cloudy

Barometric Pressure: _____

Ambient Temp Avg: _____

Ambient Temp High/Low: _____

Indoor Air Temp Avg: _____

Wind Speed/Direction: _____

Other: _____

Potential Outdoor Sources of Pollution

Source	*Location*

Household Products

Type	*Ingredient(s)*

OPTIMAL TECHNOLOGY
Specializing in Environmental Field Services

November 18, 2022

Peter Cloven
Pinnacle Environmental, Inc.
P.O. Box 904
Clayton, CA 94517

Dear Peter:

This letter presents the results of the soil vapor investigation conducted by Optimal Technology (Optimal), for Pinnacle Environmental, Inc. on November 17, 2022. The study was performed at 3596 Van Buren Blvd., Riverside, California.

Optimal was contracted to perform a soil vapor survey at this site to screen for possible chlorinated solvents and aromatic hydrocarbons. The primary objective of this soil vapor investigation was to determine if soil vapor contamination is present in the subsurface soil.

Gas Sampling Method

Gas sampling was performed by hydraulically pushing soil gas probes to a depth of 0.5 feet below ground surface (bgs). One-quarter inch Nylaflow tubing was installed at depth in a three-inch sand pack. Hydrated bentonite filled the hole from the top of the sand pack to the surface. An electric rotary hammer drill was used to drill a 1.0-inch diameter hole through the overlying surface to allow probe placement when required. The same electric hammer drill was used to push probes in areas of resistance during placement.

At each sampling location, an electric vacuum pump set to draw 0.2 liters per minute (L/min) of soil vapor was attached to the probe and purged prior to sample collection. Vapor samples were obtained in gas-tight syringes by drawing the sample through a luer-lock connection which connects the sampling probe and the vacuum pump. Samples were immediately injected into the gas chromatograph/purge and trap after collection. New tubing was used at each sampling point to prevent cross contamination.

All analyses were performed on a laboratory grade Agilent model 6890N gas chromatograph equipped with an Agilent model 5973N Mass Spectra Detector and Tekmar LSC 3100 Purge and Trap. A Restek column using helium as the carrier gas was used to perform all analysis. All results were collected on a personal computer utilizing Agilent's MS and chromatographic data collection and handling system.

Quality Assurance

5-Point Calibration
The initial five-point calibration consisted of 20, 50, 100, 200 and 500 ul injections of the calibration standard. A calibration factor on each analyte was generated using a best fit line method using the Agilent data system. If the r^2 factor generated from this line was not greater than 0.990, an additional five-point calibration would have been performed. Method reporting limits were calculated to be 1-1000 micrograms per cubic meter (ug/m^3) for the individual compounds.

A daily calibration check was performed using a pre-mixed standard supplied by Scotty Analyzed Gases. The standard contained common halogenated solvents and aromatic hydrocarbons (see Table 1). The individual compound concentrations in the standards ranged between 0.025 nanograms per microliter (ng/ul) and 0.25 ng/ul.

TABLE 1

Acetone	Benzene	Bromobenzene	Bromochloromethane
Bromodichloromethane	Bromoform	Bromomethane	2-Butanone (MEK)
n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon Tetrachloride
Chlorobenzene	Chloroethane	Chloroform	Chloromethane
2-Chlorotoluene	4-Chlorotoluene	Cyclohexane	Dibromochloromethane
1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene
1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,2-Dichloroethane
1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
1,2-Dichloropropane	2,2-Dichloropropane	1,3-Dichloropropane	1,1-Dichloropropene
Ethylbenzene	Freon 113	Hexachlorobutadiene	Isopropylbenzene
p-Isopropyltoluene	Methylene Chloride	4-Methyl-2-Pentanone	Naphthalene
n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane
Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene
1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane
1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl Chloride
m/p-Xylene	o-Xylene	Diisopropyl Ether	Ethyl Tert Butyl Ether
MTBE	Tert-Amyl Methyl Ether	Tertiary Butyl Alcohol	Isobutane

Sample Replicates
A replicate analysis (duplicate) was run to evaluate the reproducibility of the sampling system and instrument. The difference between samples did not vary more than 20%.

Equipment Blanks
Blanks were run at the beginning of each workday and after calibrations. The blanks were collected using an ambient air sample. These blanks checked the septum, syringe, GC column, GC detector and the ambient air. Contamination was not found in any of the blanks analyzed during this investigation. Blank results are given along with the sample results.

Purge Volume
The standard purge volume of three volumes was purged in accordance with the July 2015 DTSC/RWQCB Advisory for Active Soil Gas Investigations.

Tracer Gas Leak Test
A tracer gas was applied to the soil gas probes at each point of connection in which ambient air could enter the sampling system. These points include the top of the sampling probe where the tubing meets the probe connection and the surface bentonite seals. Isobutane was used as the tracer gas. No Isobutane was found in any of the samples collected.

Shut-in Test
A shut-in test was conducted prior to purging or sampling each location to check for leaks in the above-ground sampling system. The system was evaluated to a minimum measured vacuum of 100 inches of water. The vacuum gauge was calibrated and sensitive enough to indicate a water pressure change of at least 0.5 inches.

Scope of Work

To achieve the objective of this investigation a total of 5 vapor samples were collected from 4 locations at the site. Sampling depths, vacuum readings, purge volume and sampling volumes are given on the analytical results page. All the collected vapor samples were analyzed on-site using Optimal's mobile laboratory.

Subsurface Conditions

Subsurface soil conditions offered sampling flows at 0" water vacuum.

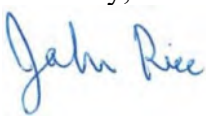
Results

During this vapor investigation, three samples contained levels of Tetrachloroethene (PCE) ranging from 17 ug/m^3 to 18 ug/m^3. One sample contained 125 ug/m^3 of Chloroform. None of the other compounds listed in Table 1 above were detected above the listed reporting limits. A complete table of analytical results is included with this report.

Disclaimer

All conclusions presented in this letter are based solely on the information collected by the soil vapor survey conducted by Optimal Technology. Soil vapor testing is only a subsurface screening tool and does not represent actual contaminant concentrations in either the soil and/or groundwater. We enjoyed working with you on this project and look forward to future projects. If you have any questions, please contact me at (877) 764-5427.

Sincerely,



John Rice
Project Manager

OPTIMAL TECHNOLOGY
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SOIL VAPOR RESULTS

Site Name: 3596 Van Buren Blvd., Riverside, CA
Lab Name: Optimal Technology
Date: 11/17/22
Analyst: J. Rice **Collector:** J. Rice
Inst. ID: Agilent 6890N
Method: Modified EPA 8260B
Detector: Agilent 5973N Mass Spectrometer
Page: 1 of 2

SAMPLE ID	BLANK-1	SS1	SS1 Dup	SS2	SS3	SS4		
Sampling Depth (Ft.)	N/A	0.5	0.5	0.5	0.5	0.5		
Purge Volume (ml)	N/A	100	100	100	100	100		
Vacuum (in. of Water)	N/A	0	0	0	0	0		
Injection Volume (ul)	100,000	100,000	100,000	100,000	100,000	100,000		
Dilution Factor	1	1	1	1	1	1		

COMPOUND	REP. LIMIT	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)		
Acetone	1000	ND	ND	ND	ND	ND	ND		
Benzene	3	ND	ND	ND	ND	ND	ND		
Bromobenzene	1000	ND	ND	ND	ND	ND	ND		
Bromochloromethane	1000	ND	ND	ND	ND	ND	ND		
Bromodichloromethane	2	ND	ND	ND	ND	ND	ND		
Bromoform	80	ND	ND	ND	ND	ND	ND		
Bromomethane	150	ND	ND	ND	ND	ND	ND		
2-Butanone (MEK)	1000	ND	ND	ND	ND	ND	ND		
n-Butylbenzene	1000	ND	ND	ND	ND	ND	ND		
sec-Butylbenzene	1000	ND	ND	ND	ND	ND	ND		
tert-Butylbenzene	1000	ND	ND	ND	ND	ND	ND		
Carbon Tetrachloride	2	ND	ND	ND	ND	ND	ND		
Chlorobenzene	1000	ND	ND	ND	ND	ND	ND		
Chloroethane	1000	ND	ND	ND	ND	ND	ND		
Chloroform	4	ND	ND	ND	ND	ND	**125**		
Chloromethane	1000	ND	ND	ND	ND	ND	ND		
2-Chlorotoluene	1000	ND	ND	ND	ND	ND	ND		
4-Chlorotoluene	1000	ND	ND	ND	ND	ND	ND		
Cyclohexane	1000	ND	ND	ND	ND	ND	ND		
Dibromochloromethane	1000	ND	ND	ND	ND	ND	ND		
1,2-Dibromo-3-chloropropane	1	ND	ND	ND	ND	ND	ND		
1,2-Dibromoethane	1	ND	ND	ND	ND	ND	ND		
Dibromomethane	1000	ND	ND	ND	ND	ND	ND		
1,2-Dichlorobenzene	1000	ND	ND	ND	ND	ND	ND		
1,3-Dichlorobenzene	1000	ND	ND	ND	ND	ND	ND		
1,4-Dichlorobenzene	8	ND	ND	ND	ND	ND	ND		
Dichlorodifluoromethane	1000	ND	ND	ND	ND	ND	ND		
1,2-Dichloroethane	3	ND	ND	ND	ND	ND	ND		
1,1-Dichloroethane	50	ND	ND	ND	ND	ND	ND		
1,1-Dichloroethene	1000	ND	ND	ND	ND	ND	ND		
cis-1,2-Dichloroethene	200	ND	ND	ND	ND	ND	ND		
trans-1,2-Dichloroethene	1000	ND	ND	ND	ND	ND	ND		
1,2-Dichloropropane	9	ND	ND	ND	ND	ND	ND		
2,2-Dichloropropane	1000	ND	ND	ND	ND	ND	ND		
1,3-Dichloropropane	1000	ND	ND	ND	ND	ND	ND		

Note: ND = Below Listed Reporting Limit

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SOIL VAPOR RESULTS

Site Name: 3596 Van Buren Blvd., Riverside, CA
Lab Name: Optimal Technology
Date: 11/17/22
Analyst: J. Rice **Collector:** J. Rice
Inst. ID: Agilent 6890N
Method: Modified EPA 8260B
Detector: Agilent 5973N Mass Spectrometer
Page: 2 of 2

SAMPLE ID	BLANK-1	SS1	SS1 Dup	SS2	SS3	SS4		
Sampling Depth (Ft.)	N/A	0.5	0.5	0.5	0.5	0.5		
Purge Volume (ml)	N/A	100	100	100	100	100		
Vacuum (in. of Water)	N/A	0	0	0	0	0		
Injection Volume (ul)	100,000	100,000	100,000	100,000	100,000	100,000		
Dilution Factor	1	1	1	1	1	1		

COMPOUND	REP. LIMIT	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)	CONC (ug/m^3)		
1,1-Dichloropropene	1000	ND	ND	ND	ND	ND	ND		
Ethylbenzene	30	ND	ND	ND	ND	ND	ND		
Freon 113	1000	ND	ND	ND	ND	ND	ND		
Hexachlorobutadiene	4	ND	ND	ND	ND	ND	ND		
Isopropylbenzene	1000	ND	ND	ND	ND	ND	ND		
p-Isopropyltoluene	1000	ND	ND	ND	ND	ND	ND		
Methylene Chloride	30	ND	ND	ND	ND	ND	ND		
4-Methyl-2-Pentanone	1000	ND	ND	ND	ND	ND	ND		
Naphthalene	2	ND	ND	ND	ND	ND	ND		
n-Propylbenzene	1000	ND	ND	ND	ND	ND	ND		
Styrene	1000	ND	ND	ND	ND	ND	ND		
1,1,1,2-Tetrachloroethane	10	ND	ND	ND	ND	ND	ND		
1,1,2,2-Tetrachloroethane	1	ND	ND	ND	ND	ND	ND		
Tetrachloroethene (PCE)	10	ND	**17**	**17**	**18**	ND	ND		
Toluene	1000	ND	ND	ND	ND	ND	ND		
1,2,3-Trichlorobenzene	1000	ND	ND	ND	ND	ND	ND		
1,2,4-Trichlorobenzene	60	ND	ND	ND	ND	ND	ND		
1,1,1-Trichloroethane	1000	ND	ND	ND	ND	ND	ND		
1,1,2-Trichloroethane	5	ND	ND	ND	ND	ND	ND		
Trichloroethene (TCE)	10	ND	ND	ND	ND	ND	ND		
Trichlorofluoromethane	1000	ND	ND	ND	ND	ND	ND		
1,2,3-Trichloropropane	10	ND	ND	ND	ND	ND	ND		
1,2,4-Trimethylbenzene	1000	ND	ND	ND	ND	ND	ND		
1,3,5-Trimethylbenzene	1000	ND	ND	ND	ND	ND	ND		
Vinyl Chloride	1	ND	ND	ND	ND	ND	ND		
m/p-Xylene	1000	ND	ND	ND	ND	ND	ND		
o-Xylene	1000	ND	ND	ND	ND	ND	ND		
Diisopropyl Ether (DIPE)	1000	ND	ND	ND	ND	ND	ND		
Ethyl Tert Butyl Ether	1000	ND	ND	ND	ND	ND	ND		
MTBE	350	ND	ND	ND	ND	ND	ND		
Tert-Amyl Methyl Ether (TAME)	1000	ND	ND	ND	ND	ND	ND		
Tertiary Butyl Alcohol	1000	ND	ND	ND	ND	ND	ND		
Isobutane (Tracer Gas)	1000	ND	ND	ND	ND	ND	ND		

Note: ND = Below Listed Reporting Limit

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CHAIN OF CUSTODY FORM

Site Name/Number		PO# / Project Ref#	
Site Address	**3596 Van Buren Blvd., Riverside, CA**		
Company Name			
Contact Person(s):		Phone#	Email:
Comments:			

				TESTS REQUIRED (please mark with an "X")			
Sample Identification	Sampling Device	Date Collected	Time Collected	**Soil Gas Mod 8260B**	**Soil Gas Mod 8021B**	**Soil Gas Mod 8015**	**Notes**
BLANK-1	Syringe	11/17/22	10:10 AM	**x**			
SS1	Syringe	11/17/22	10:33 AM	**x**			
SS1 Dup	Syringe	11/17/22	10:33 AM	**x**			
SS2	Syringe	11/17/22	11:00 AM	**x**			
SS3	Syringe	11/17/22	11:20 AM	**x**			
SS4	Syringe	11/17/22	11:38 AM	**x**			

Collected & Tested by:

John Rice

1667 Cross Bridge Place, Thousand Oaks, CA 91362 • Toll Free (877) SOIL GAS (764-5427) • (818) 734-6230 • Fax (818) 734-6235

Pinnacle Environmental Inc.

PO Box 904, Clayton, CA 94517 • (925) 673-5500 / (925) 673-5507 fax

August 14, 2024 PEI Project #22-5709B

Mr. Mike Sadeghian
President and CEO
Van Buren Land & Investment Inc.
9670 Magnolia Ave., #207
Riverside CA, 92503

RE: Limited Vapor Screening Assessment (Phase II) dated November 30, 2022
Commercial Property - 3570 and 3596 Van Buren Blvd, Riverside, California

Dear Mr. Sadghian:

Per our conversation, I have read the email from Ms. Candice Assadzedeh of the city of Riverside, which states, "The Phase II ESA recommends either soil vapor samples from beneath the building or indoor air samples (see below). Please let me know the status and when the indoor air samples' results will be available, as staff needs these results to make a CEQA determination." As a former Planning Commissioner, I understand what Ms. Assadzedeh is requesting and appreciate her question.

The question appears to be associated with the last two "bullets" associated with the Pinnacle Environmental, Inc (PEI) November 30, 2022 report in which we state the following (directly excerpted):

1) Concentrations exceeding ESLs, do not necessarily represent an immediate threat to human health, but rather, **that additional investigation may be warranted**. However, since benzene and chloroform were not detected in subslab data proximal to the sample location, both benzene and chloroform concentrations may be from external ambient sources rather than subsurface impact.

2) Based on the data collected, a current vapor intrusion concern does not appear to exist related to the current commercial use of the 3570 and 3596 Van Buren Boulevard structures. However, should the property be redeveloped, **additional assessment or mitigation measures may be required** to address future vapor concerns that were identified in shallow vapor in the September 2022 assessment.

The underlined and bolded two sections appear to challenge Ms. Assadzadeh's CEQA determination. This email provides additional insight that should suffice for her review, and each bullet is discussed below in more detail.

Bullet 1) – The statement "Concentrations exceeding ESLs, do not necessarily represent an immediate threat to human health, but rather, that additional investigation may be warranted" comes directly from the definition of what an environmental screening level (ESL) is. PEI notes that the indoor air impacts detected were NOT associated with subslab vapor concentration found proximal to the indoor air sample. Therefore, the detected benzene and chloroform concentrations appear to be associated with exterior (or ambient) sources (e.g., engine exhaust) and are not a significant environmental concern that requires additional assessment.

Bullet 2) - At the time of the assessment, the building was an old gas service station used as a tire business. PEI concluded, "Based on the data collected, a current vapor intrusion concern does not appear to exist related to the current commercial use of the 3570 and 3596 Van Buren Boulevard structures". At that time, PEI did not know what the intended future use would be. PEI has since reviewed plans for future commercial development of the property with a 7-11 and fueling operations. The convenience store is proposed to be located at the northeastern corner away from the existing building and former underground storage tanks (USTs), and the future fuel pumps/islands are proposed to be in the location of the existing buildings. PEI concluded, "additional assessment or mitigation measures may be required to address future vapor concerns that were identified in shallow vapor in the September 2022 assessment". However, PEI notes it was not able to replicate the PCE concentrations noted in the September 2022 assessment. In addition, PEI notes that "occupiable" structures are being constructed on the northern portion of the subject property rather than the southern portion of the parcel where prior impacts were detected (and pump islands and USTs are proposed). Therefore, based on the continued proposed commercial use of the property as a convenience store/gas station versus a residential or some other sensitive use (e.g., day care), further assessment does not appear warranted based on the data collected by PEI in its November 30, 2022 assessment.

Please call me if you have any questions.

Sincerely,

Sincerely,
Pinnacle Environmental, Inc.

Peter K. Cloven, EP, CEM
Principal Assessor/Environmental Professional

URBAN | CROSSROADS

VAN BUREN 7-ELEVEN (PR-2024-001665)

TRAFFIC ANALYSIS

PREPARED BY: Jose Alire, PE | jalire@urbanxroads.com
Robert Vu, PE | rvu@urbanxroads.com
Aric Evatt | aevatt@urbanxroads.com

Reference Number	Agency	Date
16095-04 TA Report	City of Riverside	October 1, 2024

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CAMUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PHF	Peak Hour Factor
Project	Van Buren 7-Eleven
RCTC	Riverside County Transportation Commission
RIVCOM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Authority
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed Van Buren 7-Eleven development ("Project"), which is located at 3570 & 3596 Van Buren Boulevard, as shown on Exhibit 1-1. The purpose of this TA is to evaluate the potential traffic and circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies and to achieve acceptable circulation system operational conditions in accordance with the City's General Plan. As directed by City of Riverside staff, this traffic study has been prepared in accordance with the City of Riverside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment and consultation with City staff during the scoping process. (1) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

The Project is to construct the following improvements as design features in conjunction with development of the site:

- Project to construct Driveway 1 on Primrose Drive with stop controls for the northbound traffic (Project egress), and Driveway 2 on Van Buren Boulevard with stop controls for the eastbound traffic (Project egress) in order to facilitate site access.
- Project to restripe the eastbound left-turn lane at Van Buren Boulevard & Primrose Drive/Andrew Street to provide 140' of storage length

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report. There are no peak hour intersection operational deficiencies anticipated for existing and future traffic conditions. As such, no off-site improvements have been identified as part of this TA.

1.2 PROJECT OVERVIEW

The proposed Project is located at 3570 & 3596 Van Buren Boulevard, in the City of Riverside (see Exhibit 1-2). The Project is proposed to consist of developing a new 7 Eleven convenience store with 12 vehicle fueling positions (see Exhibit 1-2). As indicated on Exhibit 1-2, vehicular access will be provided via one full access driveway on Primrose Drive and one right-in/right-out access driveway on Van Buren Boulevard. The Project's parking requirement is 12.2 spaces and is providing 24 spaces, exceeding the City's parking requirement.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021. (2) The Project is estimated to generate a net total of 794 two-way trips per day with 46 AM peak hour trips and 56 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 1-1: LOCATION MAP

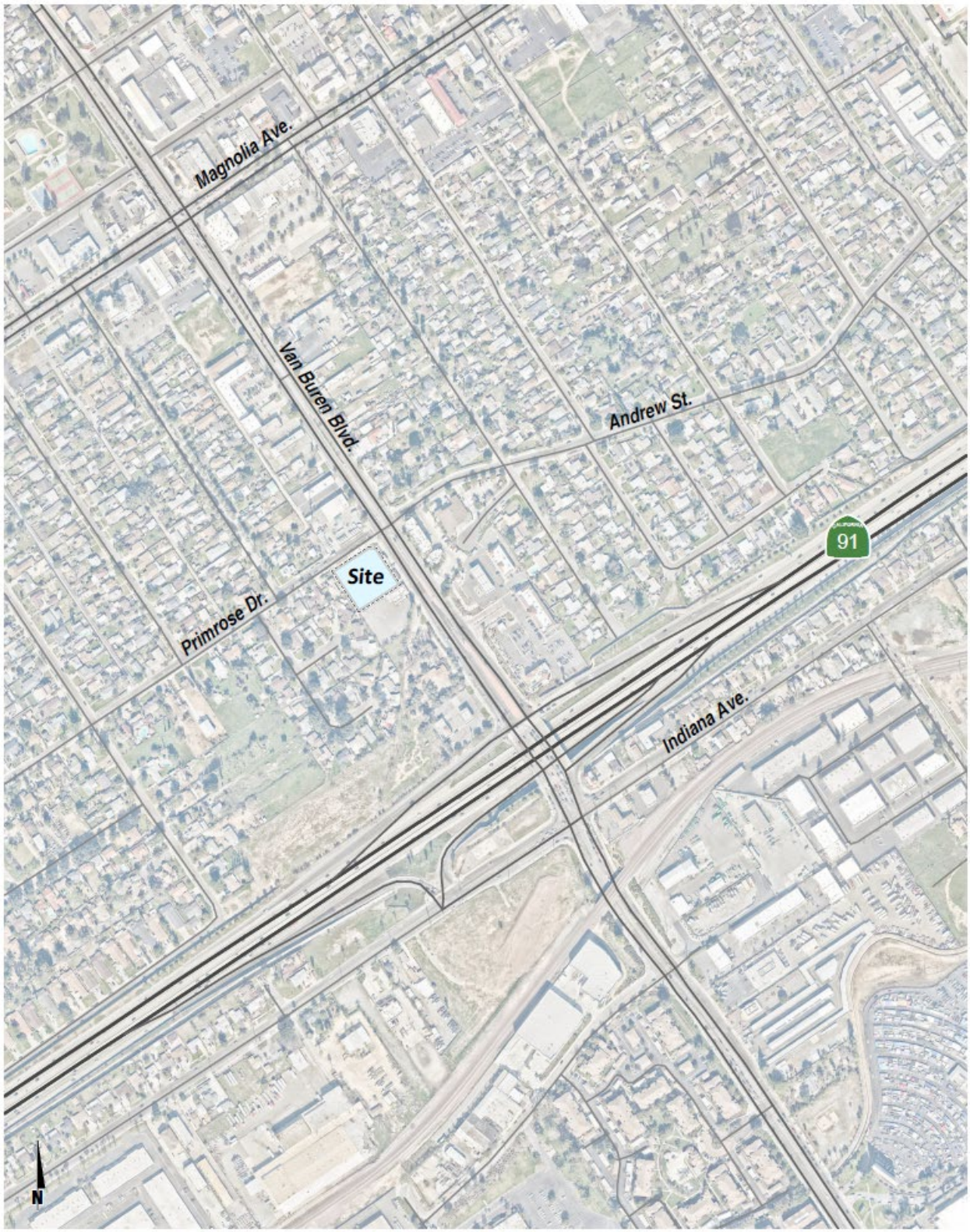
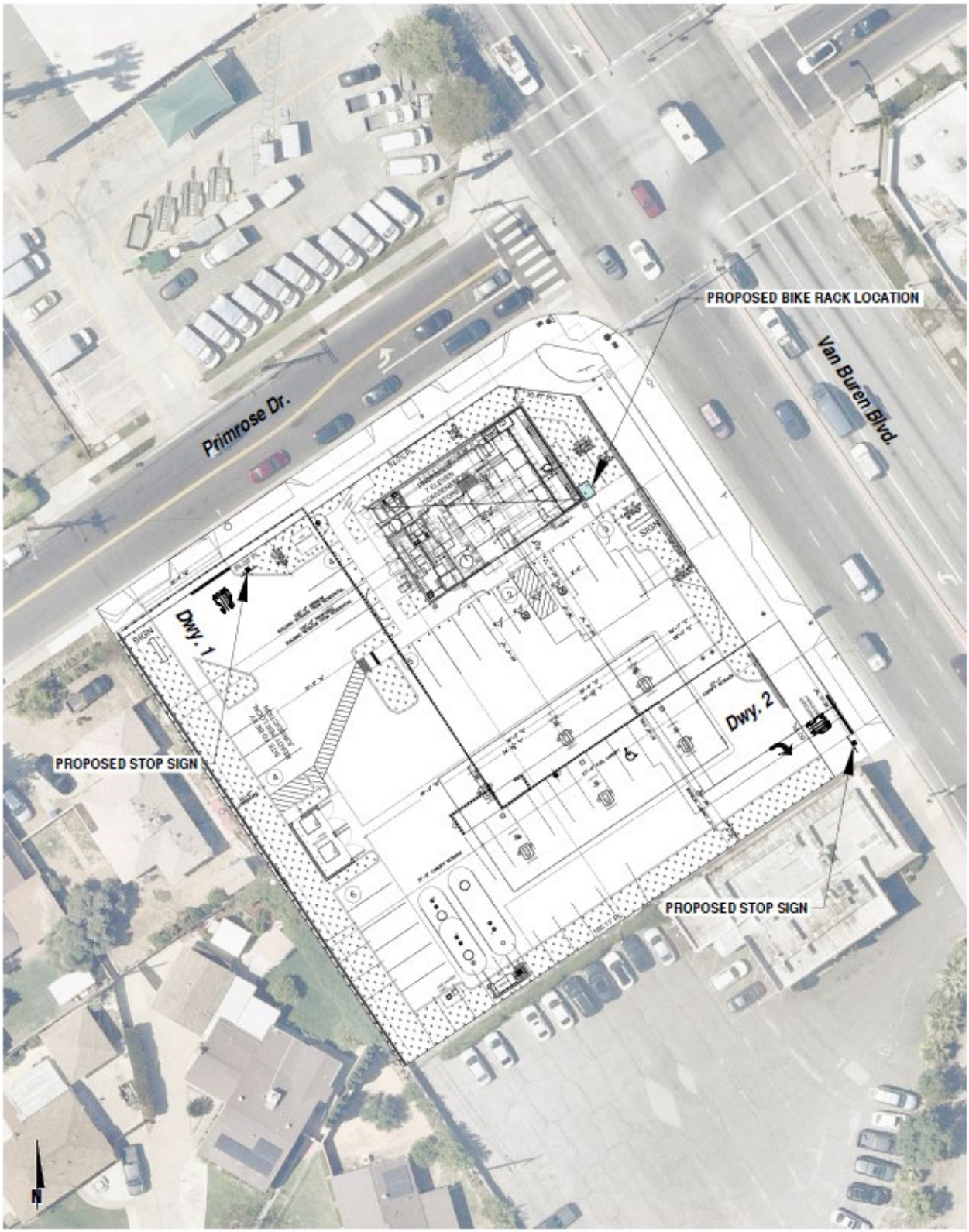


EXHIBIT 1-2: PRELIMINARY SITE PLAN



1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2024) Conditions
- Background (2026) Without Project Conditions
- Background (2026) With Project Conditions
- Cumulative (2045) Without Project Conditions
- Cumulative (2045) With Project Conditions

1.3.1 EXISTING (2024) CONDITIONS

Information for Existing (2024) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Local schools were in session with in-person instruction at the time of the traffic counts. Traffic counts were conducted in June 2024.

1.3.2 BACKGROUND (2026) CONDITIONS

The Background (2026) conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2024) conditions of 4.04% is included for Background (2026) traffic conditions (2.0% per year compounded annually over 2 years). A list of cumulative development projects was compiled from information provided by the City of Riverside and is consistent with other recent studies in the study area.

1.3.3 CUMULATIVE (2045) CONDITIONS

Traffic projections for Cumulative (2045) with Project conditions were derived from the latest Riverside Transportation Analysis Model (RIVCOM). The Cumulative (2045) conditions analysis has been utilized to determine if improvements funded through regional transportation fee programs, such as the Development Impact Fee (DIF) program or Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF), or other approved funding mechanisms can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the City of Riverside (lead agency). Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF facilities) are identified as such.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Riverside's traffic study requirements, Urban Crossroads, Inc. prepared a traffic study scoping package for review by City staff prior to the preparation of this report. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology and is included in Appendix 1.1. The following 6 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA based on consultation with City of Riverside staff. Exhibit 1-3 and Table 1-2 also identify 2 roadway segments that were selected for this analysis.

EXHIBIT 1-3: STUDY AREA

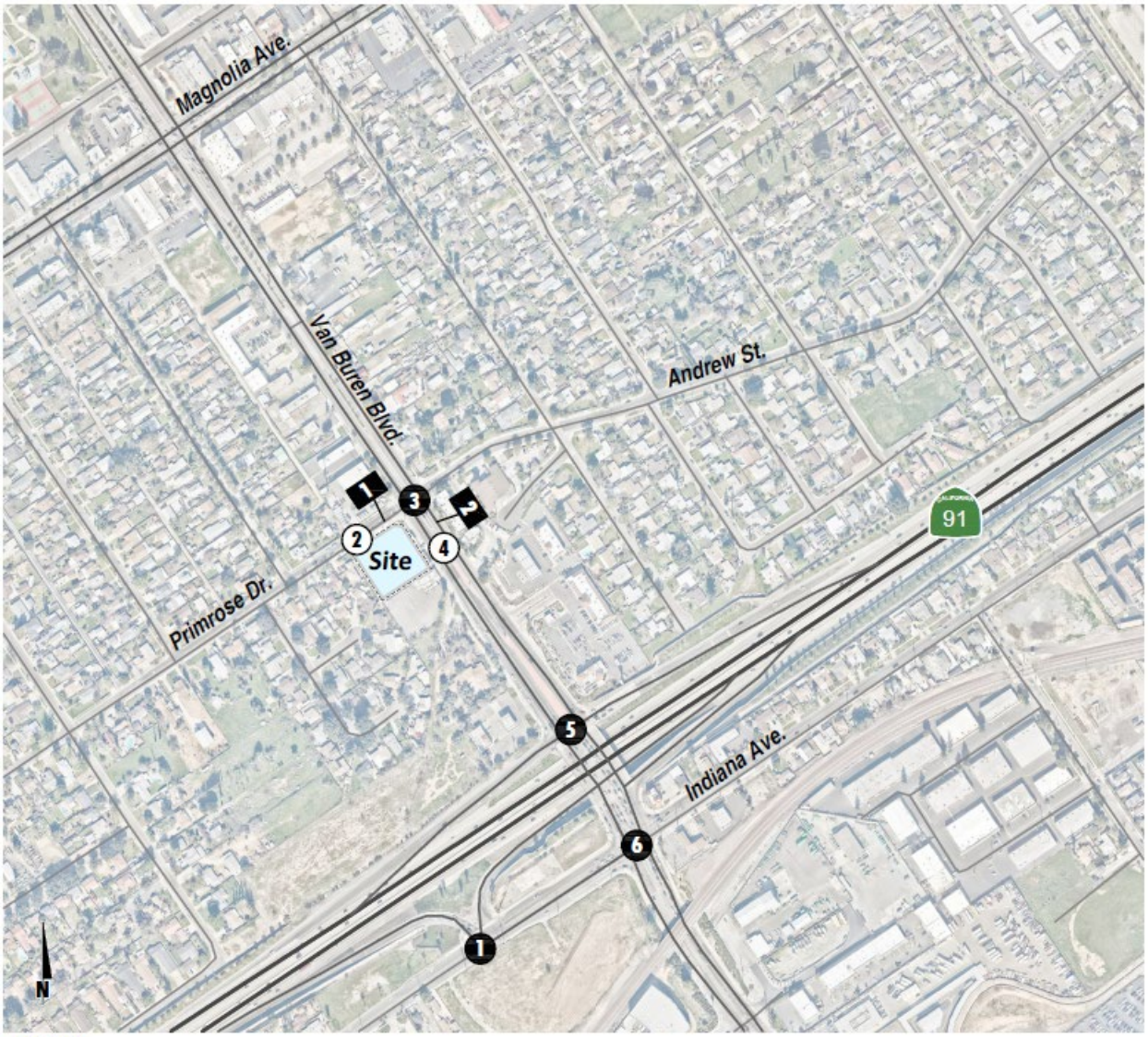


TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

#	Intersection	Jurisdiction	CMP Facility?
1	SR-91 EB Ramps & Indiana Av.	Riverside	No
2	Driveway 1 & Primrose Dr.	Riverside	No
3	Van Buren Bl. & Primrose Dr./Andrew St.	Riverside	No
4	Van Buren Bl. & Driveway 2	Riverside	No
5	Van Buren Bl. & SR-91 WB Ramps	Riverside	No
6	Van Buren Bl. & Indiana Av.	Riverside	No

TABLE 1-2: ROADWAY SEGMENT ANALYSIS LOCATIONS

#	Roadway	Segment Limits
1	Primrose Dr.	Van Buren Bl. & Roosevelt St.
2	Van Buren Bl.	Primrose Dr. & SR91 WB Ramps

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and most recently updated in 2019 as part of the Riverside County Long Range Transportation Study. The Riverside County Transportation Commission (RCTC) adopted the 2019 CMP for the County of Riverside in December 2019. (3) There are no study area intersections identified as a Riverside County CMP intersection.

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis, and Section 5 *Background (2026) Traffic Conditions* and Section 6 *Cumulative (2045) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented in Table 1-3.

TABLE 1-3: SUMMARY OF LOS BY ANALYSIS SCENARIO

	Existing	2026 Without Project	2026 With Project	2045 Without Project	2045 Without Project
1 SR-91 EB Ramps & Indiana Av.	●	●	●	●	●
2 Driveway 1 & Primrose Dr.	N/A	N/A	●	N/A	●
3 Van Buren Bl. & Primrose Dr. / Andrew St.	●	●	●	●	●
4 Van Buren Bl. & Driveway 2	N/A	N/A	●	N/A	●
5 Van Buren Bl. & SR-91 WB Ramps	●	●	●	●	●
6 Van Buren Bl. & Indiana Av.	●	●	●	●	●

LEGEND:
◖ = AM Peak Hour
◗ = PM Peak Hour
● = A-D
● = E
● = F

1.5.1 EXISTING (2024) CONDITIONS

All study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2024) traffic conditions.

1.5.2 BACKGROUND (2026) CONDITIONS

All study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under Background (2026) Without Project and With Project traffic conditions. **The addition of Project traffic would not trigger the City of Riverside's significance criteria.**

1.5.3 CUMULATIVE (2045) CONDITIONS

All study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under Cumulative (2045) Without Project and With Project traffic conditions. **The addition of Project traffic would not trigger the City of Riverside's significance criteria.**

1.6 RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access. The site adjacent recommendations are shown on Exhibit 1-4 and illustrated on Exhibit 1-5.

Recommendation 1 – ***Driveway 1 & Primrose Dr. (#2)*** – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the northbound approach (Project driveway) and construct a shared left-right turn lane.

Recommendation 2 – ***Van Buren Bl. & Primrose Dr. / Andrew St. (#3)*** – The following improvements are necessary to accommodate site access:

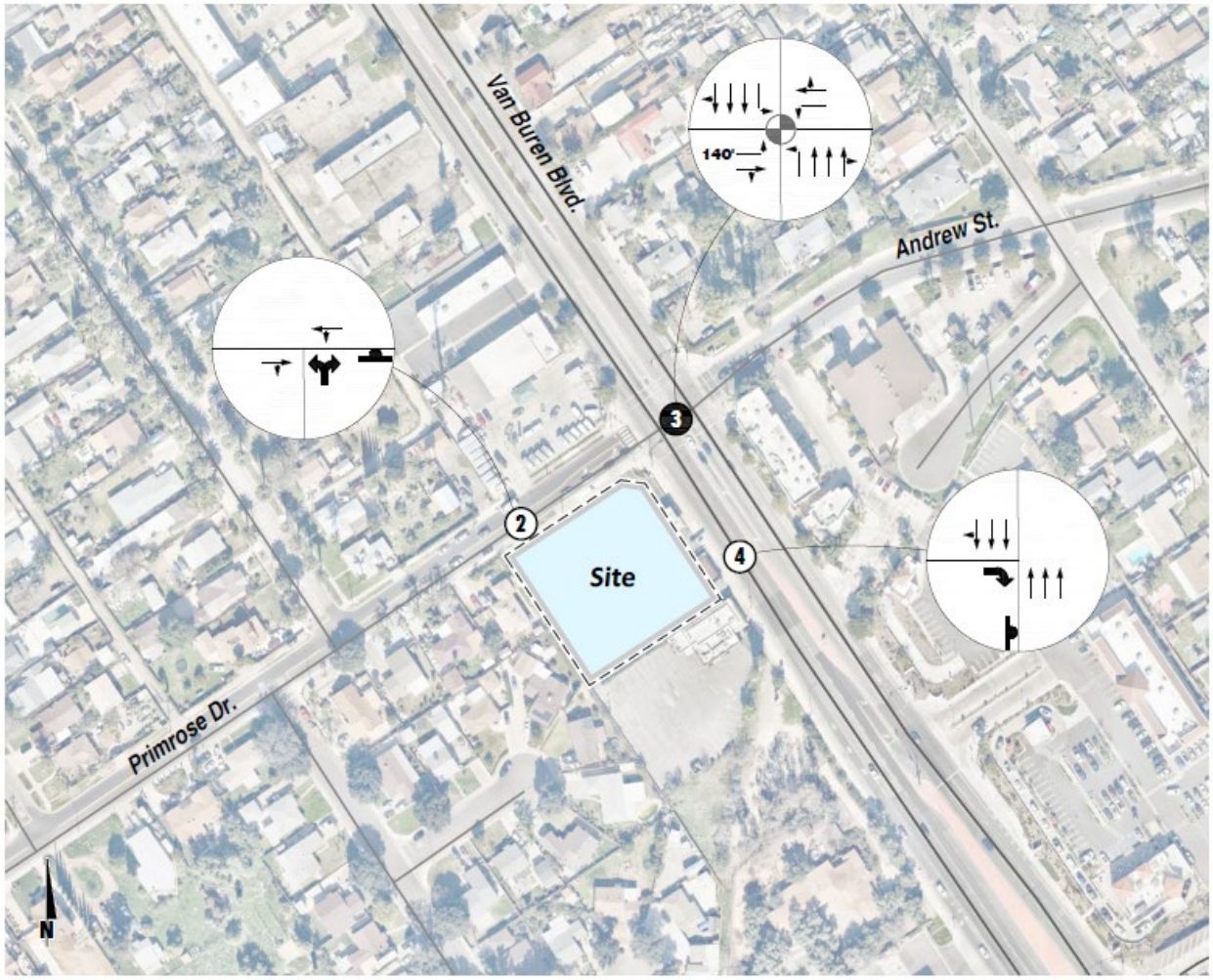
- Project to restripe the existing eastbound left turn lane to provide 140-feet of storage.

Recommendation 3 – ***Van Buren Bl. & Driveway 2 (#4)*** – The following improvement is necessary to accommodate site access:

- Project to install a stop control on the eastbound approach (Project driveway) and construct a right turn only lane.

Van Buren Boulevard is currently constructed to its ultimate half-section width as a Special Boulevard along the Project's frontage from the Project's southern boundary to the Project's northern boundary. Additionally, Primrose Street is currently constructed to its ultimate half-section width as an Local Street along the Project's frontage from the Project's western boundary to the Project's eastern boundary. However, the Project should improve the curb and gutter, sidewalk, and landscaping as needed to accommodate site access.

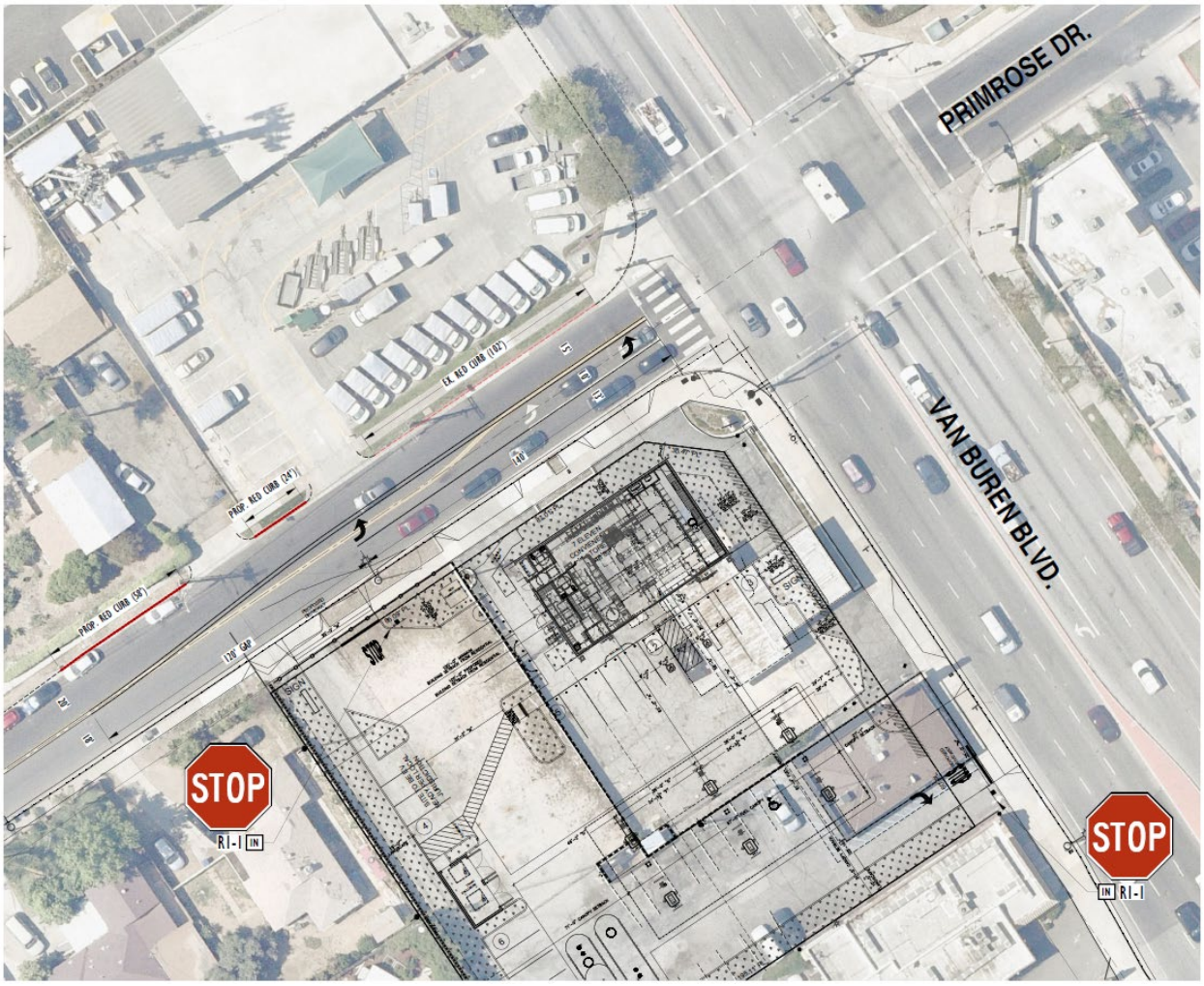
EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



LEGEND:

- 0 = Existing Intersection Analysis Location
- (0) = Future Intersection Analysis Location
- = Existing Traffic Signal
- = Proposed Stop Sign
- = Existing Lane
- = Proposed Lane
- 140' = Storage Improvement

EXHIBIT 1-5: CONCEPTUAL PLAN



On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and City of Riverside sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

TABLE 1-3: SUMMARY OF PROJECT IMPROVEMENTS

#	Intersection Location	Jurisdiction	Improvements	Project Responsibility
2	Driveway 1 & Primrose Dr.	City of Riverside	Install a stop control on the northbound approach	Construct
3	Van Buren Bl. & Primrose Dr./Andrew St.	City of Riverside	Restripe the existing eastbound left turn lane to provide 140-feet of storage	Construct
4	Van Buren Bl. & Driveway 2	City of Riverside	Install a stop control on the eastbound approach	Construct

1.7 QUEUING ANALYSIS

A queuing analysis was conducted at Van Buren Boulevard & Primrose Drive/Andrew Street and all Project driveways for Existing conditions and Cumulative (2045) Without Project and With Project traffic conditions to determine the turn pocket lengths necessary to accommodate near-term 95th percentile queues. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 12) has been utilized to assess queues at the Project access points. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the HCM. SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations.

The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many jurisdictions utilize the 95th percentile queues for design purposes. SimTraffic simulations have been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 15-minute periods with 60-minute recording intervals.

The results of the queuing analysis are shown in Table 1-4 for Existing conditions and Table 1-5 for Cumulative conditions. The minimum storage length for turn pockets to accommodate the 95th percentile queues at the site adjacent intersections and Project driveways were previously shown on Exhibit 1-4. Signal optimization has been applied to the intersection signal timing. Queuing worksheets are included in Appendix 1.2.

Improvements have been identified at the intersection movements where the 95th percentile queue exceeds the existing available storage. These improvements are identified to satisfy City comments and address long-range traffic deficiencies, likely attributable to the ambient and cumulative development growth. Table 1-6 provides the queuing analysis for Cumulative (2045) conditions to provide acceptable storage length for the turn pockets shown.

The anticipated queuing deficiencies at the study area intersections are consistent under both Cumulative (2045) Without Project and With Project, with the exception of the following movements:

- Van Buren Bl. & Primrose Dr./Andrew St. (#3) – EBL and WBL turn movements

Van Buren Boulevard & Primrose Drive/Andrew Street is located adjacent to the Project site. The eastbound left turn lane is expected to serve Project traffic. The westbound left turn lane may potentially serve Project traffic. As such, the queuing deficiencies will be addressed based on the proposed Project's design features (see Section 1.6.1 for a discussion of the proposed improvements that the Project will construct). All other movements shown in Table 1-6 are anticipated to experience queuing issues under Without Project conditions, therefore the deficiency is likely caused by the local and regional traffic growth. As such, the Project is not proposed to construct the improvements for the westbound left turn lane.

A summary of the improvements identified to address all Cumulative (2045) queuing deficiencies is provided in Table 1-7. As shown in Table 1-7, the Project responsibility has been identified based on the results of the Cumulative (2045) Without Project and With Project queuing analysis, as shown in Table 1-6. Movements that are identified as a Project deficiency in Table 1-6 are identified as construct obligations in Table 1-7. All other queuing deficiencies are identified under both Without Project and With Project, meaning the Project does not solely cause the queuing deficiency for that specific movement. Since the City does not have a fair share program to collect fair share fees, the Project responsibility for these movements is identified as "None."

TABLE 1-4: QUEUING ANALYSIS FOR EXISTING (2024) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet) [1] AM Peak Hour	PM Peak Hour
3	Van Buren Bl. & Primrose Dr./Andrew St.	NBL	150	124	151
		SBL	160	62	70
		EBL	60	32	50
		WBL	145	140	120

[*] **BOLD** = Stacking distance is greater than available stacking distance.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown in this table, where applicable.

TABLE 1-5: QUEUING ANALYSIS FOR CUMULATIVE (2045) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	2045 Without Project 95th Percentile Queue (Feet) [1,2] AM Peak Hour	2045 Without Project 95th Percentile Queue (Feet) [1,2] PM Peak Hour	2045 With Project 95th Percentile Queue (Feet) [1,2] AM Peak Hour	2045 With Project 95th Percentile Queue (Feet) [1,2] PM Peak Hour	Project Deficiency? [3] AM	Project Deficiency? [3] PM
2	Driveway 1 & Primrose Dr.	NBR	100	Future Intersection		55	63	No	No
		WBL	170			52	97	No	No
3	Van Buren Bl. & Primrose Dr./Andrew St.	NBL	150	150 [1]	154 [1]	152 [1]	151 [1]	No	No
		SBL	160	68	67	68	74	No	No
		EBL	60	**72**	**95**	**125**	**137**	No	No
		WBL	145	**178**	**175**	**171**	**185**	No	No
4	Van Buren Bl. & Driveway 2	EBR	100	Future Intersection		61	63	No	No

* **BOLD** = Stacking distance is greater than available stacking distance.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown in this table, where applicable.

[2] Due to the random simulations evaluated using the SimTraffic software, there are cases where the Without Project conditions generates results that are higher than the With Project condition.

[3] Project deficiency is anticipated if there is identified queuing issue under With Project conditions but not under Without Project conditions

TABLE 1-6: QUEUING ANALYSIS FOR CUMULATIVE (2045) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Movement	Available Stacking Distance (Feet) [1]	95th Percentile Queue (Feet) AM Peak Hour	95th Percentile Queue (Feet) PM Peak Hour
3	Van Buren Bl. & Primrose Dr./Andrew St.	NBL	150	152 [2]	151 [2]
		SBL	160	68	74
		EBL	**140**	125	137
		WBL	**190**	171	185

[1] **100** = Improvement

[2] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown in this table, where applicable.

TABLE 1-7: SUMMARY OF QUEUING IMPROVEMENTS

#	Intersection Location	Movement	Improvement	Changes to Current Parking Restrictions?	Changes to Current Access Restrictions?	Feasible?	Project Responsibility[1]
3	Van Buren Bl. & Primrose Dr./Andrew St.	Northbound	None	None	None	Not Applicable	Not Applicable
		Southbound	None	None	None	Not Applicable	Not Applicable
		Eastbound	Restripe EB left turn pocket to provide 140-feet of storage	None	None	Yes, restripe only	Construct
		Westbound	Restripe WB left turn pocket to provide 190-feet of storage[2]	None	None	Yes, restripe only	None

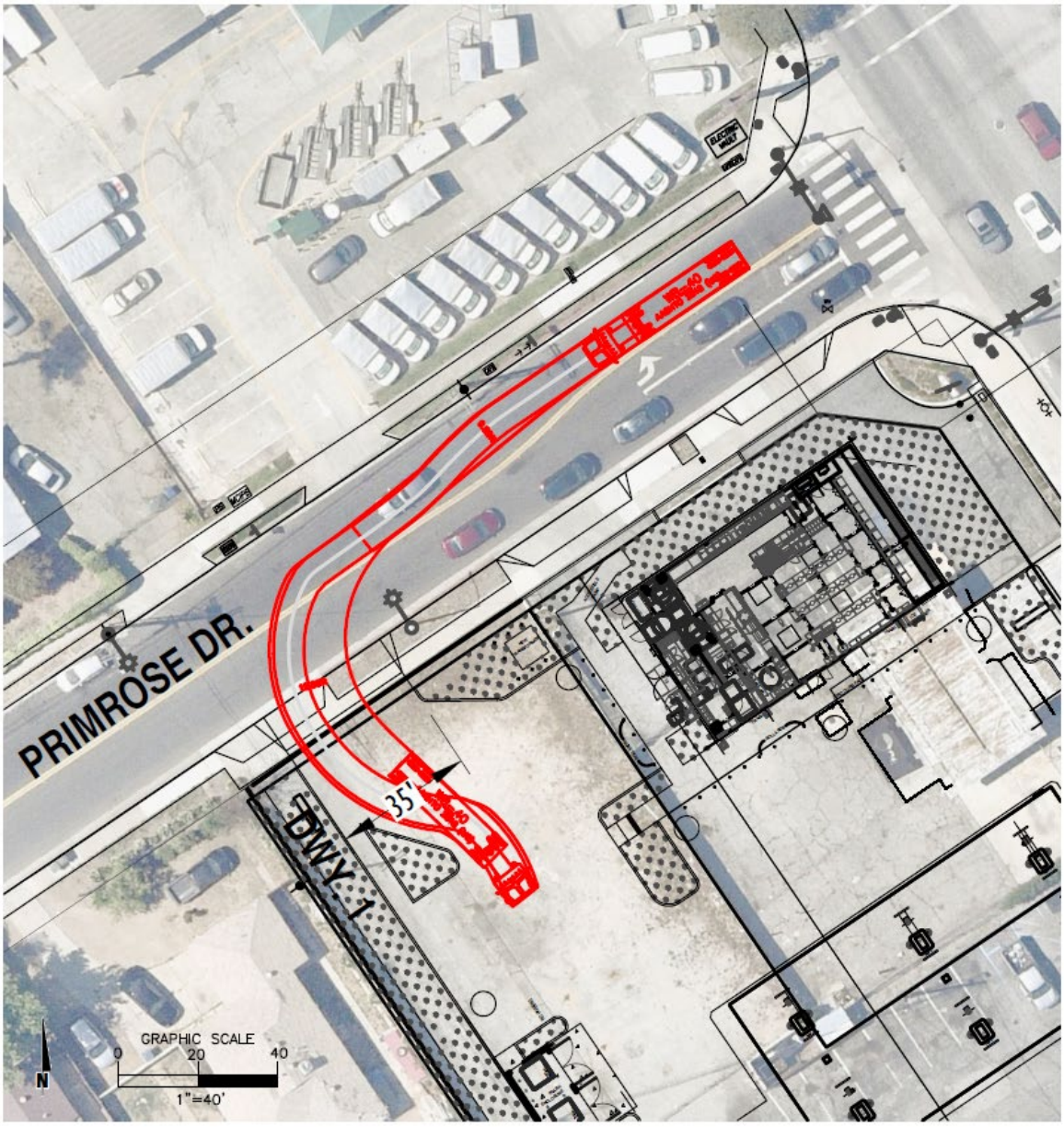
[1] If marked "None" Project is not recommended to make any noted changes as the deficiency and improvement needs are required under pre-project conditions as well with a nominal contribution by the Project.

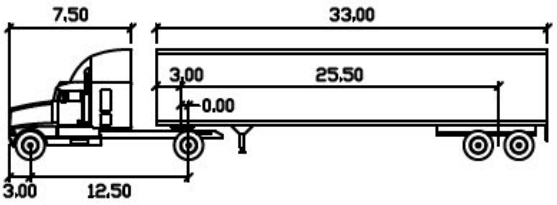
[2] The Quick Quack Project at NE corner of the intersection will install approximately 40 to 50 feet eastbound left-turn pocket for the project driveway along Andrew Street.

1.7 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the Project driveways and site adjacent intersection of Van Buren Boulevard & Primrose Drive/Andrew Street, which is anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. A WB-40 truck (33-foot trailer) has been utilized for the purposes of this analysis, which is consistent with the size of the fuel tankers. Driveway 1 on Primrose Drive and the intersection of Van Buren Boulevard & Primrose Drive/Andrew Street are anticipated to accommodate the ingress of heavy trucks as currently designed. Driveway 2 on Van Buren Boulevard is anticipated to accommodate the egress of heavy trucks as currently designed. Exhibit 1-6 reflects the inbound truck access at Driveway 1; Exhibit 1-7 reflects the outbound truck access at Driveway 2; and Exhibit 1-8 reflects the inbound truck access at the intersection of Van Buren Boulevard & Primrose Drive/Andrew Street.

EXHIBIT 1-6: TRUCK TURNING TEMPLATES (1 OF 3)

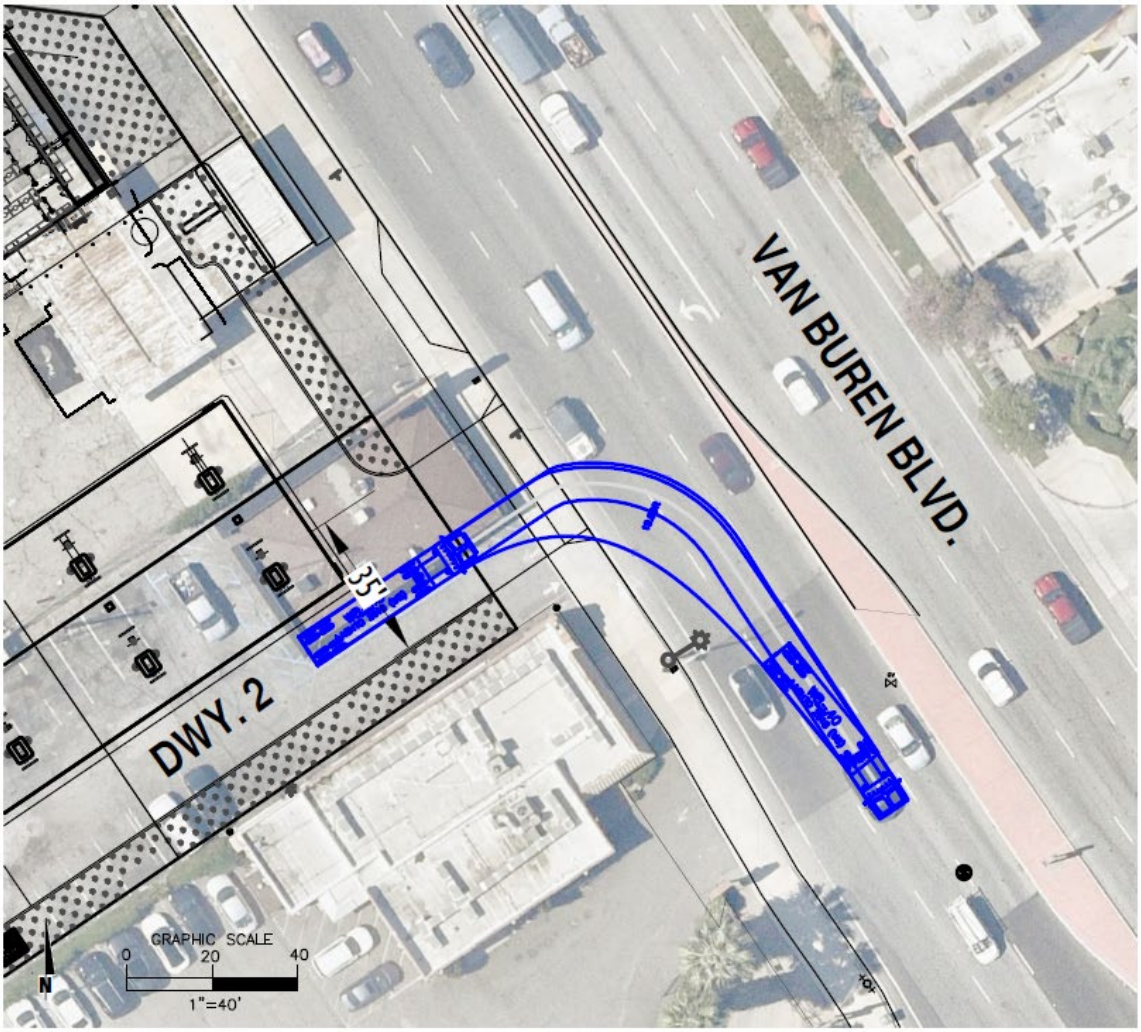


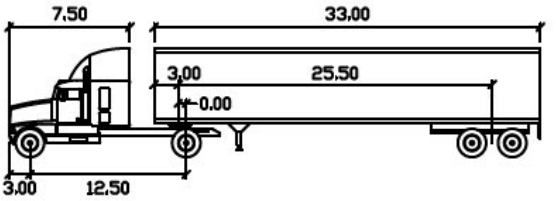


WB-40

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.00	Steering Angle	20.3
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.00		

EXHIBIT 1-7: TRUCK TURNING TEMPLATES (2 OF 3)

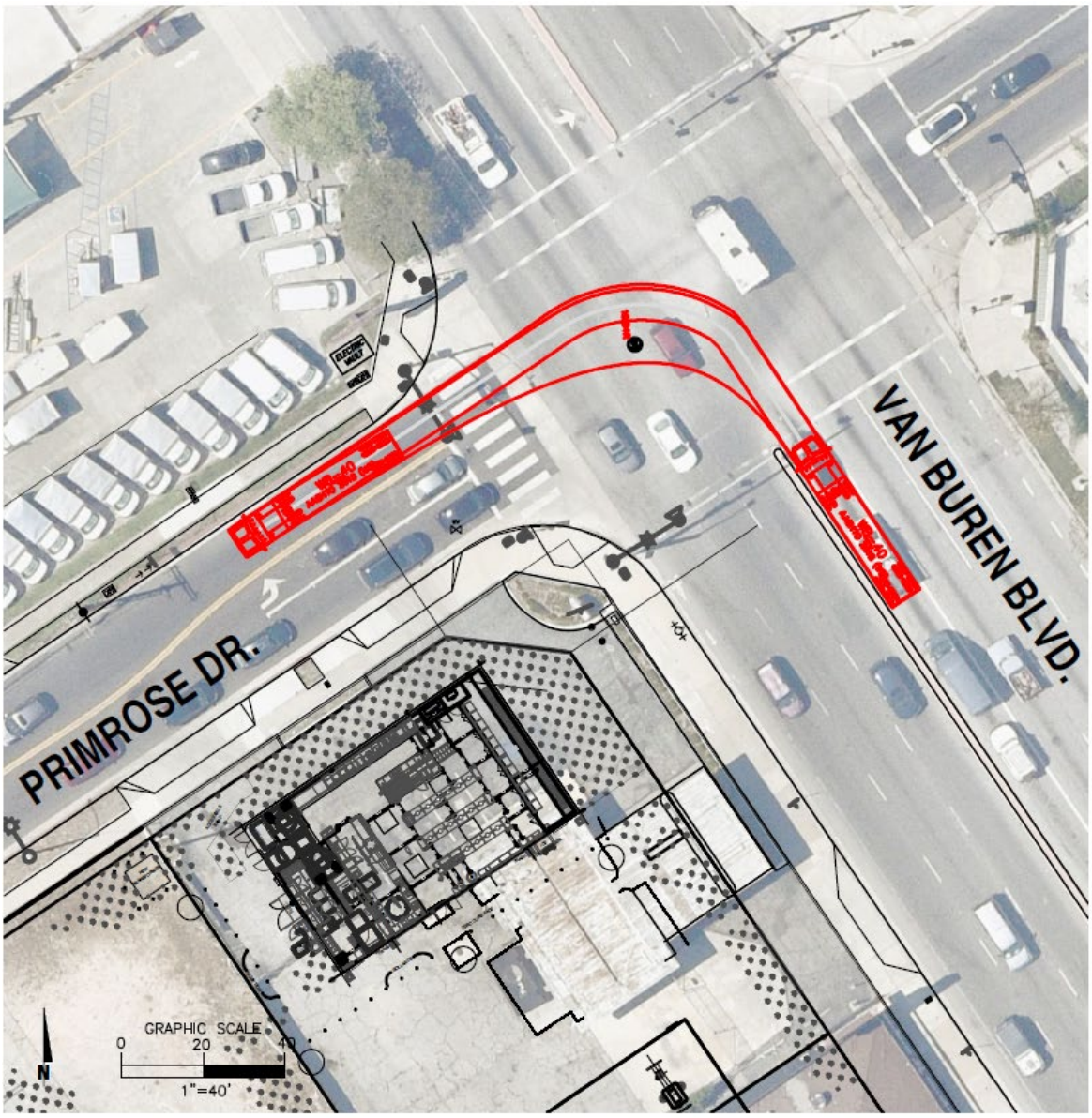


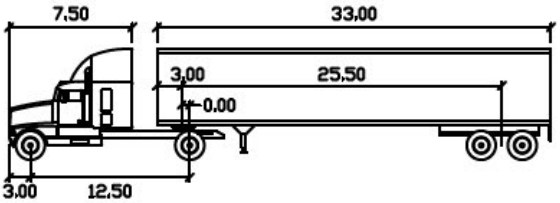


WB-40

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.00	Steering Angle	20.3
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.00		

EXHIBIT 1-8: TRUCK TURNING TEMPLATES (3 OF 3)





WB-40

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.00	Steering Angle	20.3
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.00		

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with City of Riverside's Traffic Study Guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 7th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Riverside requires signalized intersection operations analysis based on the methodology described in the HCM. (4) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

The traffic modeling and signal timing optimization software package Synchro (Version 12) has been utilized to analyze signalized intersections. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failure are noticeable.	35.01 to 55.0	D
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F

[1] Source: HCM, 7th Edition.

[2] If V/C is greater than 1.0, then LOS F per HCM.

A saturation flow rate of 1900 has been utilized for all study area intersections located within the City of Riverside. The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Customary practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (4)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Riverside requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2). At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Little or no delays.	0 to 10.00	A
Short traffic delays.	10.01 to 15.00	B
Average traffic delays.	15.01 to 25.00	C
Long traffic delays.	25.01 to 35.00	D
Very long traffic delays.	35.01 to 50.00	E
Extreme traffic delays with intersection capacity exceeded.	>50.00	F

[1] Source: HCM, 7th Edition.

[2] If V/C is greater than 1.0, then LOS F per HCM.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or determine the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (5)

There are no existing study area intersections that are unsignalized. As such, all traffic signal warrants are only analyzed for future unsignalized intersections. Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Similarly, the speed limit has been used as the basis for determining the use of Urban and Rural warrants. Table 2-3 provides the unsignalized intersections that have been evaluated for traffic signal warrant analysis.

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

#	Intersection
2	Driveway 1 & Primrose Dr.

Although unsignalized, the intersection of Van Buren Bl. & Driveway 2 has not been evaluated for traffic signal warrant analysis as the intersection will operate with restricted access (right-in/right-out only).

The traffic signal warrant analyses for future conditions are presented in Section 5 *Background (2026) Traffic Conditions* and Section 6 *Cumulative (2045) Traffic Conditions* of this report. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment operations have been evaluated using the City of Riverside roadway capacity thresholds are provided in the City's traffic study guidelines and shown below:

Roadway Classification	Number of Lanes	Two-Way Traffic Volume (ADT)[2]		
		Service Level C	Service Level D	Service Level E
Local	2	2,500-2,799	2,800-3,099	3,100+
Collector (66' or 80')	2	9,900-11,199	11,200-12,499	12,500+
Arterial [3]	2	14,400-16,199	16,200-17,999	18,000+
Arterial (88')	4	16,800-19,399	19,400-21,199	22,000+
Arterial (100')	4	26,200-29,599	29,600-32,999	33,000+
Arterial (120')	6	38,700-44,099	44,100-49,499	49,500+
Arterial (144')	8	50,600-57,799	57,800-64,999	65,000+

Notes: (1) All capacity figures are based on optimum conditions and are intended as guidelines for planning purposes only
(2) Maximum two-way ADT values are based on the 1999 Modified Highway Capacity Manual Level of Service Tables
(3) Two-lane roadways designated as future arterials that conform to arterial design standards for vertical and horizontal alignments are analyzed as arterials.

These roadway capacities are "rule of thumb" estimates for planning purposes and are affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance,

vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic. In other words, while using ADT for planning purposes is suitable with regards to evaluating potential volume to capacity with future forecasts, it is not suitable for operational analysis because it does not account for the factors listed previously. As such, where the ADT based roadway segment analysis indicates a potential roadway capacity deficiency (i.e., unacceptable LOS), a review of the more detailed peak hour intersection analysis and progression analysis are undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity.

2.5 QUEUING ANALYSIS

The traffic modeling and signal timing optimization software package SimTraffic has been utilized to assess the queues. SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. These random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each applicable turn lane. A SimTraffic simulation has been recorded up to 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 15-minute periods with 60-minute recording intervals.

2.6 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

The City of Riverside has established LOS D as the minimum level of service for its intersections. However, key locations, such as City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS E at peak hours as the acceptable standard on a case-by-case basis. The acceptable LOS by intersection is shown below.

#	Intersection	Acceptable LOS
1	SR-91 EB Ramps & Indiana Av.	E
2	Driveway 1 & Primrose Dr.	D
3	Van Buren Bl. & Primrose Dr./Andrew St.	E
4	Van Buren Bl. & Driveway 2	E
5	Van Buren Bl. & SR-91 WB Ramps	E
6	Van Buren Bl. & Indiana Av.	E

2.7 DEFICIENCY CRITERIA

Per the City of Riverside traffic study guidelines, for Projects that are in conformance with the General Plan:

a) LOS C is to be maintained at all street intersections

b) LOS D is to be maintained at intersections of Collector or higher classification (see General Plan Policy CCM 2.3).

For Projects that propose uses or intensities above that contained in the General Plan, operational improvements are required when the addition of Project related trips causes either peak hour LOS to degrade from acceptable to unacceptable levels or the peak hour delay to increase as follows:

LOS	Delay Threshold
LOS A/B	By 10 Seconds
LOS C	By 8 Seconds
LOS D	By 5 Seconds
LOS E	By 2 Seconds
LOS F	By 1 Second

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Riverside General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Riverside staff (Appendix 1.1), the study area includes a total of 4 existing intersections as shown previously on Exhibit 1-4. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of Riverside. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified in the City of Riverside General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Riverside General Plan Circulation Element and Exhibit 3-3 illustrates the City of Riverside General Plan roadway cross-sections.

Study area roadways that are classified as an Special Boulevard have variable widths and design. The following study area roadways within the City of Riverside are classified as an Special Boulevard:

- Van Buren Boulevard

Study area roadways that are classified as an Arterial are identified as having four to eight lanes of travel. The following study area roadways within the City of Riverside are classified as an Arterial:

- Indiana Avenue

Study area roadways that are classified as a Local are identified as having two lanes of travel. The following study area roadways within the City of Riverside are classified as a Collector:

- Primrose Drive
- Andrew Street

3.3 BICYCLE AND PEDESTRIAN FACILITIES

The City of Riverside Master Plan of Trails and Bikeways is shown on Exhibit 3-4. There is a designated Class II bikeway that runs along Van Buren Boulevard and Indiana Avenue in the vicinity of the study area. Existing pedestrian facilities within the study area are shown on Exhibit 3-5. As shown on Exhibit 3-5, there are existing pedestrian facilities provided along the Project's frontage and in the vicinity of the Project site to provide pedestrian connectivity throughout the study area.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

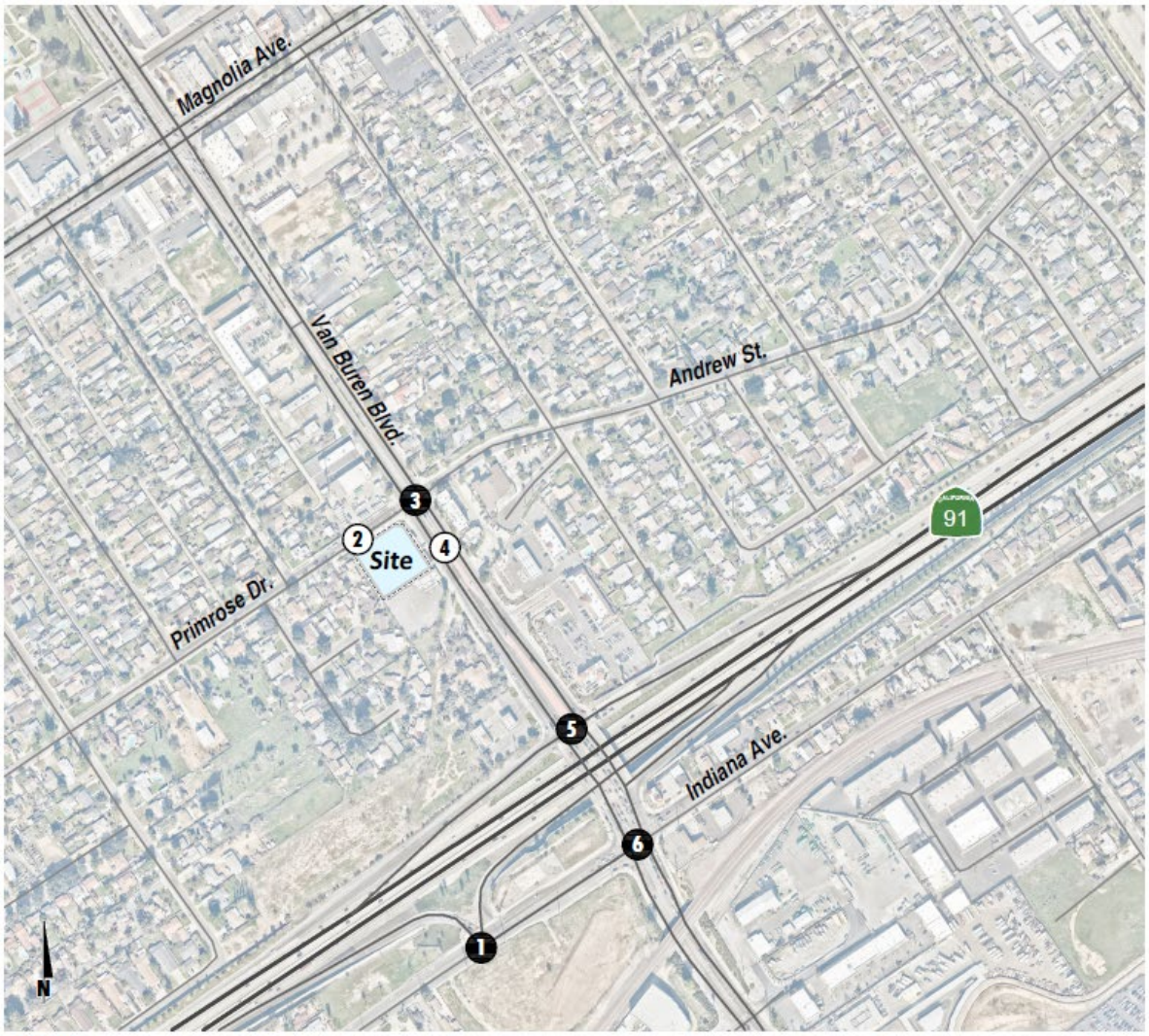


EXHIBIT 3-2: CITY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT

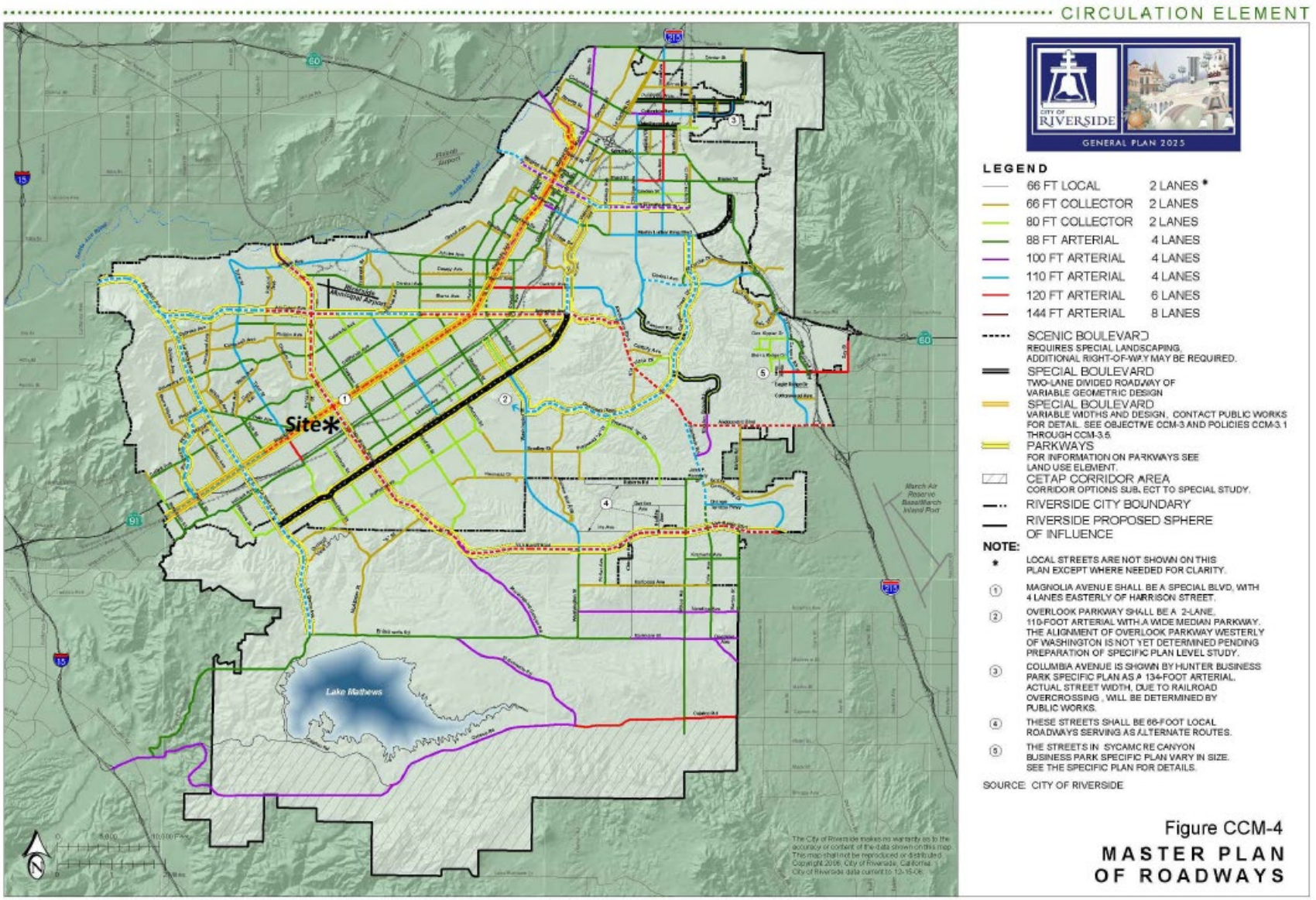
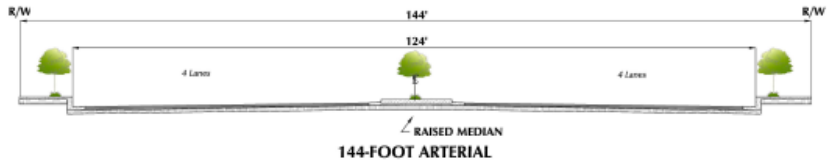
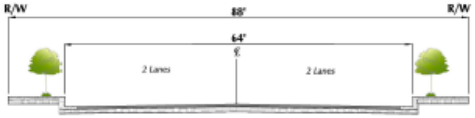


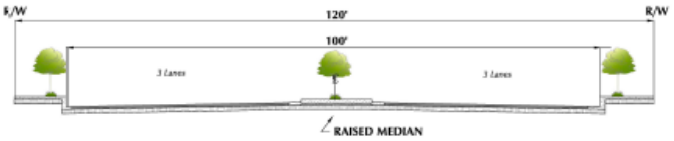
EXHIBIT 3-3: CITY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS



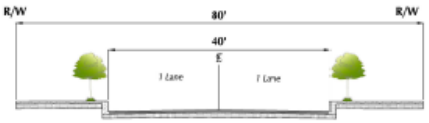
144-FOOT ARTERIAL



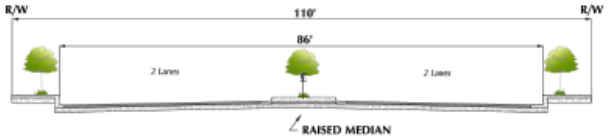
88-FOOT ARTERIAL



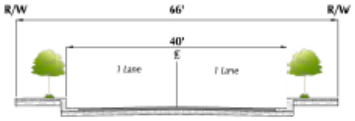
120-FOOT ARTERIAL



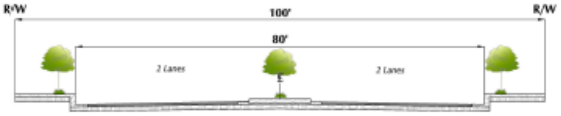
80-FOOT COLLECTOR



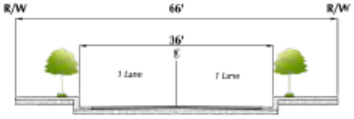
110-FOOT ARTERIAL



66-FOOT COLLECTOR



100-FOOT ARTERIAL



LOCAL STREET

CITY OF RIVERSIDE
GENERAL PLAN 2025

NOTE:
FOR PARKWAY CROSS SECTION STANDARDS, CONSULT THE PUBLIC WORKS DEPARTMENT.

SOURCE: CITY OF RIVERSIDE, 2004.

Figure CCM-2
STANDARD ROADWAY CROSS SECTION

EXHIBIT 3-4: CITY OF RIVERSIDE MASTER PLAN OF TRAILS AND BIKEWAY

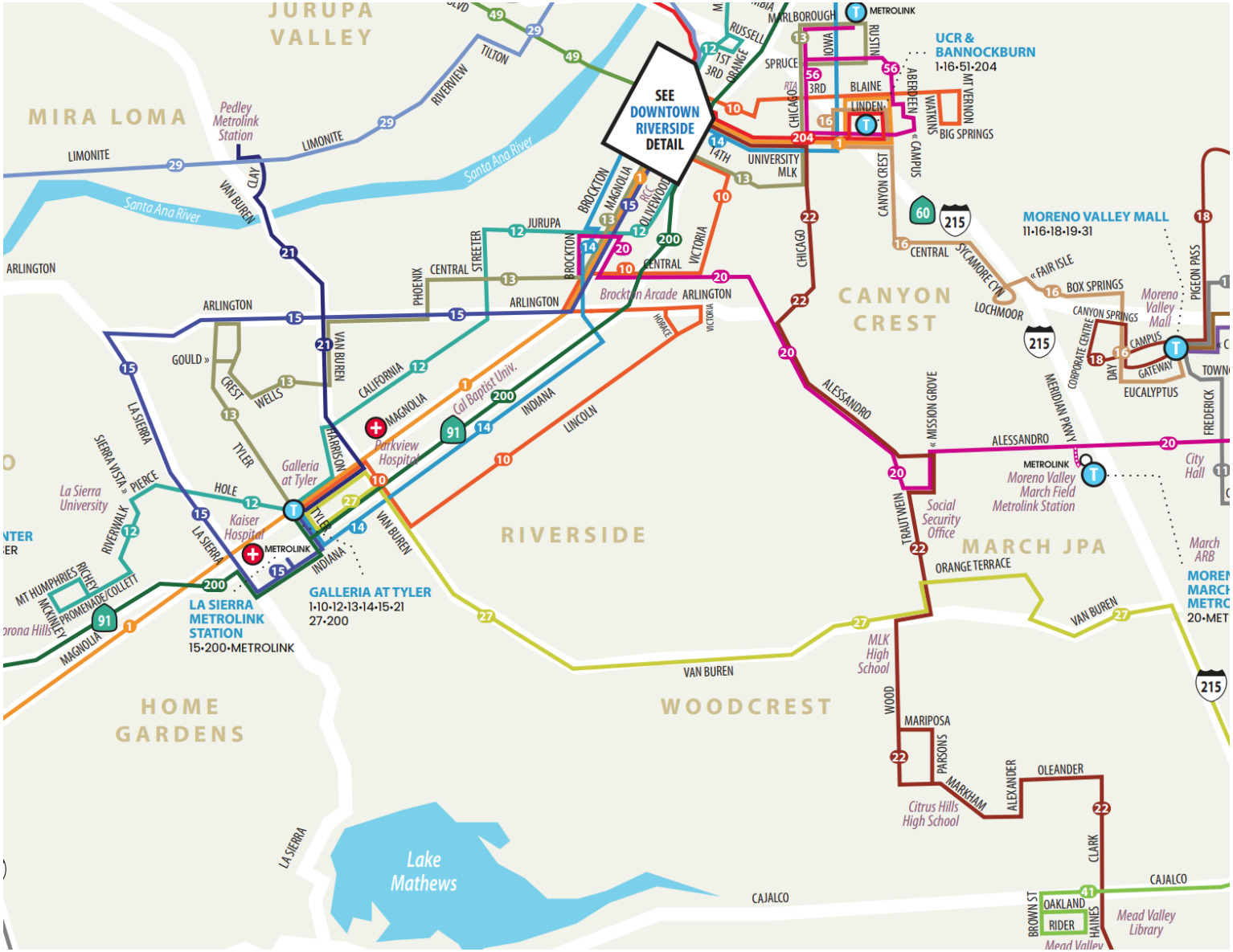
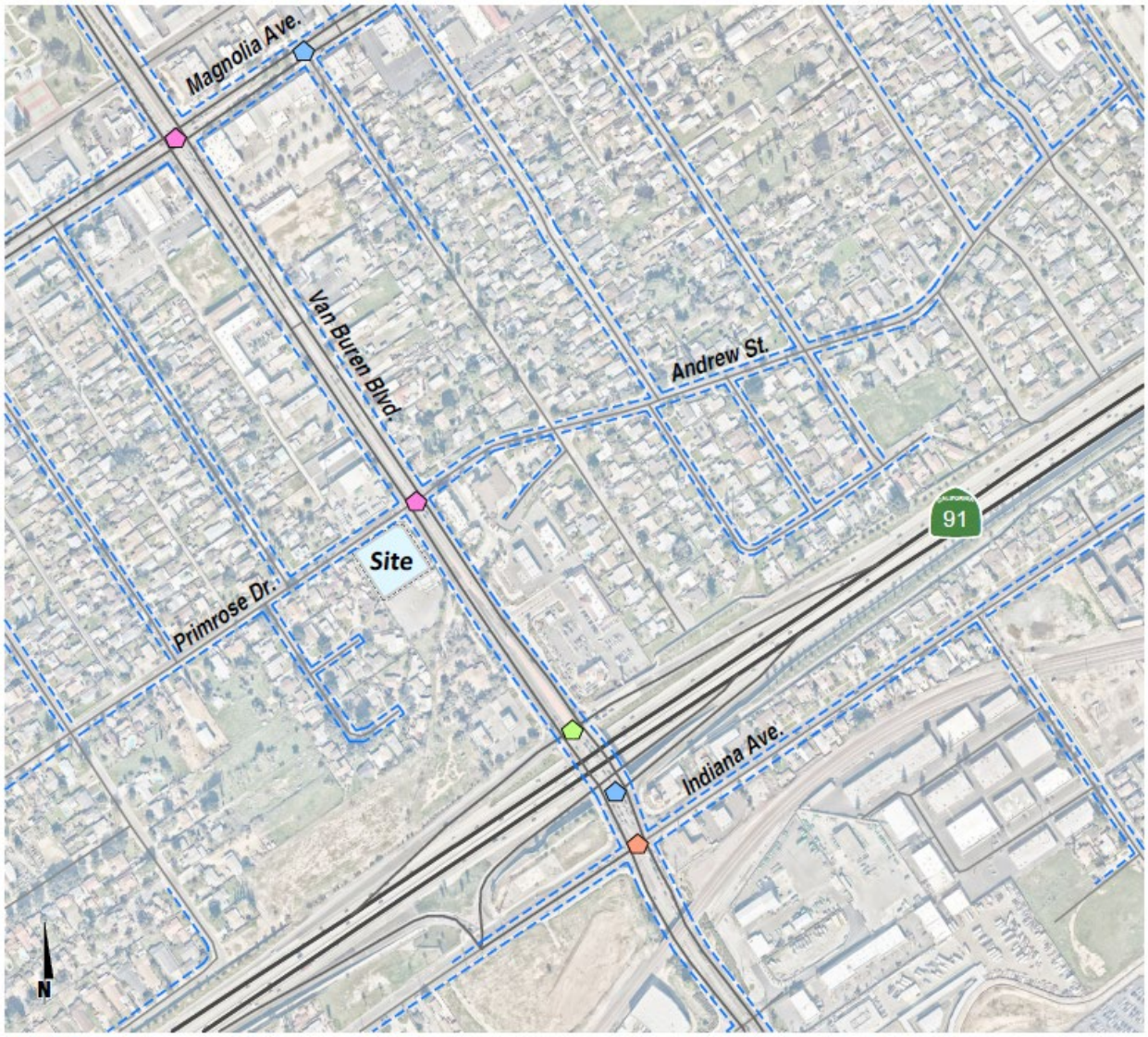


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES



3.4 TRANSIT SERVICE

The Riverside Transit Authority (RTA) currently serves the City of Riverside. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-6. As shown, there are several existing lines that provide service along Van Buren Boulevard and Indiana Avenue. There is an existing bus stop along the Project's frontage. RTA Routes 10 and 27 are the closest routes that may serve the Project.

3.5 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in 2024. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

Local schools are back in session with in-person instruction, as such, no additional adjustments were made to the traffic counts for the purposes of establishing the existing baseline. The 2024 weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday ADT volumes are shown on Exhibit 3-7. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 15.04 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 6.65 percent. As such, the above equation utilizing a factor of 15.04 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 6.65 percent (i.e., 1/0.0665 = 15.04) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-7.

EXHIBIT 3-6: CITY OF RIVERSIDE TRANSIT MAP

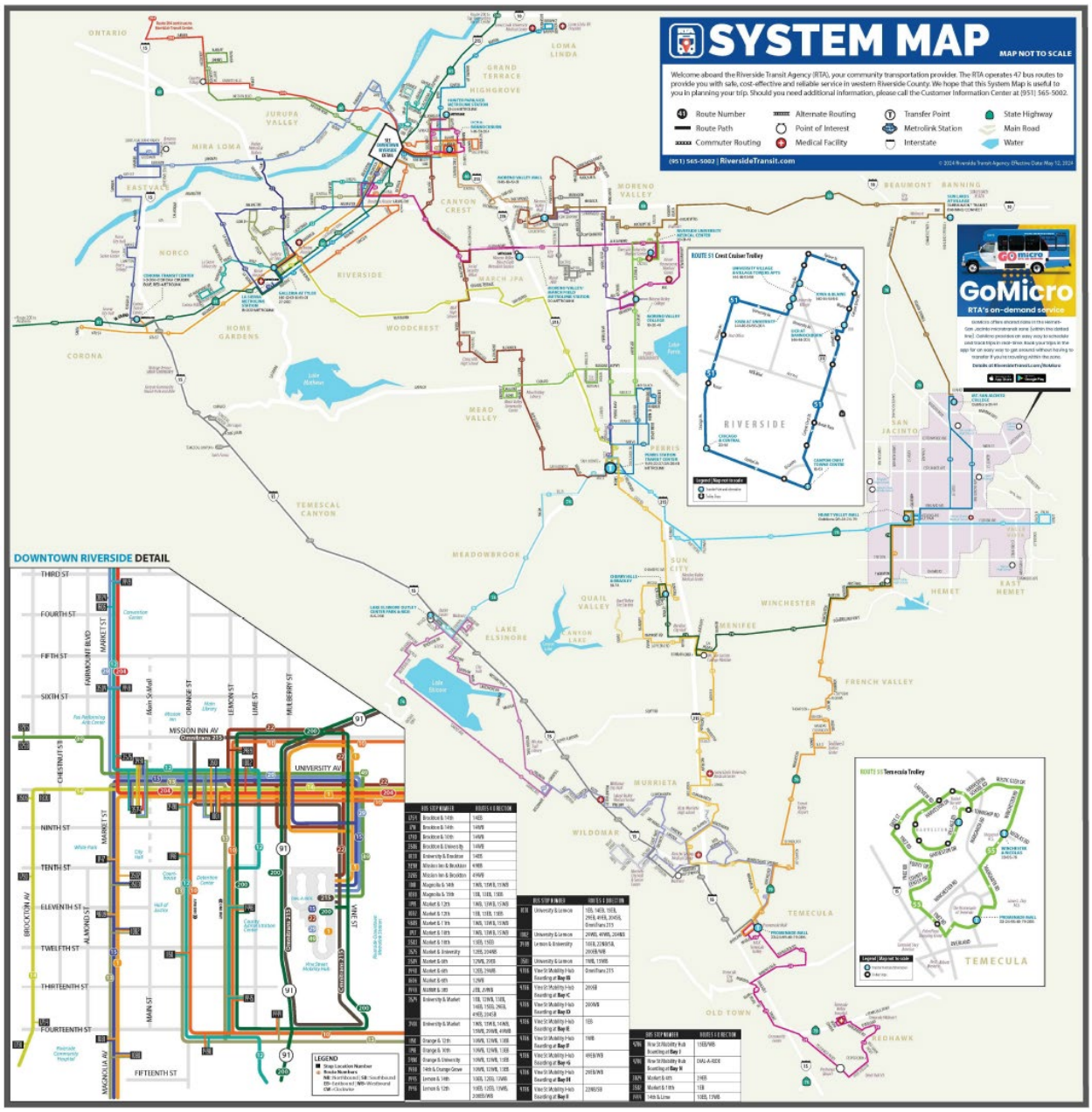


EXHIBIT 3-7: EXISTING (2024) TRAFFIC VOLUMES

LEGEND:

- **0** = *Existing Intersection Analysis Location*
- (0) = *Future Intersection Analysis Location*
- 00 (00) = *Peak Hour Volume AM (PM)*
- **00** = *Average Daily Traffic (ADT) in Thousands*

3.6 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that all the study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2024) traffic conditions. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2024) CONDITIONS

#	Intersection	Traffic Control [2]	Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM
1	SR-91 EB Ramps & Indiana Av.	TS	35.1	38.8	D	D
2	Driveway 1 & Primrose Dr.		Future Intersection			
3	Van Buren Bl. & Primrose Dr./Andrew St.	TS	19.0	20.7	B	C
4	Van Buren Bl. & Driveway 2		Future Intersection			
5	Van Buren Bl. & SR-91 WB Ramps	TS	27.2	26.7	C	C
6	Van Buren Bl. & Indiana Av.	TS	42.0	45.7	D	D

1 Per the Highway Capacity Manual (7th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

2 TS = Traffic Signal

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing (2024) traffic conditions are based on existing peak hour intersection turning volumes. There are no unsignalized study area intersections that currently meet a traffic signal warrant for Existing (2024) traffic conditions (see Appendix 3.3).

3.8 ROADWAY SEGMENT ANALYSIS

The roadway capacities utilized for the study area roadway segment analysis are obtained from the applicable roadway capacities for each agency. These roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. It should be noted, capacities have been interpolated where applicable for roadway sections not identified in an agency's General Plan. Table 3-2 provides a summary of the Existing (2024) conditions roadway segment capacity analysis. As shown in Table 3-2, the following study area roadway segment is currently operating at an unacceptable LOS based on the daily roadway capacity thresholds and minimum LOS criteria:

- Primrose Dr. between Van Buren Bl. & Roosevelt St.

Although the roadway of Primrose Drive operates at LOS E roadway capacity, the roadway segment is built to the General Plan ultimate full-section width. As such, additional roadway widening is not recommended.

TABLE 3-2: ROADWAY SEGMENT ANALYSIS FOR EXISTING (2024) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing 2024	Existing LOS[2]
1	Primrose Dr.	Van Buren Bl. & Roosevelt St.	2D	3,100	8,209	E
2	Van Buren Bl.	Primrose Dr. & SR91 WB Ramps	6D	49,500	42,519	C

[1] These maximum roadway capacities are based on the City of Riverside's thresholds.

[2] LOS = Level of Service

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The proposed Project consists of developing a new 7 Eleven convenience store with 12 vehicle fueling positions. The Project is proposed to utilize the following driveways:

- Driveway 1 on Primrose Drive: full access driveway
- Driveway 2 on Van Buren Boulevard: right-in/right-out only driveway

A preliminary site plan of which the traffic study will be based on is shown on Exhibit 1-2.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) was used to estimate the trip generation. (2)

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) for Convenience Store/Gas Station - GFA (2-4k) (ITE Land Use Code 945) land use were utilized. (2) The trip generation rates are shown in Table 4-1. As shown in Table 4-1, the Project is anticipated to generate a net total of 794 two-way trips per day with 46 AM peak hour trips and 56 PM peak hour trips.

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Convenience Store/Gas Station - GFA (2-4k)	945	VFP	8.03	8.03	16.06	9.21	9.21	18.42	265.12

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

Project Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Convenience Store/Gas Station - GFA (2-4k)	12	VFP	96	96	192	111	111	222	3,182
Pass-By (76% AM; 75% PM/Daily)[2]:			-73	-73	-146	-83	-83	-166	-2,388
Total Net Trips:			23	23	46	28	28	56	794

[1] VFP = Vehicle Fueling Positions

[2] Pass-by Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

As the Project is proposed to include retail uses, pass-by percentages have been obtained from the latest ITE Trip Generation Manual (2021). (2) Pass-by trips are associated with existing traffic on the roadway network that might visit a use on-site on their way to their primary destination.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic

routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site and are consistent with other similar projects that have been reviewed and approved by City of Riverside staff. The proposed Project trip distribution patterns are illustrated on Exhibit 4-1. These distribution patterns was reviewed and approved by the City of Riverside as part of the traffic study scoping process (see Appendix 1.1).

4.3 MODAL SPLIT

The potential for Project trips (non-truck) to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, the Project only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2.

4.5 BACKGROUND TRAFFIC

4.5.1 BACKGROUND CONDITIONS

Future year traffic forecasts have been based upon background (ambient) growth at 2.0% per year. The total ambient growth is 4.04% for 2026 conditions (2.0% per year compounded over 2 years). The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Background (2026) traffic volumes are provided in Section 5 of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine Background "With Project" forecasts conditions. Conservatively, this TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed ambient growth rates; and some of these related projects may not be implemented and operational within the 2026 Opening Year time frame assumed for the Project (see also Section 4.6 *Cumulative Development Traffic*).

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION

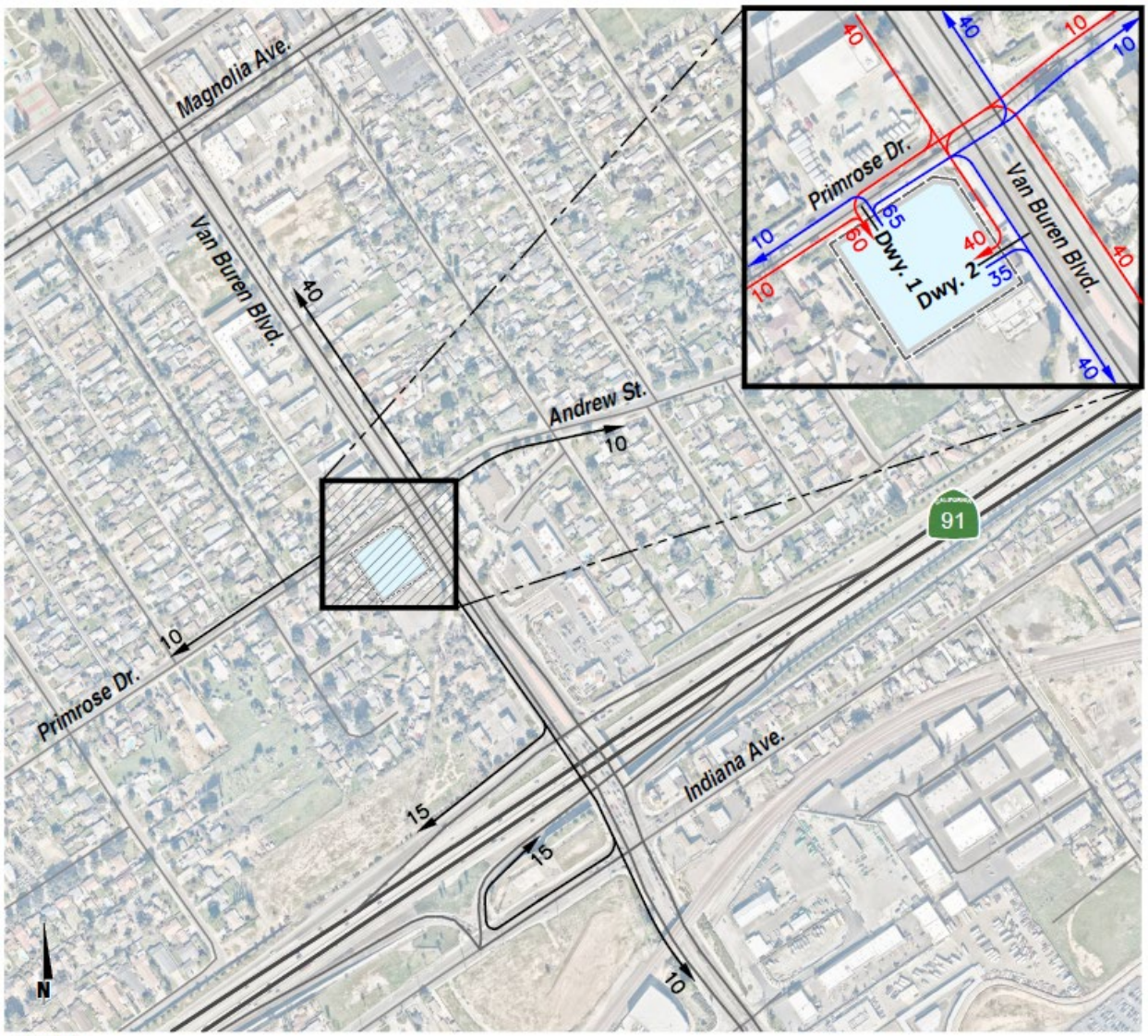

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES

LEGEND:

- ❶ = *Existing Intersection Analysis Location*
- ⓪ = *Future Intersection Analysis Location*
- 00 (00) = *Peak Hour Volume AM (PM)*
- **00** = *Average Daily Traffic (ADT)*

4.5.2 CUMULATIVE (2045) CONDITIONS

The Cumulative (2045) traffic conditions were derived from the latest RIVCOM using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and Cumulative conditions. See additional discussion in Section 4.7 *Cumulative (2045) Volume Development*.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

Other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area have also been included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Riverside. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections.

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate Background (2026) forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-3, listed in Table 4-2, and have been considered for inclusion.

These cumulative projects have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4.

TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

ID	Project Name	Land Use	Quantity	Units[1]
R1	P17-0946	Office / Medical Building	4.415	TSF
R2	P18-0296 / P18-0297 / P18-0298 / P18-0299 / P18-0300 / P18-0301 / P18-0302 / P18-0303	Convenience Store/Gas Station with Car Wash	16	VFP
		Restaurant with Drive-thru	2.533	TSF
		Sit-down Restaurant	5.550	TSF
		Hotel	84	Room
R3	P20-0476 / P20-0477	Car Wash	10.629	TSF
R4	PR-2021-000975	Multi-family Residential	139	DU
R5	PR-2021-001026	Office / Medical Building	1.351	TSF
R6	PR-2022-001338	Car Wash	3.596	TSF
R7	PR-2022-001369	University	14.226	TSF
R8	PR-2022-001464	Self-Storage	172.536	TSF
R9	PR-2022-001467	Multi-family Residential	63	DU
R10	PR-2023-001531	Office / Medical Building	1.389	TSF
R11	PR-2023-001477	Restaurant Bar	1.800	TSF
R12	PR-2023-001598	Adult Daycare Facility	7.500	TSF
R13	PR-2024-001643	Multi-family Residential	149	DU
R14	PR-2024-001655	Public Charter School	500	STU
R15	PR-2024-001665	Convenience Store/Gas Station (Proposed Proje	3.010	TSF
R16	PR-2024-001679	Coffee Shop with Drive-thru	0.950	TSF
R17	PR-2021-000831	Retail	14.000	TSF
		Restaurant	1.020	TSF
R18	PR-2021-001212	Brewery	2.027	TSF
R19	PR-2022-001381	Multi-family Residential	70	DU
R20	PR-2023-001617	Convenience Store	2.878	TSF

[1] DU = Dwelling Units; STU = Students; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

EXHIBIT 4-3: CUMULATIVE DEVELOPMENT LOCATION MAP

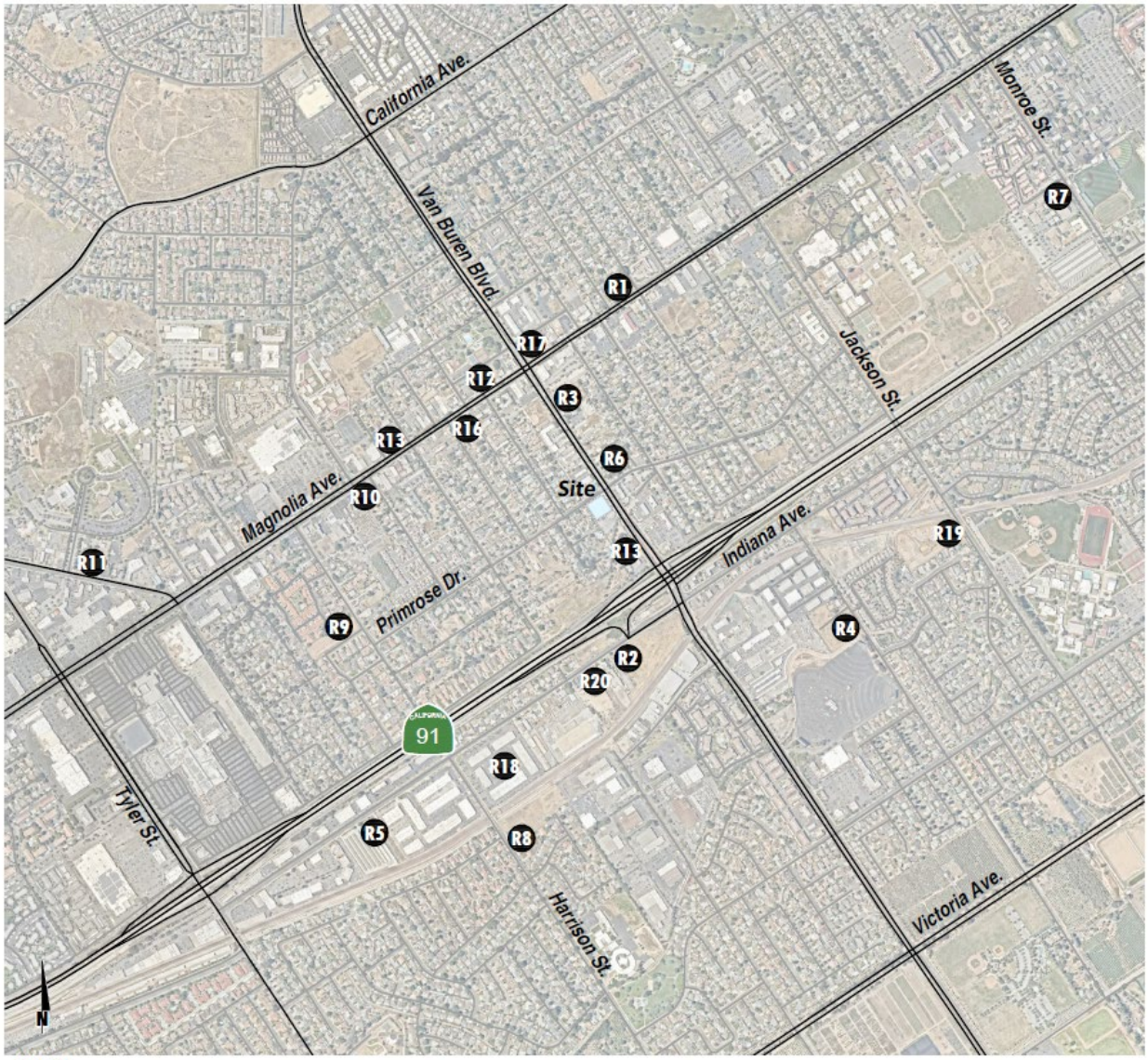

EXHIBIT 4-4: CUMULATIVE ONLY TRAFFIC VOLUMES

4.7 CUMULATIVE (2045) CONDITIONS

"Buildout" traffic projections for Cumulative conditions are based on traffic model forecasts and were derived from the RivCOM using accepted procedures for model forecast refinement and smoothing for study area intersections located within the County of Riverside. The Cumulative traffic conditions analyses was utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the TUMF, can accommodate the long-range traffic at the target LOS identified in the City of Riverside General Plan.

The traffic forecasts reflect the area-wide growth anticipated between Existing (2024) conditions and Cumulative (2045) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Cumulative peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location. The RivCOM has a base (validation) year of 2018 and a horizon (future forecast) year of 2045. The RivCOM 2045 model utilized for the purposes of this analysis assumes buildout of the City of Riverside.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 765), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The future Cumulative (2045) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Post-processing worksheets for Cumulative (2045) Without Project traffic conditions are provided in Appendix 4.1.

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5 BACKGROUND (2026) TRAFFIC CONDITIONS

This section discusses the methods used to develop Background (2026) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant and analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Background (2026) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Background conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Background conditions only.

5.2 BACKGROUND (2026) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 4.04% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Background (2026) Without Project traffic conditions are shown on Exhibit 5-1.

5.3 BACKGROUND (2026) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Background (2026) Without Project traffic in conjunction with the addition of Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Background (2026) With Project traffic conditions are shown on Exhibit 5-2.

5.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Background (2026) traffic conditions with the roadway and intersection geometrics consistent with Section 5.1 *Roadway Improvements*. As shown in Table 5-1, the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under Background (2026) Without Project and With Project traffic conditions, consistent with Existing (2024) traffic conditions. **The addition of Project traffic would not trigger the City of Riverside's significance criteria.** The intersection operations analysis worksheets for Background (2026) Without Project and Background (2026) With Project traffic conditions are included in Appendices 5.1 and 5.2, respectively.

EXHIBIT 5-1: BACKGROUND (2026) WITHOUT PROJECT TRAFFIC VOLUMES

LEGEND:

- ❶ = *Existing Intersection Analysis Location*
- (1) = *Future Intersection Analysis Location*
- 00 (00) = *Peak Hour Volume AM (PM)*
- **00** = *Average Daily Traffic (ADT) in Thousands*

EXHIBIT 5-2: BACKGROUND (2026) WITH PROJECT TRAFFIC VOLUMES

TABLE 5-1: INTERSECTION ANALYSIS FOR BACKGROUND (2026) CONDITIONS

#	Intersection	Traffic Control[2]	2028 Without Project Delay[1] (secs.) AM	2028 Without Project Delay[1] (secs.) PM	2028 Without Project Level of Service AM	2028 Without Project Level of Service PM	2028 With Project Delay[1] (secs.) AM	2028 With Project Delay[1] (secs.) PM	2028 With Project Level of Service AM	2028 With Project Level of Service PM	Project-Related Traffic Deficiency?[3]
1	SR-91 EB Ramps & Indiana Av.	TS	36.5	40.4	D	D	36.5	40.5	C	D	No
2	Driveway 1 & Primrose Dr.	--/CSS	Future Intersection				10.0	10.9	B	B	No
3	Van Buren Bl. & Primrose Dr./Andrew St.	TS	26.0	34.6	C	C	29.5	39.1	C	D	No
4	Van Buren Bl. & Driveway 2	--/CSS	Future Intersection				23.7	29.7	C	D	No
5	Van Buren Bl. & SR-91 WB Ramps	TS	28.8	28.1	C	C	28.8	28.1	C	C	No
6	Van Buren Bl. & Indiana Av.	TS	68.1	69.1	E	E	68.6	69.6	E	E	No

1 Per the Highway Capacity Manual (7th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

2 TS = Traffic Signal; CSS = Cross-street Stop

3 Project-related traffic deficiency occurs when the addition of project-related trips causes either peak hour LOS to degrade from acceptable LOS (LOS A through LOS D) to unacceptable levels (LOS E or LOS F) or the peak hour delay is increased by the following values:

LOS A/B = 10 seconds or more
LOS C = 8 seconds or more
LOS D = 5 seconds or more
LOS E = 2 seconds or more
LOS F = 1 second or more

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Background (2026) With Project traffic conditions based on daily planning level volumes. There are no unsignalized intersections under Background (2026) Without Project traffic conditions. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under Background (2026) With Project traffic conditions (see Appendix 5.3).

5.6 ROADWAY SEGMENT ANALYSIS

Table 5-2 provides a summary of the Background (2026) conditions roadway segment capacity analysis. As shown in Table 5-2, all study area roadway segments are anticipated to operate at an unacceptable LOS based on the daily roadway capacity thresholds and minimum LOS criteria under Background (2026) Without and With Project traffic conditions. Roadway segment widening has only been considered/recommended if the intersection operations analysis indicates that additional through lanes are needed in order to process peak hour volumes at the intersections. Since the study area intersections operate at acceptable LOS during the peak hours, no widening has been recommended. Although the roadways of Primrose Drive and Van Buren are anticipated to operate at LOS E roadway capacities, both roadway segments are built to the General Plan ultimate full-section width. As such, additional roadway widening is not recommended.

TABLE 5-2: ROADWAY SEGMENT ANALYSIS FOR BACKGROUND (2026) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2026 Without Project 2024	2026 Without Project v/c	2026 Without Project LOS[2,3]	2026 With Project 2024	2026 With Project v/c	2026 With Project LOS[2,3]	Change in v/c
1	Primrose Dr.	Van Buren Bl. & Roosevelt St.	2D	3,100	10,287	3.32	E	11,919	3.84	E	0.53
2	Van Buren Bl.	Primrose Dr. & SR91 WB Ramps	6D	49,500	54,051	1.09	E	54,369	1.10	E	0.01

1 These maximum roadway capacities are based on the City of Riverside's thresholds.

2 LOS = Level of Service

3 Roadway segment widening has only been considered/recommended if the intersection operations analysis indicates that additional through lanes are needed in order to process peak hour volumes at the intersections. Since the study area intersections operate at acceptable LOS during the peak hours, no widening has been recommended. Although the roadways of Primrose Drive and Van Buren are anticipated to operate at LOS E roadway capacities, both roadway segments are built to the General Plan ultimate full-section width. As such, additional roadway widening is not recommended.

6 CUMULATIVE (2045) TRAFFIC CONDITIONS

This section discusses the methods used to develop Cumulative (2045) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Cumulative (2045) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Cumulative conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).
- Other parallel facilities, that although not evaluated for the purposes of this analysis, are anticipated to be in place for Cumulative traffic conditions and would affect the travel patterns within the study area.

6.2 CUMULATIVE (2045) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes developed from the RIVCOM (see Section 4.7 *Cumulative (2045) Volume Development* of this TA for a detailed discussion on the post-processing methodology). The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Cumulative (2045) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 CUMULATIVE (2045) WITH PROJECT TRAFFIC VOLUME FORECASTS

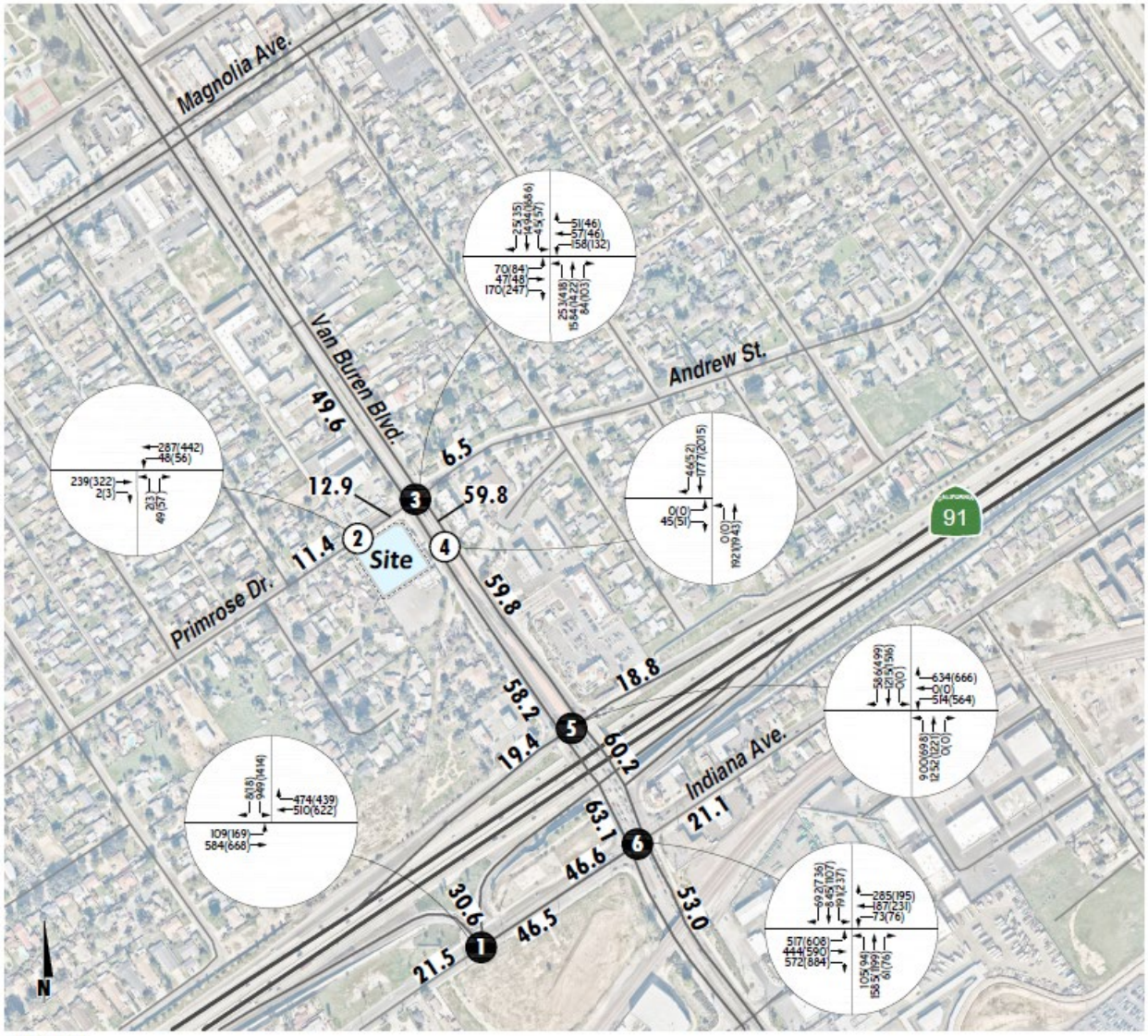
This scenario includes the refined post-processed volumes developed from the RIVCOM pus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Cumulative (2045) With Project traffic conditions are shown on Exhibit 6-2.

6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Cumulative (2045) traffic conditions with the roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under Cumulative (2045) Without Project and With Project traffic conditions, consistent with Existing (2024) traffic conditions. **The addition of Project traffic would not trigger the City of Riverside's significance criteria.** The intersection operations analysis worksheets for Cumulative (2045) Without Project and Cumulative (2045) With Project traffic conditions are included in Appendices 6.1 and 6.2, respectively.

EXHIBIT 6-1: CUMULATIVE (2045) WITHOUT PROJECT TRAFFIC VOLUMES

EXHIBIT 6-2: CUMULATIVE (2045) WITH PROJECT TRAFFIC VOLUMES



LEGEND:

- (0) = Existing Intersection Analysis Location
- (0) = Future Intersection Analysis Location
- 00 (00) = Peak Hour Volume AM (PM)
- 00 = Average Daily Traffic (ADT) in Thousands

TABLE 6-1: INTERSECTION ANALYSIS FOR CUMULATIVE (2045) CONDITIONS

#	Intersection	Traffic Control[2]	2045 Without Project Delay[1] (secs.) AM	2045 Without Project Delay[1] (secs.) PM	2045 Without Project Level of Service AM	2045 Without Project Level of Service PM	2045 With Project Delay[1] (secs.) AM	2045 With Project Delay[1] (secs.) PM	2045 With Project Level of Service AM	2045 With Project Level of Service PM	Project-Related Traffic Deficiency?[3]
1	SR-91 EB Ramps & Indiana Av.	TS	40.4	45.9	D	D	40.7	46.2	D	D	No
2	Driveway 1 & Primrose Dr.	--/CSS	Future Intersection				10.1	11.1	B	B	No
3	Van Buren Bl. & Primrose Dr./Andrew St.	TS	29.2	44.5	C	D	32.7	48.3	C	D	No
4	Van Buren Bl. & Driveway 2	--/CSS	Future Intersection				25.7	33.0	D	D	No
5	Van Buren Bl. & SR-91 WB Ramps	TS	31.4	29.9	C	C	31.4	29.9	C	C	No
6	Van Buren Bl. & Indiana Av.	TS	71.9	70.2	E	E	72.3	70.6	E	E	No

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[2] TS = Traffic Signal; CSS = Cross-street Stop

[3] Project-related traffic deficiency occurs when the addition of project-related trips causes either peak hour LOS to degrade from acceptable LOS (LOS A through LOS D) to unacceptable levels (LOS E or LOS F) or the peak hour delay is increased by the following values:

LOS A/B = 10 seconds or more
LOS C = 8 seconds or more
LOS D = 5 seconds or more
LOS E = 2 seconds or more
LOS F = 1 second or more

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Cumulative (2045) With Project traffic conditions based on daily planning level volumes. There are no unsignalized intersections under Cumulative (2045) Without Project traffic conditions. There are no unsignalized study area intersections that are anticipated to meet a traffic signal warrant under Cumulative (2045) With Project traffic conditions (see Appendix 6.3).

6.6 ROADWAY SEGMENT ANALYSIS

Table 6-2 provides a summary of the Cumulative (2045) conditions roadway segment capacity analysis. As shown in Table 6-2, all study area roadway segments are anticipated to operate at an unacceptable LOS based on the daily roadway capacity thresholds and minimum LOS criteria under Cumulative (2045) Without and With Project traffic conditions. Roadway segment widening has only been considered/recommended if the intersection operations analysis indicates that additional through lanes are needed in order to process peak hour volumes at the intersections. Since the study area intersections operate at acceptable LOS during the peak hours, no widening has been recommended. Although the roadways of Primrose Drive and Van Buren are anticipated to operate at LOS E roadway capacities, both roadway segments are built to the General Plan ultimate full-section width. As such, additional roadway widening is not recommended.

TABLE 6-2: ROADWAY SEGMENT ANALYSIS FOR CUMULATIVE (2045) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2045 Without Project 2024	2045 Without Project v/c	2045 Without Project LOS[2,3]	2045 With Project 2024	2045 With Project v/c	2045 With Project LOS[2,3]	Change in v/c
1	Primrose Dr.	Van Buren Bl. & Roosevelt St.	2D	3,100	11,315	3.65	E	12,947	4.18	E	0.53
2	Van Buren Bl.	Primrose Dr. & SR91 WB Ramps	6D	49,500	59,456	1.20	E	59,774	1.21	E	0.01

[1] These maximum roadway capacities are based on the City of Riverside's thresholds.

[2] LOS = Level of Service

[3] Roadway segment widening has only been considered/recommended if the intersection operations analysis indicates that additional through lanes are needed in order to process peak hour volumes at the intersections. Since the study area intersections operate at acceptable LOS during the peak hours, no widening has been recommended. Although the roadways of Primrose Drive and Van Buren are anticipated to operate at LOS E roadway capacities, both roadway segments are built to the General Plan ultimate full-section width. As such, additional roadway widening is not recommended.

7 REFERENCES

1. **City of Riverside.** *Traffic Impact Analysis Guidelines for Vehicles Traveled and Level of Service Assessment.* Riverside : s.n., July 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
3. **VRPA Technologies, Inc. for Riverside County Transportation Commission.** *Riverside County Long Range Transportation Study.* County of Riverside : VRPA Technologies, Inc., December 2019.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 7th Edition. s.l. : National Academy of Sciences, 2022.
5. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014, Updated March 30, 2021 (Revision 6).
6. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
7. **City of San Jacinto.** *City of San Jacinto 2040 General Plan.* San Jacinto : s.n., Adopted November 15, 2022.
8. **County of Riverside Transportation Department.** *Transportation Analysis Guidelines for Level of Service and Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.

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APPENDIX 1.1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT

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APPROVED
Vital Patel
06/13/2024

City of Riverside
City of Arts & Innovation

Public Works Department

Traffic Analysis Scoping Form

This scoping form shall be submitted to the City of Riverside Traffic Engineering Division

Project Identification:

Case Number:	PR-2024-001665 (RZ, CUP, DR, PCRN)
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Van Buren 7-Eleven
Project Address:	3570 &3596 VAN BUREN BLVD
Project Opening Year:	2026
Project Description:	7-Eleven Convenience Store with 12 vehicle fueling positions

	Consultant:	**Developer:**
Name:	Robert Vu	Richard Reaves
Address:	1133 Camelback St. #8329	6879 Airport Drive
	Newport Beach, CA 92658	Riverside, CA 92504
Telephone:		
Fax/Email:	rvu@urbanxroads.com	RReaves@adkan.com

Scoping & Study Fees:

Fees to be made payable to "City of Riverside" and delivered to Land Development. City Hall 3rd Floor, 3900 Main Street, Riverside, CA 92522

1) Scoping Agreement Fee (For all projects not screened from analysis): **$271.00**

2) TIA Review (For projects with both LOS & VMT analysis of any scale, or standalone LOS analyses with over 100 vehicle trips per hour): **$2671.02**

3) TIA Review (For standalone VMT analysis, or standalone LOS analyses with under 100 vehicle trips per hour): **$1288.20**

Trip Generation Information:

Trip Generation Data Source: ITE 11th Edition

Current General Plan Land Use:

MU-V – Mixed-Use – Village

Proposed General Plan Land Use:

C Commercial

Current Zoning:

MU-V – Mixed-Use – Village

Proposed Zoning:

C Commercial

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	0	0	0	23	23	46
PM Trips	0	0	0	28	28	56

Trip Internalization: ☐ Yes ☒ No (_____% Trip Discount)

Pass-By Allowance: ☒ Yes ☐ No (75-76% Trip Discount)

Potential Screening Checks

Is your project screened from specific analyses in accordance with City Guidelines?

Is the project screened from LOS assessment? ☐ Yes ☒ No

LOS screening justification (see Page 6 of the guidelines): not applicable

Is the project screened from VMT assessment? [X] Yes [ ] No

VMT screening justification (see Pages 23-25 of the guidelines):
VMT analysis not required per attached traffic memo dated 04/03/2024

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution):

North	South	East	West
40 %	40 %	10 %	10 %

- Attach list of Approved and Pending Projects that need to be considered (provided by the lead agency and adjacent agencies)
- Attach list of study intersections/roadway segments See Exhibit 3
- Attach legible site plan See Exhibit 1
- Note other specific items to be addressed:
  - Site access
  - On-site circulation
  - ~~Parking~~
  - Consistency with Plans supporting Bikes/Peds/Transit
  - Other _____
- Date of Traffic Counts Thursday May 23, 2024
- Attach proposed analysis scenarios (years plus proposed forecasting approach) See next page
- Attach proposed phasing approach (if the project is phased) Single Phase

VMT Scoping

For projects that are not screened, identify the following: Not applicable

- Travel Demand Forecasting Model _____
- Attach WRCOG Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)

Specific Issues to be addressed in the Study (in addition to the standard analysis described in the Guidelines) (To be filled out by the Public Works Traffic Engineering Division)

Roadway analysis for Van Buren Bl. between Primrose Dr. & SR91 WB Ramps and Primrose Dr. between Van Buren Bl. & Roosevelt St.

Queuing analysis for the intersection of Van Buren Bl. & Primrose Dr./Andrew St. and project driveways.

Evaluate the westbound left turn lane at Van Buren Bl. & Primrose Dr./Andrew St with an extended turn pocket of 145' (from 100').

Analysis Scenarios:

- Existing (2024)
- Opening Year Cumulative (2026) Without Project
- Opening Year Cumulative (2026) With Project
- Horizon Year (2045) Without Project
- Horizon Year (2045) With Project