

**Final Environmental Impact Report  
Alessandro Business Center**

State Clearinghouse #: 2007021005

*Prepared for:*

City of Riverside  
Planning Department  
3900 Main Street  
Riverside, CA 92522  
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949/333-6600

This Final EIR has been prepared in compliance with the California Environmental Quality Act and City of Riverside CEQA Resolution No. 21106, and reflects the independent judgment of the City of Riverside.



Ken Gutierrez, Planning Director

December 15, 2009

ICF Jones & Stokes. 2009. Final Environmental Impact Report Alessandro Business Center. June. (ICF J&S 00945.07.) Irvine, CA. Prepared for City of Riverside, CA.

# Contents

<b>Chapter 1</b>	<b>Introduction.....</b>	<b>1-1</b>
	Purpose .....	1-1
	Process.....	1-2
<b>Chapter 2</b>	<b>Comments Received and Responses to Comments.....</b>	<b>2-1</b>
	Introduction .....	2-1
	Comments Received .....	2-1
	Comments and Responses to Comments .....	2-3
	Master Responses to Comments .....	2-3
	Comment Letter A. John Guerin, Riverside County Airport Land Use Commission .....	2-7
	Comment Letter B. Gail Barton, RCHCA .....	2-8
	Comment Letter C. Anna Hoover, Pechanga Cultural Resources, Temecula Band of Luiseno Mission Indians .....	2-9
	Comment Letter D. Daniel Kopulsky, California Department of Transportation (Caltrans) .....	2-17
	Comment Letter E. Dave Singleton, Native American Heritage Commission .....	2-23
	Comment Letter F. Daniel Kopulsky, California Department of Transportation (Caltrans) .....	2-26
	Comment Letter G. Greg Holmes, California Department of Toxic Substances Control .....	2-27
	Comment Letter H. Jonathan Evans, Center for Biological Diversity/Drew Feldman, San Bernardino Audubon Society/George Hague, Sierra Club .....	2-28
	Comment Letter I. Jeff Brandt, California Department of Fish and Game .....	2-55
	Comment Letter J. Glen Robertson, Regional Water Quality Control Board .....	2-59
	Comment Letter K. Richard E. Eunice, P.E., Department of the Air Force .....	2-60
	Comment Letter L. Cindy Roth, Greater Riverside Chambers of Commerce.....	2-61
	Comment Letter M. Len Nunney, Friends of Riverside’s Hills .....	2-62
	Comment Letter M3. Len Nunney, Friends of Riverside’s Hills .....	2-79
	Comment Letter N. George Hague, Sierra Club, San Gorgonio Chapter .....	2-86

Meeting Comments O. City of Riverside Planning  
Commission (September 3, 2009).....2-90

**Chapter 3 Errata to the Draft EIR .....3-1**  
 Introduction .....3-1  
 Changes to the Draft EIR.....3-1  
     Executive Summary .....3-1  
     Section 3.4 Cultural Resources .....3-5  
     Section 3.7 Land Use and Planning .....3-11  
     Section 3.8 Noise.....3-12  
     Section 3.10 Transportation and Circulation.....3-13  
     Section 3.11 Hydrology and Water Quality .....3-15  
     Chapter 4 Cumulative .....3-15

**Chapter 4 Mitigation Monitoring and Reporting Program .....4-1**  
 Introduction .....4-1  
 Project Overview.....4-1  
 Monitoring and Reporting Procedures .....4-2  
 Mitigation Monitoring and Reporting Program  
 Implementation .....4-2

**Appendix A Multi-Jurisdictional Traffic Signal Synchronization  
Project Information**

**Appendix B Alessandro Boulevard Street Improvement Project  
Negative Declaration**

**Appendix C Alessandro Business Park Traffic Conditions Table**

**Appendix D Alessandro Boulevard NB/SB I-215 Ramp  
Improvements Project Plan**

**Appendix E Synchro Analysis**

**Appendix F Merge/Diverge Analysis**

**Appendix G Timeline of the Completion of the Acquisition  
Requirements under the SKR HCP Prepared by the  
Riverside County Habitat Conservation Agency**

# Tables

<b>Table</b>	<b>On Page</b>
ES-1 Summary of Environmental Impacts, Mitigation, and Residual Impacts.....	3-1
3.4-1 Summary of Project Impacts and Mitigation on Cultural Resources .....	3-5
3.7-1 Summary of Project Impacts and Mitigation on Land Use .....	3-11
3.10-1 Summary of Project Impacts and Mitigation on Transportation and Circulation .....	3-13

# Acronyms

AG	Attorney General
B/OP	Business/Office Park
BMP	Business and Manufacturing Park
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CCTV	closed-circuit television
CEQA	California Environmental Quality Act
City	City of Glendora
CMPs	corrugated metal pipes
CO	carbon monoxide
CO <sub>2</sub> e	carbon dioxide equivalent
CPC	City of Riverside Planning Commission
DBESP Preservation	Determination of Biologically Equivalent or Superior
DTSC	Department of Toxic Substances
final EIR	final Environmental Impact Report
GHG	greenhouse gas
HCP	Habitat Conservation Plan
HOV	high occupancy vehicle
HRA	health risk assessment
HVAC	heating, ventilation, and air conditioning
MAB	March Air Base lands
MEI	maximally exposed individual
MSHCP	Multiple Species Habitat Conservation Plan
NAHC	Native American Heritage Commission
NOA	Notice of Availability
NO <sub>x</sub>	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
O <sub>3</sub>	ozone
PF	Public Facilities
PM <sub>10</sub>	particulate matter
proposed project	Alessandro Business Center Project

RA	Residential Agricultural
RC	Residential Conservation
RCHCA	Riverside County Habitat Conservation Agency
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SKR	Stephen's Kangaroo Rat
SO <sub>x</sub>	sulfur oxides
STPs	Shovel Test Probes
TMC	Traffic Management Center
TUMF	Transportation Uniform Mitigation Fee
WMWD or Western	Western Municipal Water District
WQMP	Water Quality Management Plan
WSA	Water Supply Assessment



# **Chapter 1**

## **Introduction**



## **Purpose**

The City of Riverside (City), as the lead agency under the California Environmental Quality Act (CEQA), has prepared this final environmental impact report (final EIR) for the proposed Alessandro Business Center Project (proposed project). This final EIR contains all of the required contents as outlined in Section 15132 of the State CEQA Guidelines, including:

- the draft environmental impact report or a revision to the draft;
- comments and recommendations received on the draft EIR;
- a list of persons, organizations, and public agencies commenting on the draft EIR;
- the responses of the lead agency to significant environmental points raised in the review and consultation process; and
- any other information added by the lead agency.

This final EIR for the project consists of comments and responses to comments and a mitigation monitoring plan for the project. This final EIR is intended to be used along with the draft EIR, which is incorporated by reference and bound separately.

This final EIR assembles all the environmental data and analyses that have been prepared for the proposed project. It also includes public and agency comments on the draft EIR and responses by the City to those comments. The intent of the final EIR is to provide a forum to air and address comments pertaining to the analysis contained in the draft EIR and to provide an opportunity for clarification, corrections, or minor revisions to the draft EIR as needed.

The evaluation and response to comments is an important part of the CEQA process because it allows the following:

- the opportunity to review and comment on the methods of analysis contained in the draft EIR,
- the ability to detect any omissions that may have occurred during the preparation of the draft EIR,

- the ability to check for accuracy of the analysis contained within the draft EIR,
- the ability to share expertise, and
- the ability to discover public concerns.

## Process

A draft EIR was prepared for the project and circulated for a 45-day public review period from July 3, 2009 through August 19, 2009 through the Governor’s Office of Planning and Research, the State Clearinghouse, and the Riverside County Clerk.

The City used several methods to elicit comments on the draft EIR. The notice of availability (NOA) was mailed to various agencies and organizations and to individuals that had previously requested such notice, and directly to adjacent property owners. Additionally, the NOA was posted at the Riverside County Clerk’s office on July 3, 2009. The draft EIR was available for review at the City of Riverside Planning Division, located at 3900 Main Street, Riverside, CA 92522. During the Draft EIR review period, the City sent a letter to individuals and organizations soliciting additional comments on the Draft EIR.

Written and oral comments were received during and after the public review period. Pursuant to Section 15088 of the State CEQA Guidelines, the City, as the lead agency for the project, has reviewed all comments received on the draft EIR. Responses to these comments are contained within Chapter 2, “Comments Received and Responses to Comments,” of this final EIR.

**Chapter 2**  
**Comments Received and Responses to**  
**Comments**



## Chapter 2

# Comments Received and Responses to Comments

## Introduction

In accordance with Section 15088 of Title 14 of the California Code of Regulation (the “State CEQA Guidelines”), the City has evaluated the comments received on the Draft EIR for the Alessandro Business Park Project and has prepared written responses to these comments. This chapter contains copies of the comments received during the public review process and provides an evaluation and written responses for each of these comments.

## Comments Received

During the public review period for the project from July 3, 2009 to August 19, 2009, the City received 10 comment letters from agencies, organizations, and individuals. Oral comments were received from organizations and members of the public, as well as members of the City of Riverside Planning Commission (CPC), at the CPC meeting held on September 3, 2009.

Certain comment letters were received from commenter's after the close of the official 45-day public review and comment period established by CEQA. As noted above, that official comment period commenced on July 3, 2009 and closed on August 19, 2009. The City received 4 comment letters following the close of that 45-day public comment period.

Section 15088(a) of the State CEQA Guidelines states that, “The lead agency shall respond to comments received during the noticed comment period and any extensions and may respond to late comments.” (Emphases added.) Accordingly, nothing in CEQA “requires the lead agency to respond to comments not received within the comment periods....” (Pub. Res. Code, § 21092.5(c); see also *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1111.) Nonetheless, and in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to these late comment letters.

The commenting parties are listed below, along with a corresponding letter, which relates to the comment letters and the responses to comments provided in this Chapter.

<b>Comment Letter</b>	<b>Name/Agency</b>	<b>Correspondence Date</b>	<b>Date Received</b>
A	John Guerin, Riverside County Airport Land Use Commission	July 22, 2009	July 22, 2009
B	Gail Barton, RCHCA	July 29, 2009	August 4, 2009
C	Anna Hoover, Pechanga Cultural Resources, Temecula Band of Luiseno Mission Indians	August 17, 2009	August 17, 2009
D	Daniel Kopulsky, California Department of Transportation (Caltrans)	August 12, 2009	August 13, 2009
E	Dave Singleton, Native American Heritage Commission	August 13, 2009	August 17, 2009
F	Daniel Kopulsky, California Department of Transportation (Caltrans)	August 18, 2009	August 19, 2009
G	Greg Holmes, California Department of Toxic Substances Control	August 18, 2009	August 20, 2009
H	Jonathan Evans, Center for Biological Diversity/Drew Feldman, San Bernardino Audubon Society/George Hague, Sierra Club	August 19, 2009	August 19, 2009
I	Jeff Brandt, California Department of Fish and Game	August 19, 2009	August 19, 2009
J	Glen Robertson, Regional Water Quality Control Board	August 19, 2009	August 19, 2009
<b>Comment letters received after the close of the 45-day public comment period (July 3 – August 19, 2009)</b>			
K	Richard E. Eunice, P.E., Department of the Air Force	August 21, 2009	August 27, 2009
L	Cindy Roth, Greater Riverside Chambers of Commerce	August 31, 2009	September 2, 2009
M	Len Nunney, Friends of Riverside's Hills	September 2, 2009	September 2, 2009
	M1 Len Nunney, Friends of Riverside's Hills	March 21, 2007	September 2, 2009*

<b>Comment Letter</b>	<b>Name/Agency</b>	<b>Correspondence Date</b>	<b>Date Received</b>
M2	Len Nunney, Friends of Riverside's Hills	April 23, 2007	September 2, 2009*
M3	Len Nunney, Friends of Riverside's Hills	October 17, 2007	September 2, 2009*
N	George Hague, Sierra Club, San Gorgonio Chapter	September 3, 2009	September 3, 2009
<b>Draft EIR Hearing</b>			
O	City of Riverside Planning Commission	September 3, 2009	September 3, 2009

\* Originally received during previous comment period

## Comments and Responses to Comments

This section includes all written comments on the Draft EIR received by the City and the responses to those comments in accordance with Section 15088 of the State CEQA Guidelines. In accordance with the CEQA Guidelines, responses are prepared for those comments that address the sufficiency of the environmental document regarding the adequate disclosure of environmental impacts and methods to avoid or mitigate those impacts. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the Draft EIR. Additionally, it should be noted that comments by public agencies should be limited to those aspects of a project that are within its area of expertise or which are required to be carried out or approved by the agency, and such comments must be supported by substantial evidence. (CEQA Guidelines Section 15204)

## Master Responses to Comments

The City is providing master responses below as to certain issues that were raised or implicated by one or more comment letters. Those master responses are numbered and provided below, and they are referred to throughout the letter-specific responses.

### Master Response #1: Late Comment Letters

The City is providing master responses below as to certain issues that were raised or implicated by one or more comment letters. Those master responses are numbered and provided below, and they are referred to throughout the letter-specific responses.

Certain comment letters were received from commenters after the close of the official 45-day public review and comment period established by CEQA. As

noted above, that official comment period commenced on July 3, 2009 and closed on August 19, 2009. The City received 4 comment letters following the close of that 45-day public comment period.

Section 15088(a) of the State CEQA Guidelines states that, “The lead agency shall respond to comments received during the noticed comment period and any extensions and may respond to late comments.” (Emphases added.) Accordingly, nothing in CEQA “requires the lead agency to respond to comments not received within the comment periods....” (Pub. Res. Code, § 21092.5(c); see also *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1111.) Nonetheless, and in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to these late comment letters.

## **Master Response #2: Comments on Non-Environmental Issues**

Section 15088 of the State CEQA Guidelines states that, “The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response.” (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].)

## **Master Response #3: Vague or Conclusory Comments**

Some of the comments received on the Draft EIR state the commenters’ conclusions without elaborating on the reasoning behind, or the factual support for, those conclusions. Under CEQA, the lead agency has an obligation to respond to timely comments with “good faith, reasoned analysis.” (State CEQA Guidelines, § 15088(c).) These responses “shall describe the disposition of significant environmental issues raised ... [and] giv[e] reasons why specific comments and suggestions were not accepted.” (State CEQA Guidelines, § 15088(c) [emphasis added].) To the extent, however, that specific comments and suggestions are not made, specific responses cannot be provided and, indeed, are not required. (*Browning-Ferris Industries of California, Inc, v. City Council of the City of San Jose* (1986) 181 Cal.App.3d 852 [Where a general comment is made, a general response is sufficient].)

## **Master Response #4: Recirculation**

The responses to comments are presented below. These responses do not significantly alter the Project, do not change the Draft EIR’s significance

conclusions, nor result in a conclusion that significantly more severe environmental impacts will result from the Project. Instead, the information presented in the responses to comments merely “clarify[y] or amplify[y] or makes insignificant modifications” in the already adequate Draft EIR, as is permitted by State CEQA Guidelines section 15088.5(b).

Regarding recirculation of the Draft EIR, State CEQA Guidelines Section 15088.5 requires the lead agency to recirculate an EIR only when significant new information is added to the EIR after public notice is given of the Draft EIR’s availability. New information added to an EIR is not significant unless the EIR has changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse, environmental effect of the project or a feasible way to mitigate or avoid such an effect that the project’s proponent’s have declined to implement. (State CEQA Guidelines, § 15088.5.) In summary, significant new information consists of: 1) disclosure of a new significant impact; 2) disclosure of a substantial increase in the severity of an environmental impact; 3) disclosure of feasible project alternative or mitigation measure considerably different from the others previously analyzed that would clearly lessen environmental impacts of the project but the project proponent declines to adopt it; or 4) the Draft EIR being so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (*Ibid.*) In contrast, recirculation is not required where, for example, new information added to an EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR. (*Ibid.*)

The responses to comments which follow present information that expands upon the Project and the analysis of the Project’s impacts, but does not change the overall significance conclusions presented in the Draft EIR circulated for public review. Additionally, the responses present supplemental information and analysis in response to requests from the commenters. This analysis, however, merely supplements, expands upon, and provide further details on the analysis already provided in the Draft EIR. Accordingly, this information merely “clarifies” or “amplifies” the analysis provided in the Draft EIR, and recirculation is not required.

Additionally, some of the responses below revise or impose new mitigation measures. These mitigation measures were proposed by commenters and, pursuant to CEQA, the City imposed those measures either to further mitigate potentially significant impacts or to further reduce already insignificant impacts. These mitigation measures, however, do not change the significance conclusions originally presented in the Draft EIR, nor are they imposed due to the discovery of new significant impacts. Moreover, and because these mitigation measures address ways to implement the proposed Project but do not propose the construction of new facilities, none of these new mitigation measures will result in any potentially significant impacts of their own. Accordingly, further environmental review based on the imposition of these measures is not required because such analysis is only required where a “mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed.” (State CEQA Guidelines, § 15126.4(a)(1).) Even then, however, the impacts of the mitigation measures should be “discussed in less

detail than the significant impacts of the project as proposed.” (*Ibid.*; see also *Stevens v. City of Glendale* (1981) 125 Cal.App.3d 986.)

Accordingly, neither the clarifications to the Draft EIR provided through the responses to comments, nor the supplemental analysis provided in these responses, nor the clarification or addition of further mitigation measures results in any changes to the EIR “that deprive[d] the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the [P]roject or a feasible way to mitigate or avoid such an effect (including a feasible [P]roject alternative) that the Project’s proponents have declined to implement.” (State CEQA Guidelines, § 15088.5(a).) Thus, there is substantial evidence supporting the City’s determination that recirculation of the Draft EIR is not required under CEQA. (See *ibid.*)

**Brenes, Patricia**

**From:** Guerin, John [JGUERIN@rctlma.org]  
**Sent:** Wednesday, July 22, 2009 6:04 PM  
**To:** Brenes, Patricia  
**Subject:** Corac Alessandro Business Center (ALUC Case No. MA-06-114)  
**Attachments:** MA-06-114.LTRConsistent.doc

This project was reviewed by ALUC on June 8, 2006, and determined to be consistent, subject to conditions. (See attached letter.) If no changes have been made to project design or layout, building use, and the proposed zoning classification, the determination remains valid, and no further ALUC review is required.

A-1

**John Guerin**  
Principal Planner



**Riverside County Airport Land Use Commission**  
4080 Lemon Street, 9<sup>th</sup> Floor  
Riverside, Ca 92501  
(951) 955-0982  
(951) 955-0923 (fax)  
[JGUERIN@RCTLMA.ORG](mailto:JGUERIN@RCTLMA.ORG)

## **Comment Letter A. John Guerin, Riverside County Airport Land Use Commission**

### **Response to Comment A-1**

Comment noted. No changes have been made to the project design or layout, building use, and the proposed zoning classification. Therefore, the June 8, 2006 ALUC review and consistency determination remains valid and no further ALUC review is required.

The July 6, 2006 ALUC Development Review findings and conditions were provided as an attachment to the comment letter. All conditions set forth by ALUC were included in the DEIR as Mitigation Measure HAZ-1.



*A Joint Powers Authority*

July 29, 2009



**RCHCA  
Board of Directors**

Ms. Patricia Brenes, Senior Planner  
City of Riverside  
Planning Division  
3900 Main Street, 3<sup>rd</sup> Floor  
Riverside, CA 92522

**City of Corona**  
Eugene Montanez  
Chairperson

**City of Hemet**  
Robin Lowe

**Re: Draft EIR for the Alessandro Business Center (Planning Cases: P06-0416, 18, 19, 21, P07-0102, and P07-1028)**

**City of Lake Elsinore**  
Melissa Melendez

Dear Ms. Brenes:

The Riverside County Habitat Conservation Agency (RCHCA) is the agency that implements the Stephens' Kangaroo Rat (SKR) Habitat Conservation Plan (HCP). The RCHCA examined the Draft EIR for the Alessandro Business Center and has one comment.

B-1

**City of Menifee**  
Fred Twyman

The plan proposes to dedicate 36.23 acres to the City of Riverside Parks, Recreation, and Community Services Department for incorporation in the Sycamore Canyon Wilderness Park. The RCHCA requests that this dedication be included in the Sycamore Canyon Core Reserve. This will serve to facilitate management of all the lands in the reserve and benefit the SKR populations. Further, incorporating the land into the Reserve will make existing endowment funds available for managing the lands for SKR.

B-2

**City of Moreno Valley**  
William H. Batey II

**City of Murrieta**  
Gary Thomasian  
Vice-Chair

The dedication of the 36.23 acres to the City of Riverside Parks, Recreation, and Community Services Department must reflect the intention that these lands be a part of the Sycamore Canyon SKR Core Reserve. The dedication must require the submittal of a letter from the City of Riverside Parks, Recreation, and Community Services Department to the RCHCA requesting that the lands be added to the boundary of the Sycamore Canyon Core Reserve.

B-3

**City of Perris**  
Mark Yarbrough

**City of Riverside**  
Mike Gardner

Thank you for the opportunity to provide comment on the Draft EIR for the Alessandro Business Center. Fee free to contact the RCHCA if you have any questions.

**County of Riverside**  
Supervisor Bob Buster

**City of Temecula**  
Maryann Edwards

Sincerely,

**City of Wildomar**  
Bob Cashman

Gail Barton  
Principal Planner

**Executive Director**  
Carolyn Syms Luna

GB:kh

xc: Carolyn Syms Luna, RCHCA Executive Director

**General Counsel**  
Karin Watts-Bazan  
Deputy County Counsel

## Comment Letter B. Gail Barton, RCHCA

### Response to Comment B-1

Comment noted. The City of Riverside appreciates the RCHCA's acknowledgement of the receipt and review of the Draft EIR.

### Response to Comment B-2

The Project Description includes dedication of 36.23-acres of property to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park (DEIR page 2-4). The existing Sycamore Canyon Wilderness Park boundaries also encompass the Sycamore Canyon Core Reserve for the RCHCA Stephen's Kangaroo Rat (SKR) Habitat Conservation Plan (HCP). The City of Riverside agrees that the proposed dedication of 36.23-acres of property should be included in the SKR HCP Sycamore Canyon Core Reserve. The following text will be added to the Project Description (DEIR Page 2-4).

“The remaining property comprises approximately 6.15 acres of vacant land located at the southwest corner of the property, and 36.23 acres to be dedicated to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. The 36.23 acres will be added to the SKR HCP Sycamore Canyon Core Reserve, managed by the Riverside County Habitat Conservation Authority (RCHCA). A deed restriction would be recorded for the dedicated 36.23-acre area to preserve the property as open space in perpetuity.”

### Response to Comment B-3

Comment noted. The City of Riverside will coordinate the addition of the 36.23-acres of property into the SKR HCP boundaries with the RCHCA through submittal of a letter requesting that the lands be added to the boundary of the Sycamore Canyon Core Reserve. The Commenter confirms that the RCHCA will accept the dedication.



**PECHANGA CULTURAL RESOURCES**  
*Temecula Band of Luiseño Mission Indians*

Post Office, Box 2183 • Temecula, CA 92593  
Telephone (951) 308-9295 • Fax (951) 506-9491

August 17, 2009

Chairperson:  
Germaine Arenas

Vice Chairperson:  
Mary Bear Magee

Committee Members:  
Evie Gerber  
Darlene Miranda  
Bridgett Barcello Maxwell  
Aurelia Marruffo  
Richard B. Searce, III

Director:  
Gary DuBois

Coordinator:  
Paul Macarro

Cultural Analyst:  
Anna Hoover

Monitor Supervisor:  
Jim McPherson

**VIA E-MAIL and USPS**

Ms. Patricia Brenes  
Senior Planner  
City of Riverside, Planning Department  
3900 Main Street  
Riverside, CA 92522

**Re: Pechanga Tribe Comments on the Draft Environmental Impact Report (DEIR) for the Alessandro Business Center, Planning Cases P06-0416, P06-0418, P06-0419, P06-0421, P07-0102 and P07-1028**

Dear Ms. Brenes:

Thank you for inviting us to submit comments on the above named Project. This comment letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, "the Tribe"), a federally recognized Indian tribe and sovereign government. The Tribe is formally requesting, pursuant to Public Resources Code §21092.2, to be notified and involved in the entire CEQA environmental review process for the duration of the above referenced project (the "Project"). Please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archeological reports, and all documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project. The Tribe also requests that these comments be incorporated into the record of approval for this Project as well.

The Tribe is submitting these comments concerning the Project's potential impacts to cultural resources in conjunction with the environmental review of the Project. The Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts. Further, the Tribe reserves the right to participate in the regulatory process and provide comment on issues pertaining to the regulatory process and Project approval.

**THE CITY OF RIVERSIDE MUST INCLUDE INVOLVEMENT OF AND CONSULTATION WITH THE PECHANGA TRIBE IN ITS ENVIRONMENTAL REVIEW PROCESS**

It has been the intent of the Federal Government<sup>1</sup> and the State of California<sup>2</sup> that Indian

<sup>1</sup> See Executive Memorandum of April 29, 1994 on Government-to-Government Relations with Native American Tribal Governments and Executive Order of November 6, 2000 on Consultation and Coordination with Indian Tribal Governments.

C-1

tribes be consulted with regard to issues which impact cultural and spiritual resources, as well as other governmental concerns. The responsibility to consult with Indian tribes stems from the unique government-to-government relationship between the United States and Indian tribes. This arises when tribal interests are affected by the actions of governmental agencies and departments. In this case, it is undisputed that the project lies within the Pechanga Tribe's traditional territory. Therefore, in order to comply with CEQA and other applicable Federal and California law, it is imperative that the City of Riverside consult with the Tribe in order to guarantee an adequate basis of knowledge for an appropriate evaluation of the Project effects, as well as generating adequate mitigation measures.

### PECHANGA CULTURAL AFFILIATION TO PROJECT AREA

The Pechanga Tribe asserts that the Project area is part of Luiseño, and therefore the Tribe's, aboriginal territory as evidenced by the existence of Luiseño place names, *tóota yixélval* (rock art, pictographs, petroglyphs), and an extensive Luiseño artifact record in the vicinity of the Project. The Tribe further asserts that this culturally sensitive area is affiliated with the Pechanga Band of Luiseño Indians because of the Tribe's cultural ties to this area as well as our history with Projects within the City of Riverside and its sphere of influence.

C-2

The Pechanga Tribe's knowledge of our ancestral boundaries is based on reliable information passed down to us from our elders; published academic works in the areas of anthropology, history and ethno-history; and through recorded ethnographic and linguistic accounts. Many anthropologists and historians who have presented boundaries of the Luiseño traditional territory have included the City of Riverside area in their descriptions (Drucker 1937; Heiser and Whipple 1957; Kroeber 1925; Smith and Freers 1994), and such territory descriptions correspond with what was communicated to the Pechanga people by our elders. While historic accounts and anthropological and linguistic theories are important in determining traditional Luiseño territory, the Pechanga Tribe asserts that the most critical sources of information used to define our traditional territories are our songs, creation accounts, and oral traditions.

Luiseño history originates with the creation of all things at *'éxva Teméeku*, known today as the City of Temecula, and dispersing out to all corners of creation (what is today known as Luiseño territory). It was at Temecula that the Luiseño deity *Wuyóot* lived and taught the people, and here that he became sick, finally expiring at Lake Elsinore. Many of our songs relate the tale of the people taking the dying *Wuyóot* to the many hot springs at Elsinore, where he died (DuBois 1908). He was cremated at *'éxva Teméeku*. It is the Luiseño creation account that connects Elsinore to Temecula, and thus to the Temecula people who were evicted and moved to the Pechanga Reservation, and now known as the Pechanga Band of Luiseño Mission Indians

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<sup>2</sup> See California Public Resource Code §5097.9 et seq.; California Government Code §§65351,65352,65352.3 and 65352.4

(the Pechanga Tribe). From Elsinore, the people spread out, establishing villages and marking their territories. The first people also became the mountains, plants, animals and heavenly bodies.

Many traditions and stories are passed from generation to generation by songs. One of the Luiseño songs recounts the travels of the people to Elsinore after a great flood (DuBois 1908). From here, they again spread out to the north, south, east and west. Three songs, called *Montivol*, are songs of the places and landmarks that were destinations of the Luiseño ancestors, several of which are located near the Project area. They describe the exact route of the Temecula (Pechanga) people and the landmarks made by each to claim title to places in their migrations (DuBois 1908:110). Further, the story of *Táakwish* and *Tukupar* includes place names for events from the Idyllwild area to the Glen Ivy/Corona area (Kroeber 1906). In addition, Pechanga elders state that the Temecula/Pechanga people had usage/gathering rights to an area extending from Rawson Canyon on the east, over to Lake Mathews on the northwest, down Temescal Canyon to Temecula, eastward to Aguanga, and then along the crest of the Cahuilla range back to Rawson Canyon. The Native American Heritage Commission (NAHC) Most Likely Descendent (MLD) files substantiate this habitation and migration record from oral tradition. These examples illustrate a direct correlation between the oral tradition and the physical place; proving the importance of songs and stories as a valid source of information outside of the published anthropological data.

*Tóota yixélval* (rock art) is also an important element in the determination of Luiseño territorial boundaries. *Tóota yixélval* can consist of petroglyphs (incised) elements, or pictographs (painted) elements. The science of archaeology tells us that places can be described through these elements. Riverside and Northern San Diego Counties are home to red, black and white pigmented pictograph panels. Archaeologists have adopted the name for these pictograph-versions, as defined by Ken Hedges of the Museum of Man, as the San Luis Rey style. The San Luis Rey style incorporates elements which include chevrons, zig-zags, dot patterns, sunbursts, handprints, net/chain, anthropomorphic (human-like) and zoomorphic (animal-like) designs. Tribal historians and photographs inform us that some design elements are reminiscent of Luiseño ground paintings. A few of these design elements, particularly the flower motifs, the net/chain and zig-zags, were sometimes depicted in Luiseño basket designs and can be observed in remaining baskets and textiles today.

An additional type of *tóota yixélval*, identified by archaeologists also as rock art or petroglyphs, is known as cupules. Throughout Luiseño territory, there are certain types of large boulders, taking the shape of mushrooms or waves, which contain numerous small pecked and ground indentations, or cupules. Cupules, either located on vertical “wave-shaped” or horizontal “ridge-back” boulders, can be found within Sycamore Canyon—within several hundred feet north and south of the Project, near Oleander Road in Riverside and the *Qaxállku* village complex near Cajalco Rd. at Boulder Springs. Many more are suspected to be located within the Woodcrest area and the southern portion of the City of Riverside although additional research still needs to be conducted. Moreover, according to historian Constance DuBois:

When the people scattered from Ekvo Temeko, Temecula, they were very powerful. When they got to a place, they would sing a song to make water come there, and would call that place theirs; or they would scoop out a hollow in a rock with their hands to have that for their mark as a claim upon the land. The different parties of people had their own marks. For instance, Albañas's ancestors had theirs, and Lucario's people had theirs, and their own songs of Munival to tell how they traveled from Temecula, of the spots where they stopped and about the different places they claimed (1908:158).

Thus, our songs and stories, our indigenous place names, as well as academic works, demonstrate that the Luiseño people who occupied what we know today as the City of Riverside and its sphere of influence are ancestors of the present-day Luiseño/Pechanga people, and as such, Pechanga is culturally affiliated to this geographic area. Further, the Pechanga Tribe was designated as the affiliated Tribe by LSA Associates for the March Joint Powers Authority and the March Air Reserve Base, which is located immediately to the south and east of the City (Schroth 1999).

The Tribe would welcome to opportunity to meet with the City of Riverside to further explain and provide documentation concerning our specific cultural affiliation to lands within your jurisdiction.

### **PROJECT IMPACTS TO CULTURAL RESOURCES**

The Tribe is in receipt of the three (3) Archaeological Reports and the Draft Environmental Impact Report (DEIR). The Proposed Project is located in a highly sensitive region of Luiseño territory and the Tribe believes that the possibility for recovering subsurface resources during ground-disturbing activities is high. The Tribe has over thirty-five (35) years of experience in working with various types of construction projects throughout its territory. The combination of this knowledge and experience, along with the knowledge of the culturally-sensitive areas and oral tradition, is what the Tribe relies on to make fairly accurate predictions regarding the likelihood of subsurface resources in a particular location.

C-3

Pursuant to the DEIR, the Project encompasses a portion of the Sycamore Canyon Ecological Preserve/Wilderness Park. This region contains well over seventy-five (75) individually recorded archaeological sites, ten (10) of which are located within the Project boundaries (CA-RIV-2505, -2514, -2516, -2517, -2518, -2519, -2521, -2522, -2523 & -2524). The Project does not propose disturbance of the entire 80.07 acres. The footprint is limited to 36.91 acres, primarily located within the southeastern portion of the site with some disturbance to the north-central area and a future development area proposed for the southwestern corner. The remaining acreage will be transferred to the Preserve.

Of these ten (10) sites, four (4) were subjected to Phase II Testing (RIV-2505, -2518, -2523, -2524) and one (1) site (RIV-2519) was partially tested to determine if it extended into the Project footprint. These sites have been recorded as milling sites with limited surface artifacts and possible rock shelters; and of which the Tribe knows represents a small portion of a much larger habitation complex.

C-3

Sites RIV-2518 and -2524 are directly within the Project footprint and are slated for destruction. RIV-2523 is located adjacent to the northern proposed parking area and will also be impacted by what appears to be contour grading and/or blasting<sup>3</sup> and -2505 is in the future development area. Site RIV-2519 was determined to not extend within the proposed footprint and therefore, is not proposed for direct impacts; the 2008 study indicates that it will be incorporated into the Preserve boundaries. The results of the study therefore indicate that four (4) sites will be destroyed and the remaining six (6) sites are located within the open space area and are not to be disturbed. The high number of utilized resources in this area proves that Luiseño ancestors were extremely active within the region and that this area was a large habitat area, or village complex, for Indian people. Additionally, the Tribe believes that impacts and/or destruction of the cultural sites within this area are a great irreparable loss to tribal culture and scientific knowledge. The Tribe has several concerns regarding the archaeological studies and the overall analysis of the area and does not agree with the conclusions presented.

A major problem that the Tribe has been observing over the last few decades is the shift in archaeological practices which look at cultural resources on an individual scale, on a project-by-project basis. This piecemeal type of assessment belies the fact that many of these sites are much larger complexes, and thus results in evaluations of the sites as not being significant. Further, this kind of piecemeal approach seems to be contrary to the tenets of archaeology which supposedly strives for a holistic approach. Because of this approach, very little regional or settlement pattern research is conducted within the Riverside County area to connect the dots. This has resulted in the systematic destruction of villages and habitation areas.

The Tribe believes that individual recordation of sites is an attempt to piecemeal obvious complexes/large cultural areas into smaller portions in order to make a “not significant” determination. While we understand that recordation of sites in this manner may assist with the management of such sites and features, it undermines the ability to offer a complete and thorough analysis of the Project impacts to cultural resources. The Tribe believes that division of sites and features into separate sites necessarily takes away from the significance of the sites themselves because they are analyzed by only looking at the particulars of that site/feature while missing the relationship to the other sites/features in the vicinity as well as the topography, geography, plant resources and waterways. A particular feature may be part of a significant village or habitation area, but one would never know that if only the feature was analyzed by itself. In addition, the

<sup>3</sup> Based upon Figure 3 in the 2008 Phase II archaeological study: *Phase II Testing and Evaluation Report for Sites CA-RIV-2505 and CA-RIV-2523 and Presence-Absence Testing: Southern Boundary of CA-RIV-2519 Located Within the Alessandro Business Center Project Area, Riverside County, California*. Jones & Stokes, 2008

Tribe believes this regional analysis would necessarily suggest that there is a high potential for subsurface resources to be found during grading or ground-disturbing activities for this Project.

C-3

Almost 25 years ago, Glassow (1985)<sup>4</sup> addressed the issue of how site complexes and regional complexes (i.e. villages and habitation areas) were being divided into smaller sites for analysis. This procedure misses the full interpretation of the sites, resulting in a “write-off” or dismissal of sites based only on a partial analysis. Small sites are described as those sites which “typically have surface areas on the order of 1,000 m<sup>2</sup> or less, deposits of less than 50 cm depth, only two or three major classes of cultural remains and very few, most often fragmentary finished artifacts” (59). He states, “...(S)ites on the smaller end of the size range are being systematically neglected by many archaeologists in favor of sites on the larger end of the size range. Not only are small sites seldom investigated, but they are frequently assessed as having no appreciable significance to research and are therefore being destroyed...”(ibid: 58). He further provides an example of an archaeological document that determined a site to be not eligible for the National Register. The assessment stated that although the small site, which contained a lithic scatter and two bifacial tools, contained high integrity, the potential to answer research questions was limited and thus the site was not eligible. This limited data was based solely upon a survey and one posthole test unit. Archaeologists make the mistake of treating each site as an individual “temporary camp site or isolated feature” as opposed to looking at them as elements or components of larger village complexes.

With regard to this Project, the Tribe asserts that the same methodology and resulting dismissal of sites is occurring. The 2006 Phase II archaeological study<sup>5</sup> repeats over and over that “Milling sites are very common and do not in themselves qualify as an important cultural resource”. The Tribe would like to know at what point milling features will become important and uncommon; when so many of them have been written off and destroyed so that there are only a few dozen left? The destruction of milling resources is a common practice in western Riverside County, justified because they are so ‘ubiquitous.’ Scientific potential is measured by the amount of artifacts found around the milling feature, not the feature itself. The Tribe views these important cultural features as part of the larger village complex which can aide in the analysis of that complex as well as the fact that they are the remains of the ancestors.<sup>6</sup>

<sup>4</sup> Glassow, Michael A. The Significance of Small Sites to California Archaeology. *Journal of California and Great Basin Anthropology* Vol. 7, No.1. PP 58-66 (1985).

<sup>5</sup> *Phase II Testing and Evaluation Report: CA-RIV-2518 & CA-RIV-2524 and an Update of Eight Additional Sites, Corae Alessandro LLC Business Center Riverside, California.* Jones & Stokes, 2006; 22

<sup>6</sup> The Tribe would like to challenge archaeologists to begin researching why artifacts aren’t commonly found around milling features. It is time to look at why resources may not be present instead of anticipating or assuming that resources should be present. We should ask ourselves why would a person stand next to a food processing place and make a utility tool where the waste materials could get into the food or cut feet. Do we, today, stand next to a stove that contains open pots with cooking food and sharpen our knives so that metal debris could come into contact with the food?

Additionally, the Phase II archaeological studies explain the City of Riverside Municipal Code Title 20 stating that the following are the applicable criteria for archaeological sites<sup>7</sup>:

Evaluation criteria for Landmark designation by definition applies to archaeological sites (Municipal Code 20.10-2). However, the majority of the criteria apply to the built environment, with the following three criteria applicable to archaeological sites:

A. Exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural or natural history; or

D. Has a unique location or singular physical characteristics or is a view or vista representing an established and familiar visual feature of a neighborhood community or of the City; or

H. Is similar to other distinctive properties, sites, areas, or objects based on an historic, cultural or architectural motif; or...

According to the study, these criteria do not apply to the archaeological sites as individually assessed. The Tribe believes the study is incorrect in that, as discussed above and below, this area is a village complex and should be assessed as a whole, rather than individually. It is the Tribe's assertion that the above criteria, when applied to the complex as a whole, indicate that this area should be afforded City of Riverside landmark status.

Criterion A specifically calls out "special elements of the City's cultural...or natural history." As indicated above, these sites are a part of a village/habitation complex. These types of complexes are rare and endangered by continuing development. Within the last seven (7) years, the Tribe has seen at least five (5) Luiseño village complexes negatively impacted and/or destroyed in western Riverside County. The City contains at least three (3) significant village complexes, with other habitation areas spread through mainly the southeastern portion of the City-Sycamore and Mockingbird Canyon areas; portions of *Qaxállku* and what we know as *Húlvupa*, today known as Jurupa. The Tribe asserts that a traditional Luiseño village complex is a special element to not only the Tribe but to the City. The citizens of Riverside should be proud of such a special resource and should want to preserve it in perpetuity.

Criterion D refers to a unique location and a familiar visual feature of a neighborhood. A specific criterion for Luiseño villages is to be located on a water course. The Tribe believes that the village complex constitutes a familiar visual feature of the neighborhood. Large rock outcroppings and large granitic hillsides are an important part of not only western Riverside County but the City of Riverside as well. Due to increased growth and development, these beautiful natural outcrops are being destroyed at a rapid pace. The Tribe contends that

<sup>7</sup> Jones & Stokes 2008:20

destruction of this area will not only negatively impact the village complex but will also take away from the natural feel and sense of place that this neighborhood is characterized for, as contributed to by the rock outcroppings and waterways. The Tribe believes there are ways to accommodate the preservation of most of the individual features without hindering the Project development.

Criterion H, similarity to other distinctive areas, also applies to the Project. As stated throughout, this region contains a Luiseño village complex. Habitation sites are of utmost importance to the Tribe because they are the last physical remains of where our ancestors lived. They contain information and data that are reflective of every aspect of tribal culture. These places are where our ancestors lived their daily lives-raising families, carrying out customs and performing ceremonies. In order to preserve these complexes, it is important to not disturb portions of the complex, lest such disturbances are actually destroying the complex itself. It is important to preserve these habitations. This area has already been designated as an ecological preserve. Why would this not also be designated a City Landmark?

If indiscriminate destruction of individual "sites" (i.e., individual features) is allowed to continue with little to no effort put forth by the Lead Agency or Archaeologists to attempt to accommodate both the goal of preservation alongside the goal of development, the only remaining features of our villages will be small portions that have been chosen by archeologists to be "saved" based only on a scientific assessment and valuation of the site rather than the cultural significance attributed to it by the Tribe. This sort of methodology completely ignores the value of an individual feature/site's contribution to the entire habitation area and the cultural importance of these villages and habitation areas. The Tribe would like to encourage archaeologists to not just look at the number of bedrock milling sites and conclude that because there are so many they are insignificant. Rather, the Tribe asserts that archeologists must look at how these features relate to each other and to the larger environment or landscape.

C-5

Kroeber<sup>8</sup> and Heizer<sup>9</sup> used ethnographic data to describe the Luiseño Indians' settlement pattern as consisting of permanent villages of 75 to 200 people located in proximity to reliable sources of water and within range of a variety of floral and faunal food resources, which were exploited from temporary camp locations surrounding the main village. It has also been suggested that, frequently, a number of communities would combine to celebrate important festivals, harvest cycles, and other ceremonial events, occasionally inviting distant, linguistically unrelated groups. Expanding on Kroeber and Heizer's general description, True and Waugh<sup>10</sup> described Luiseño settlement patterns as;

<sup>8</sup> Alfred. L. Kroeber 1925. *Handbook of the Indians of California*. Bulletin 78, Bureau of American Ethnology, Government Printing Office, Washington D.C.

<sup>9</sup> Robert F. Heizer and M.A. Whipple 1951. *The California Indians*. University of California Press, Berkeley.

<sup>10</sup> True and Waugh 1982, p. 35

*The bipolar settlement pattern of the San Luis Rey was represented by relatively permanent and stable villages (both winter and summer), inhabited by several groups exploiting well-established territories and resources that were defended against trespass (we follow Flannery [1976:164] in using "village as a generic term for any small permanent community"), they saw this as a result of a reasonably long process of adaptation during which several strategic changes take place in settlement location patterns and in procedures for collecting resources. These strategic changes included a "trend toward the congregation of people along the major tributaries, with each tributary and its immediate environs occupied and exploited by a family-based kin group of some kind.*

Of great importance to the Luiseño people is how this would look on the landscape. For example, during his visit to Luiseño settlements in the La Jolla region in 1901, Merriam noted that "in many cases the Indians have great masses of tuna, 10-20 feet high, about or near their adobe houses" which "are not near together but scattered about, usually 1/8 or 1/4 of a mile apart and on a cleared place surrounded by chaparral."<sup>11</sup> Luiseño settlement patterns have also been described ethnographically by Sparkman<sup>12</sup> and Strong<sup>13</sup> as sedentary and territorial, with the extended families residing in villages with individual living areas separated anywhere from ¼ of a mile to ½ a mile apart. The proposal that a village foot print covers an expansive area, with each family having its own milling feature is supported by Bean when he argues that "homes were located some distance apart to provide privacy for families, if terrain permitted."<sup>14</sup> Bean and Smith also suggest that "a village might occupy three to five square miles."<sup>15</sup> While Oxendine's<sup>16</sup> dissertation is often cited when discussing late prehistoric village attributes and locations, little has been done to expand on her definition of a village foot print. The idea that villages could cover an expansive area is supported by True et al. Here, True et al<sup>17</sup> suggest that the larger outcrops containing multiple milling features are community milling areas and that each group or family within the community had its own specific milling boulder. In other words "each group then had its milling area and each family woman had her mortar or group of milling elements." To support this claim, True et al. gives the following example: The milling stones located at Silver Crest (Palomar Mountain State Park) belonging to the adjacent Pauma Village were identified by Max Peters as the property of a specific family. Each family had its own

<sup>11</sup> Merriam, C. Hart. *Studies of California Indians*. The Staff of the Department of Anthropology of the University of California, eds. Berkeley: University of California Press. 1955

<sup>12</sup> Sparkman, Philip Stedman, *The Culture of the Luiseño Indians*. University of California Publications in American Archaeology and Ethnology 1908, 8(4).

<sup>13</sup> Strong, William D. *Aboriginal Society in Southern California*. University of California Publications in American Archaeology and Ethnology 26, 1929

<sup>14</sup> Bean, Lowell J. *Mukat's People: The Cahuilla Indians of Southern California*. University of California Press, Berkeley, 1972, p. 71

<sup>15</sup> Bean, Lowell J. and Charles R. Smith. Serrano: In *Handbook of North American Indians, Volume, 8, California*, edited by Robert Heizer, Smithsonian Institution, Washington D.C., p. 43.

<sup>16</sup> Oxendine, Joan. *The Luiseño Village During the Late Prehistoric Era*. Ph.D. Dissertation, University of California, Riverside, 1983

<sup>17</sup> True et al 1974 p. 43

“place” and each mortar hole belonged to a particular “lady.” “If the pattern at Molpa in protohistoric times followed that of the adjacent Pauma Village, it is likely that these “holes” were passed down from mother to daughter and were used until they became too deep to be functional.”<sup>18</sup> Thus there is support for the Tribe’s assertion that each milling feature signifies an integral portion of the much larger village present at the site.

Glassow argues, “(A) small site and its contents gain importance as a document of a set of activities that occurred at a specific place within a particular setting. While the same set of activities might have occurred at a number of other places, it is often important to know the number of such places and variations in their settings.”<sup>19</sup> Even smaller projects like the currently proposed Project is the appropriate time for Settlement Pattern research and comparisons of artifact collections to occur and to start piecing the bigger picture together. Trade and travel patterns can be assessed; site formation, ceremonial comparisons, and site type comparisons can continue to be made. Habitation/village sites are often identified, but the necessary scientific and archival research needed to produce a thorough report is not taken. The practice of recording isolated features and artifacts which results in a “negative finding” is slowly destroying larger cultural sites that could have been identified as a significant complex. This lack of context results in destruction of the individual sites, and not only of our cultural heritage, but that of the greater community and the overall history of California.

In addition, by piecemealing projects, archeologists are not necessarily saving the correct portions of the complexes and villages, but only the portions they deem to have scientific value. By archaeologists using this methodology, we as a society are likely missing the most essential pieces of the puzzle and, most importantly, ignoring the cultural value. True and Waugh<sup>20</sup> pointed out that the Luiseño Mission Indians were resourceful with almost an innate ability to adapt to changing circumstances. They argue that either pre-contact or post-contact San Luis Rey Luiseño people had demonstrated a high degree of adaptable behavior as they consolidated to form more complex systems, placing their villages in locations that are situated near the most reliable regional water supplies. True and Waugh proposed that this could only occur within a social matrix capable of sustaining the mosaic of productive, ritual, and social relationships inherent to “village” organizations. In other words, the Luiseño people had developed a very complex sense of community and permanent Settlement Pattern: it was embedded in their Social History.

### ***The Project lies within Luiseño Territory***

Additionally, the Tribe contends that the Project area lies within Luiseño territory. The Luiseño Creation story maintains that the Luiseño people were created and thus have always

C-6

<sup>18</sup> Ibid 1974 p. 43

<sup>19</sup> Glassow 1985: 60

<sup>20</sup> True, D. L. and George Waugh. Proposed Settlement Shifts during San Luis Rey Times: Northern San Diego County, California. *Journal of California and Great Basin Anthropology* 1982, 4(2):34-54.

lived in this area. Archaeologists often utilize various theories to try to explain the ethnographic history of an area. For instance, the Tribe has found that it is common for archaeologists to use San Luis Rey I and II as cultural adaptations which are associated with the San Luis Rey Mission Indians and the Numic spread and/or the “Shoshonean intrusion”. The Tribe would like to point out that Shoshonean is a language within the Numic family of languages and is directly associated with the Great Basin area of California and Nevada. The Luiseño language belongs to the Takic family of languages and is generally associated with the southwest and Northern Mexico. While both the Numic and Takic families of language belong to the greater grouping of Uto-Aztecan languages they are separate and distinct families, as are the languages in each family. Misinterpretation of these associations often leads to misrepresentation of Luiseño Territory and life ways.

The Tribe has serious concerns regarding the determination by the Project Archaeologists that the Project area is Cahuilla traditional territory based upon one map, and asserts that the Project area is solidly within Luiseño territory based upon oral traditions and ethnographic accounts. Within the archaeological study, the “Ethnographic Background” portion states that the Project area is within the traditional cultural territory of the Cahuilla. One of Bean’s original maps of southern California tribal territory, published in 1972<sup>21</sup>, is prefaced with a statement indicating it was adapted from work conducted by A.L. Kroeber.<sup>22</sup> On this map, the Project area is definitively within Luiseño territory. The 1972 Bean and Saubel work also confirms the Project area within Luiseño territory<sup>23</sup>. In 1978, Bean produced a revised map which shows Cahuilla territory extending north and west to Riverside. While Bean’s<sup>24</sup> 1978 Cahuilla territory map is greatly altered from the earlier studies and extends the Cahuilla tribal boundary into what was previously associated with the Luiseño based upon the identification of Cahuilla place names, the entire area west of the San Jacinto Mountains on Bean’s map is devoid of Cahuilla place names. The lack of place names demonstrates a lack of support for Bean’s revision.<sup>25</sup> Further, nothing within or associated with Bean’s revised map refutes any information derived from Kroeber’s earlier work which put this area within Luiseño territory. All the Cahuilla locations which exhibit names on the map are in the Cabazon Valley, east of the Santa Rosa Mountains and east of Palomar Mountain. As such, reliance on Bean’s 1978 map is not sufficient to adequately determine that this is Cahuilla territory over Luiseño.

Ethnographic information suggests the Cahuilla moved into the areas adjacent to the project area after European contact. Kroeber’s 1907 article “Shoshonean Dialects of California”

<sup>21</sup> Bean, Lowell J. *Mukat’s People: The Cahuilla Indians of Southern California*. University of California Press, Berkeley, 1972, frontpiece

<sup>22</sup> Alfred. L. Kroeber 1925. *Handbook of the Indians of California*. Bulletin 78, Bureau of American Ethnology, Government Printing Office, Washington D.C.

<sup>23</sup> Bean, Lowell J., and Katherine S. Saubel. *Temalpakh (from the Earth): Cahuilla Indian Knowledge and Usage of Plants*. Malki Museum Press, Banning, California, 1972

<sup>24</sup> Lowell J. Bean 1978. Cahuilla. In *Handbook of North American Indians, Volume 8, California*, edited by Robert Heizer, pp. 575-587, Smithsonian Institution, Washington D.C.

<sup>25</sup> Bean 1978, p. 576

includes information on territory boundaries for each of the southern California Uto-Aztecan languages. With information provided by consultants, BIA agents, and historic accounts, he determined the Cahuilla moved into the San Bernardino area during the 1840s-1850s.

“San Bernardino valley has been attributed both to the Cahuilla and the Serrano. The Indians now living in the valley are mainly Serranos, and the statements of Indians in other parts of Southern California also give this fruitful region to the Serrano as part of their original habitat. ...Dr. John R. Swanton of the Bureau of American Ethnology has kindly furnished the information, supplied him by a Serrano school girl named Morengo, on the authority of her uncle, that her people formerly occupied San Bernardino valley and San Gorgonio pass to a point eastward just beyond Banning, but not the San Jacinto mountains. ...Statements made by the Yuman Mohave strengthen the probability that San Bernardino belonged to the Serrano. San Bernardino and Colton, they say, belonged to the Hanyuveche, the Serrano. The Hakwiche or Cahuilla were not there. The San Bernardino Mountains as far east as north or northeast of Indio belonged to the Serrano and not to the Cahuilla. The San Jacinto Mountains were Cahuilla.”<sup>26</sup>

Kroeber also proposes the Cahuilla were “brought by the Franciscans to the San Bernardino mission station attached to mission San Gabriel, and this fact may be responsible for the statements assigning this region to the Cahuilla.”<sup>27</sup> Strong concurs with Kroeber’s statement and verified the information with one of his Mountain Cahuilla consultants, Alec Arguello, who stated he had lived in the San Timoteo pass.

“five Mountain Cahuilla clans under the leadership of Juan Antonio, a well known captain, were brought to the district in about the year 1846. They settled first at the village of pulatana near Jurupa (Riverside), and later moved to sahatapa in the San Timoteo canyon near El Casco. They remained there until some time in the decade between 1850 and 1860 when the group was nearly exterminated by a smallpox epidemic.”<sup>28</sup>

Barrows, writing in the mid-1890’s, recorded the following information about the Cahuilla in the San Bernardino vicinity:

“[Cahuilla] villages in the San Bernadino and San Jose valleys were broken up thirty years or so ago, and, although they still come to the vicinity of Redlands and Riverside in search of work, their camps in these places are no longer permanent homes. They were driven from the San Timoteo canyon in the forties by the ravages of small-pox, and the

<sup>26</sup> Kroeber 1907, p. 132-133.

<sup>27</sup> Kroeber 1907, p. 133.

<sup>28</sup> Strong 1929, p. 7.

first reservation to be met now, as one rides eastward through the pass where they once held sway, is below Banning, at Potrero...<sup>29</sup>

Strong agreed with this statement except for the dates, they appear to be a decade off in accordance with other historical evidence. He concludes the “occurrence of Cahuilla in the San Bernardino region as an historic intrusion, and eliminate them from the problem of original ownership in the territory under discussion.”<sup>30</sup> On Strong’s Luiseño territory map, he wrote the following comment in the area just above the northern boundary, “probably Gabrielino, though occupied by Mountain Cahuilla in Mexican period.”<sup>31</sup> In Bean’s study on the Wanakik (Pass Cahuilla), he found that the earliest definitive date of a Cahuilla presence in San Bernardino is 1820.<sup>32</sup> Two of the primary ethnographers who studied Cahuilla believe the movement of the Cahuilla into San Bernardino occurred in the mid-1800s. Therefore, it is a logical conclusion that if the Cahuilla had not moved into the San Bernardino area until historic times, they would not have been in the Project area before that because the San Bernardino area is much farther east and the theory that the Project area was Cahuilla territory prior to the Luiseño presence fails.

Finally, as stated above, Pechanga was determined to be the affiliated Tribe for the March Air Force Base (MARB) area. Extensive research was conducted by LSA and representatives from MARB. After consultation with seven (7) local Native American tribes, LSA made the determination that of all the arguments presented for affiliation within the MARB area, the Luiseño evidence, based upon rock art styles, ethnographic information and oral tradition, “...appears to be the only undisputable evidence for occupation/use of this area by a tribal group.” Undeniably, ten years later, the Pechanga Tribe still can provide ample “undisputable evidence” that the project area was inhabited by the Luiseño people prior to European influence.

### **REQUESTED TRIBAL INVOLVEMENT AND MITIGATION**

The proposed Project is on land that is within the traditional territory of the Pechanga Band of Luiseño Indians. The Pechanga Band is not opposed to this Project. The Tribe’s primary concerns stem from the Project’s proposed impacts on Native American cultural resources. The Tribe is concerned about both the protection of unique and irreplaceable cultural resources, such as Luiseño village sites, sacred sites and archaeological items which would be displaced by ground disturbing work on the Project, and on the proper and lawful treatment of cultural items, Native American human remains and sacred items likely to be discovered in the course of the work.

C-7

The Tribe requests that it continue to be allowed to be involved and to participate with the City of Riverside in developing all monitoring and mitigation plans and measures for the

<sup>29</sup> Barrows, David P. *The Ethno-botany of the Coahuilla Indians of Southern California*. University of Chicago Press, Chicago, 1900, p. 32-33.

<sup>30</sup> Strong 1929, p. 7.

<sup>31</sup> Strong 1929, p. 275.

<sup>32</sup> Bean, Lowell. The Wanakik Cahuilla. *The Masterkey* 34(3):111-119.

duration of the Project. In addition, given the sensitivity of the Project area, it is the position of the Pechanga Tribe that Pechanga tribal monitors be required to be present during all ground-disturbing activities conducted in connection with the Project, including any additional archeological excavations performed.

The CEQA Guidelines state that lead agencies should make provisions for inadvertent discoveries of cultural resources (CEQA Guidelines §15064.5). As such, it is the position of the Pechanga Tribe that an agreement specifying appropriate treatment of inadvertent discoveries of cultural resources be executed between the Project Application/Developer and the Pechanga Tribe.

The Tribe believes that adequate cultural resources assessments and management must always include a component which addresses inadvertent discoveries. Every major State and Federal law dealing with cultural resources includes provisions addressing inadvertent discoveries (See e.g.: CEQA (Cal. Pub. Resources Code §21083.2(i); 14 CCR §1506a.5(f)); Section 106 (36 CFR §800.13); NAGPRA (43 CFR §10.4). Moreover, most state and federal agencies have guidelines or provisions for addressing inadvertent discoveries (See e.g.: FHWA, Section 4(f) Regulations - 771.135(g); CALTRANS, Standard Environmental Reference - 5-10.2 and 5-10.3). Because of the extensive presence of the Tribe's ancestors within the Project area, it is not unreasonable to expect to find vestiges of that presence. Such cultural resources and artifacts are significant to the Tribe as they are reminders of their ancestors. Moreover, the Tribe is expected to protect and assure that all cultural sites of its ancestors are appropriately treated in a respectful manner. Therefore, as noted previously, it is crucial to adequately address the potential for inadvertent discoveries.

Further, the Pechanga Tribe believes that if human remains are discovered, State law would apply and the mitigation measures for the permit must account for this. According to the California Public Resources Code, § 5097.98, if Native American human remains are discovered, the Native American Heritage Commission must name a "most likely descendant," who shall be consulted as to the appropriate disposition of the remains. Given the Project's location in Pechanga territory, the Pechanga Tribe intends to assert its right pursuant to California law with regard to any remains or items discovered in the course of this Project.

### **PROJECT MITIGATION MEASURES**

Because of the significance of the area and the large village/habitation complex, it is the Tribe's belief that all features should be protected and preserved. However, the Tribe would request that the City and Project Applicant work to preserve at least two (2) of the sites which are currently expected to be impacted: CA-RIV-2505 and CA-RIV-2523. The Tribe is requesting that the Project be redesigned so that both sites can be protected and preserved during Project construction through measures such as protective fencing and placement in landscaping or open space areas. Further, the Tribe would request that the City and Project Applicant agree to consult with the Tribe regarding the appropriate treatment for those sites which will not be avoided.

C-7

The Tribe would like to thank the City of Riverside for the inclusion of Mitigation Measures that address inadvertent discoveries as well as the incorporation of a Native American Monitor during all earthmoving activities. The Tribe is requesting the following revisions be made to the proposed mitigation measures:

- CR-1:** A qualified professional archaeologist and a culturally affiliated\* Native American monitor shall monitor the initial phase of ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground disturbing activities, the archeologist and the Native American representative shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities. Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist in consultation with the Native American representative can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.
- CR-2:** Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural materials may be found in the area. At the conclusion of all grading activities, all protective fencing shall be removed and discarded.
- CR-3:** In the event of the discovery of human remains, the County coroner shall be immediately notified. If human remains of Native American origin are discovered during ground-disturbing activities, the applicant shall comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the NAHC (PRC Section 5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner shall contact the NAHC to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely

living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts.

\*It is anticipated that the Pechanga Tribe will be the "culturally affiliated" Tribe due to its prior coordination within the City and due to its demonstrated cultural affiliation with the Project area.

In addition to the above changes, the Tribe requests the following MM to be added:

C-8

- CR-4** At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.
- CR-5** The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.
- CR-6** All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.
- CR-7** CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.
- CR-8** CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.
- CR-9** The Project Applicant and Project Archaeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archaeological sites which will not be avoided by the Project.

Pechanga Comment Letter to the City of Riverside  
Re: Pechanga Tribe Comments on the MND for the Alessandro Business Center Project  
August 17, 2009  
Page 17

The Pechanga Tribe looks forward to working together with the City of Riverside in protecting the invaluable Pechanga cultural resources found in the Project area. Please contact me at 951-308-9295 X8104 once you have had a chance to review these comments so that we might address the issues concerning the mitigation language. Thank you.

Sincerely,



Anna Hoover  
Cultural Analyst

Cc Pechanga Office of the General Counsel  
Brenda Tomaras, Tomaras & Ogas, LLP

## **Comment Letter C. Anna Hoover, Pechanga Cultural Resources, Temecula Band of Luiseno Mission Indians**

### **Response to Comment C-1**

The City of Riverside acknowledges that the Temecula Band of Luiseno Mission Indians (the Pechanga Band) has concerns regarding the impacts the Project may have on existing and/or buried cultural resources and, like other tribal entities in the region, has a right to voice its concerns as part of the CEQA process.

The City previously engaged the Pechanga Band in consultation through a letter dated May 5, 2006, during the Senate Bill 18 Consultation (DEIR, Page 3.4-17). Additionally, the Pechanga Band was contacted by the project consultant, ICF Jones & Stokes, through a letter dated January 31, 2006, during preparation of the cultural resources report (DEIR, Page 3.4-16). The City will continue to provide project notices to the Pechanga Band in accordance with the requirements of Senate Bill 18. Per the Tribe's request, the City will also add the Tribe to the distribution and mailing lists for all future CEQA notices on this Project. In addition, City staff has been in contact with Pechanga Tribe representatives and have had discussions to address their concerns. As a result of these discussions, additional mitigation has been provided that is not necessary to reduce any potentially significant impacts, but rather to further reduce already insignificant impacts. Pursuant to the requirements of CEQA and as confirmed by the Tribe's comments, the Tribe's comment letter and these responses are part of the Final EIR and administrative record for the proposed project.

### **Response to Comment C-2**

The City of Riverside recognizes that the Pechanga Band claims a direct and sole relationship to prehistoric peoples in and near the project area and that the project area may be located within the aboriginal territory of the Pechanga band. The City also recognizes that significant amounts of information exists showing that the ancestors of the Luiseno utilized the regional northeast of Lake Elsinore, and many miles north of the sovereign lands. The City acknowledges that Luiseno place names are associated with topographic points in the area.

The Schroth document discussed in the Pechanga Band's comment letter recommends that any decisions on actual and prehistoric tribal uses of the area be left up to the Native American Heritage Commission ("NAHC"). The City of Riverside concurs with recommendation and, while recognizing the Pechanga Band's connections to the area, leaves any decisions regarding most likely descendant and other potential tribal ties to the NAHC. The City also thanks the Pechanga Band for the detailed and informative history provided in its comment letter.

Regarding the Project site specifically, no clear deposits of human remains or grave goods have been discovered in the project area, but because the development requires substantial amounts of earthmoving, project related exposure of human remains and/or grave goods remains a remote possibility. If human remains or grave goods of Native American origin are uncovered by project related construction, Mitigation Measure CR-3 (DEIR, Page 3.4-28) requires that NAHC determine the MLD once contacted by the County of Riverside Coroner in compliance with California Public Resources Code 5097.98 and California HSC 7050.5. Once the MLD has been designated, the MLD has the right to recommend mitigative procedures associated with treatment of the exposed human remains or grave goods to the Landowner.

### Response to Comment C-3

The DEIR is supported by a Phase I and Phase II cultural resources report written by ICF Jones & Stokes senior archeologists. The reports followed the technical process mandated by the City of Riverside and were subsequently reviewed by City staff.

Two of the archeological sites, CA-RIV-2518 and CA-RIV-2524, are located within the development footprint (DEIR, Page 3.4-20). The sites consist of one to four milling slicks on a rock face. Site CA-RIV-2505 is located in the 6.15-acre project parcel that would remain vacant at present, but is subject to future development. All of the remaining seven sites are located outside of the development footprint and within the 36.23-acres of property proposed for dedication to the City of Riverside Parks, Recreation, and Community Services Department. These sites would be protected and remain undisturbed under the Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan.

Phase II archeological testing and evaluation, was conducted at Sites CA-RIV-2518, CA-RIV-2524, CA-RIV-2505, CA-RIV-2518, and CA-RIV-2524. No surface or subsurface artifacts were uncovered during the testing. It is possible that cultural resources will be unearthed during construction-related earthmoving. The cultural resources reports recommended that monitoring take place during earthmoving and this recommendation was included in the DEIR as Mitigation Measure CR-1 (DEIR, Page 3.4-27). Additional mitigation measures recommended by the Tribe to reduce impacts to cultural resources are described and imposed as described below. (See Responses to Comments C-7 and C-8.)

With regard to the project's cumulative impacts on cultural resources, CEQA provides that an EIR must consider the potential that the combined impacts of two or more individual effects will result in a cumulatively significant impact. (State CEQA Guidelines, § 15355.) The Draft EIR provides a cumulative impacts analysis in Chapter 4, and provides a list and a map depicting other nearby projects in the area that may add to or compound the proposed Project's individual effects. (Draft EIR pp. 4-2 through 4-4 and Figure 4.1.) Regarding cumulative impacts to cultural resources specifically, the Draft EIR

acknowledges that: “Cumulative projects in the project area and other development in western Riverside could result in the progressive loss of as-yet unrecorded archaeological resources. This loss, without proper mitigation, would be an adverse cumulative impact.” (Draft EIR p. 4-7.) Therefore, the EIR provides mitigation “to minimize and avoid potentially significant cumulative impacts on” cultural resources. (See *ibid.*) Additional mitigation measures recommended by the Tribe to reduce impacts to cultural resources are described and imposed as described below. (See Responses to Comments C-7 and C-8.) Accordingly, the analysis of cumulative impacts to cultural resources is adequate, there has been no piecemealing, and “cumulative impacts on cultural resources as a result of future development throughout the city would not be cumulative considerable.” (Draft EIR p. 4-8.)

## Response to Comment C-4

The cultural resources surveys conducted by ICF Jones & Stokes for the project included Phase II testing of Sites CA-RIV-2518, CA-RIV-2524, CA-RIV-2505, CA-RIV-2518, CA-RIV-2523, and CA-RIV-2524, which are located within or adjacent to the development footprint (DEIR, Page 3.4-20). The testing included shovel test probes (STPs) which were excavated at each of these sites to determine presence or absence of subsurface deposits and to define site boundaries. All excavated soil from the STPs was passed through a 1/4” screen. No culturally significant surface or subsurface artifacts were identified during testing (DEIR, Page 3.4-21 and 22). Evidence of long-term human habitation of the site was not found during the cultural resources records search, assessment, and Phase II testing (DEIR, Page 3.4-28)

The City undertook an analysis of whether each of the cultural sites located in the proposed Project met the requirements of City of Riverside Municipal Code Title 20 (the City’s cultural resources ordinance). (Draft EIR pp. 3.4-23 through 3.4-25.) Based on the Phase I and Phase II cultural resources reports and other information in the record, the City concluded that none of the cultural resources identified met the City’s requirements for designation as a Landmark. (*Ibid.*; Draft EIR Appendix D [cultural resources reports].) Please refer also to Response C-3.

## Response to Comment C-5

Refer to Responses C-2, C-7, and C-8. The City thoroughly analyzed both Project-specific and cumulative impacts, has not piecemealed, and has provided mitigation to assure that all impacts are reduced to below a level of significance. (Draft EIR p. ES-13, ES-14, and 4-8.) The mitigation measures proposed by the Tribe in its comment letter were imposed where feasible. (See Responses C-7 and C-8.)

## Response to Comment C-6

As discussed above (see Responses C-1 and C-2), the City defers to the NAHC regarding decisions on actual and prehistoric tribal uses of the area and most likely descendant status. However, the City of Riverside recognizes that the Pechanga Band claims a direct and sole relationship to prehistoric peoples in and near the project area and that the project area may be located within the aboriginal territory of the Pechanga band.

## Response to Comment C-7

The City agrees with the Tribe's comment that, "if human remains are discovered, State law would apply" including the provisions of Public Resources Code section 5097 – cited in the Tribe's comment letter – and other laws. The City would be bound to immediately notify the County Coroner, and the NAHC would be contacted and name a most likely descendant in the event that those human remains are Native American. The City will comply with all laws governing the discovery of human remains and, in the unlikely event that any remains are discovered, would immediately stop excavation in the vicinity of the area of discovery. (Draft EIR p. 3.4-28 [confirming that Health and Safety Code section 7050.5 requires that excavation be stopped in the vicinity of any area in which human remains are discovered].)

Regarding avoidance of the cultural resources that would be impacted by the Project, only two sites are located within the development footprint. Those sites are CA-RIV-2518 and CA-RIV-2524, both of which include milling slicks. (Draft EIR pp. 3.4-19 and 3.4-20.) All of the remaining sites are outside the development footprint and will be protected as they lie on lands that will be included in the Sycamore Canyon Wilderness Park. (See Response C-3 and Draft EIR p. 3.4-20.) The two sites that will be affected are located near the center of the remaining developable land. The only way to preserve those sites and still allow for development of the site is to reconfigure the map in a manner that would then affect other nearby cultural sites and also introduce impacts to the drainages and water resources that cross the site. Accordingly, and to allow development consistent with the City's land use designations, it is not feasible to avoid the two sites that are within the development footprint. Finally, under CEQA, impacts are already mitigated to below a level of significance and thus redesigning the site to avoid those two cultural sites is not required. (See State CEQA Guidelines, § 15126.4(a)(3) ["Mitigation measures are not required for effects which are not found to be significant."].)

Additionally, the Pechanga Band recommends that certain existing mitigation measures in the DEIR be revised. The recommended changes are found to be feasible by the City as noted below. These changes and additions are not necessary to reduce any potentially significant impacts, but instead further reduce already insignificant impacts. Accordingly, they are not new information of substantial importance, and recirculation of the Draft EIR is not required due to

these changes. (See Master Response # 4.) The changes to Mitigation Measures CR-1 are as follows:

**Mitigation Measure CR-1:**

A qualified professional archaeologist and a culturally affiliated Native American monitor shall monitor the initial phase of ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground-disturbing activities, the archeologist and the Native American representative shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities.

Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist in consultation with the Native American representative can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

The City of Riverside finds that the Pechanga Band’s recommended changes to Mitigation Measure CR-1, above, are feasible and the revised mitigation measure shall be added to the FEIR.

As recommended by the Pechanga Tribe, Mitigation Measure CR-1 will include the following footnote: “It is anticipated that the Pechanga Tribe will be the “culturally affiliated” Tribe due to its prior coordination within the City and due to its demonstrated cultural affiliation with the project area”.

It should be noted that although the Tribe is anticipated to be the culturally affiliated Tribe, as started in Response CR-2, above, the City will consult with the NAHC to determine the appropriate Native American representative or MLD if potential Native American resources or remains are uncovered during construction.

The changes to Mitigation Measures CR-2 recommended by the Tribe are as follows:

**CR-2:** Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural

materials may be found in the area. At the conclusion of all grading activities, all protective fencing shall be removed and discarded.

The City of Riverside finds that the Pechanga Band's recommended changes to Mitigation Measure CR-2, above, are feasible and the revised mitigation measure shall be added to the FEIR.

The Tribe also recommends the inclusion of a mitigation measure (CR-3) which requires that the City comply with applicable laws regarding the discovery of human remains. As discussed above, the City is bound by the law and must and will comply with the laws addressing the discovery of human remains. The provisions of the Health & Safety Code and the Public Resources Code cited by the Tribe are already fully enforceable against the City. Accordingly, the imposition of a mitigation measure requiring that the City comply with those laws is unnecessary and will not be added to the mitigation measures.

## Response to Comment C-8

The Pechanga Band has recommended the addition of six mitigation measures to the DEIR. Although the potential for significant impacts to cultural resources have already been mitigated to a level of less than significant through the implementation of Mitigation Measures CR-1, CR-2, and CR-3, the City of Riverside finds that the mitigation measures recommended by the Pechanga Band are feasible. These changes and additions are not necessary to reduce any potentially significant impacts, but instead further reduce already insignificant impacts. Accordingly, they are not new information of substantial importance, and recirculation of the Draft EIR is not required due to these changes. (See Master Response # 4.) Referred to in the Tribe's comment letter as Mitigation Measures CR-4 through CR-9, the suggested measures are listed below. Because these mitigation measures address Impact CR-1, they follow Mitigation Measure CR-2 in the FEIR, and are numbered CR-3 through CR-8. The mitigation measure listed as CR-3 in the Draft EIR, which responds to Impact CR-2, has been renumbered in the FEIR as CR-9 in order to maintain the measures' proper numerical sequence.

### Mitigation Measure CR-4:

At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered onsite.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-4 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-3 in the FEIR.

**Mitigation Measure CR-5:**

The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-5 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-4 in the FEIR.

**Mitigation Measure CR-6:**

All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-6 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-5 in the FEIR.

**Mitigation Measure CR-7:**

CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-7 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-6 in the FEIR.

**Mitigation Measure CR-8:**

CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-8 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-7 in the FEIR.

**Mitigation Measure CR-9:**

The Project Applicant and Project Archeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archeological sites which will not be avoided by the Project.

The City of Riverside finds that the Pechanga Band's recommended Mitigation Measure CR-9 is potentially feasible and the recommended mitigation measure shall be added to the FEIR. This measure is listed as CR-8 in the FEIR.

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 8

PLANNING

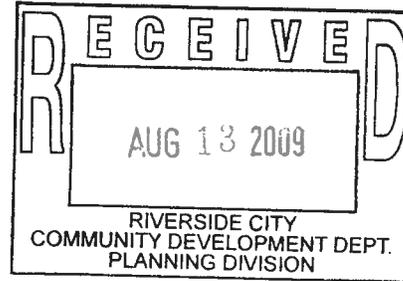
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August 12, 2009

Ms. Patricia Brenes  
City of Riverside  
Planning Division  
3900 Main Street, Third Floor  
Riverside, CA 92522

Alessandro Business Center, Draft Environmental Impact Report SCH No. 2007021005, RIV-215-PM 36.419

Dear Ms. Brenes:

We have completed our review of the Alessandro Business Center Draft Environmental Impact Report (DEIR) dated June 2009 and the associated Traffic Impact Analysis (TIA) dated November 14, 2007. The proposed project is located on an 80.07 acre parcel to the west of Interstate 215 (I-215) at the northwest corner of Alessandro Blvd and San Gorgonio Drive and consists of a 36.91 acre business park development for light industrial, warehouse distribution, and office uses.

As the owner and operator of the State Highway System (SHS), it is our responsibility to coordinate and consult with local jurisdictions when proposed development may impact our facilities. As the responsible agency under the California Environmental Quality Act (CEQA), it is also our responsibility to make recommendations to offset associated impacts with the proposed project. The project may generate traffic volumes and increase storm water runoff that impacts the SHS. Although the project is under the jurisdiction of the city of Riverside, due to potential impacts to State facilities it is also subject to the policies and regulations that govern the SHS.

D-1

The DEIR and TIA do not fully discuss impacts to the I-215 mainline and the Alessandro/I-215 ramp termini intersections. The existing LOS at Alessandro/I-215 is at an unacceptable level and the addition of the project will intensify the existing conditions. Table 1 of the TIA indicates the NB intersection at Alessandro/I-215 operates at LOS D in the morning peak hours and at LOS C in the evening peak hours. Table 5 of the TIA indicates that the addition of the proposed project will cause the Alessandro/I-215 NB intersection to operate at LOS F without improvements. With proposed improvements, which include an additional eastbound left turn lane and an additional westbound through lane, the NB intersection will operate at LOS D in the morning peak hours and LOS C in the evening peak hours. The Guide for the Preparation of Traffic Impact Studies (<http://onramp.dot.ca.gov/hq/tpp/files/pdf/TrafficImpactStudy.pdf>) recommends maintaining a target LOS at the transition between LOS C and LOS D on State facilities.

D-2

Mitigation measure TRN-15 addresses the impacts to the Alessandro/I-215 NB ramp intersection by

*"Caltrans improves mobility across California"*



contributing a fair share fee of 7.4% towards infrastructural improvements. This mitigation measure also notes “the project is responsible for only paying its “fair share” for the recommended infrastructural improvements because it would not be solely responsible for the impacted intersections. The impacts would also occur because current infrastructure does not adequately support existing traffic volume, and in addition, area wide traffic is expected to increase.”

D-3

Mitigation measure TRN-15 only includes a percentage of fair share fees and does not fully address the direct impacts associated with the proposed project. A Fair Share Fee, such as the Transportation Uniform Mitigation Fee (TUMF), addresses cumulative impacts to the transportation infrastructure. Although fair share contributions will be made, it will not alleviate the direct impacts associated with the proposed project. In addition, the contribution of funds does not guarantee or provide a time frame in which improvements will be implemented. Currently there are no improvement plans for the Alessandro/I-215 Interchange in which funds will be contributed to.

Section 3.11 Hydrology and Water Quality of the DEIR do not show the extent of potential stormwater drainage system impacts to the I-215. Although the proposed project does not directly abut State facilities, it may impact stormwater drainage facilities within our Right of Way if the proposed project causes the existing facilities to exceed capacity.

D-4

Based on the findings of the TIS and DEIR we recommend the implementation of interim improvements to offset the impacts to Alessandro/I-215 ramp termini intersections. To better analyze the degree of impacts and improvements we recommend the following be provided:

#### **Traffic Operations:**

- Synchro analysis for the Alessandro/I-215 ramp termini intersections.
- Synchro Analysis should included all driveway intersections from project site to the Alessandro/I-215 ramp termini intersections.
- A PHF of 0.92 is recommended to be used in the Synchro analysis.
- Include an electronic version of the Synchro analysis.
- Include Merge/Diverge analysis at the Alessandro/I-215 interchange for the existing and opening year Build and No Build Alternatives.
- Include ramp LOS for existing conditions and with/without improvements.
- Queuing analysis for all ramps at the Alessandro/I-215 Interchange.
- Provide Opening Year analysis that does not combine project traffic, existing traffic, and area wide growth.
- Provide analysis scenarios that include existing conditions, existing + project, existing + project + cumulative development, and existing + project + cumulative + ambient growth.
- Include a preliminary drawing of the recommended geometric improvements with corresponding LOS for the NB on/off ramps at Alessandro Blvd.

D-5

**Stormwater Drainage:**

- Provide a storm water drainage plan that indicates existing and proposed drainage facilities.
- Indicate location and facility type of Unnamed Drainage 2, and all connecting drainage systems.

D-6

Thank you for providing us this opportunity to review the Alessandro Business Center DEIR and for your consideration of these and future comments. These recommendations are preliminary and summarize our review of materials provided for our evaluation. If you have questions concerning these comments, or would like to meet to discuss our concerns, please contact me at (909) 383-4557 for assistance.

Sincerely,



DANIEL KOPULSKY  
Office Chief  
Community Planning/IGR-CEQA

c: Carl Ballard, Kunzman Associates  
Manuel Jabson, Traffic Operations D8

## **Comment Letter D. Daniel Kopulsky, California Department of Transportation (Caltrans)**

### **Response to Comment D-1**

Comment noted. The City of Riverside acknowledges that Caltrans has concerns regarding the impacts the Project may have on the State Highway System and Caltrans responsibility consult with local jurisdictions as part of the CEQA process. The commenter's specific comments on traffic and increased stormwater runoff are addressed below in Responses D-2 through D-6.

### **Response to Comment D-2**

The EIR fully analyzed the project's impacts to traffic and transportation resources. (See Draft EIR § 3.10.) The commenter is incorrect that the existing LOS at Alessandro/I-215 is at an unacceptable level. The Alessandro/I-215, as referred to by the commenter consists of the I-215 Freeway SB and NB Ramps at Alessandro Boulevard. The project baseline data for the I-215 Freeway SB Ramps at Alessandro Boulevard (Year 2007) shows the intersection operating at LOS B in the AM and PM peak hours (DEIR, Page 3.10-8). In Year 2010, the I-215 Freeway SB Ramps at Alessandro Boulevard are projected (with or without the project) to operate at a level of LOS B in the AM and C in the PM, which is an acceptable level of service (DEIR, Page 3.10-13).

The project baseline data for the I-215 Freeway NB Ramps at Alessandro Boulevard (Year 2007) shows the intersection operating at LOS D in the AM peak hour and C in the PM peak hour (DEIR, Page 3.10-8). This level of service (LOS D and LOS C) meets the conditions of City of Riverside General Plan Policy CCM-2.3 which requires LOS D or better (DEIR, Page 3.10-6). Additionally, this level of service meets the target of LOS C and LOS D on State facilities set forth in the Guide for the Preparation of Traffic Impact Studies.

The City of Riverside acknowledges that the I-215 NB Ramps at Alessandro Boulevard are projected in the Year 2010 to operate at unacceptable level (LOS F) in the AM and PM peak hours (DEIR, Page 3.10-13). This unacceptable level of operation is not due to the project, as demonstrated by the Draft EIR. (Draft EIR pp. 3.10-13 [even without the project, the NB Ram will operate at LOS "F" in 2010].)

Independently of the proposed project, the City of Riverside is taking steps to address this impact. The City is the lead agency working with the City of Moreno Valley and Riverside County Transportation Commission to address level of service on the Alessandro Boulevard Corridor through approval and implementation of the Multi-Jurisdictional Traffic Signal Synchronization Project. This project would reduce traffic delay on the I-215 Freeway SB/NB Ramps at Alessandro Boulevard, including the through traffic signal

coordination, real time roadway surveillance, and communication links between the cities Traffic Management Centers. The South Coast Air Quality Management District awarded the grant to fund this project in September, 2009. This project is fully funded and is currently in engineering review by the City of Riverside and is expected to be implemented in 2010. See Appendix A for description of project plans.

Additionally, the City of Moreno Valley will be improving Alessandro Boulevard from the I-215, east to Frederick Street, to increase level of service as part of the Alessandro Boulevard Street Improvement Project. These improvements include the addition of two 12-foot wide travel lanes in both the east-bound and west-bound direction; one 14-foot wide travel lane in both the eastbound and westbound direction; one 8-foot wide paved shoulder lined with concrete curb, gutter (2-foot wide gutter pan), 5.5-foot wide sidewalk, and 6-foot wide parkway in both the eastbound and westbound directions; and an 18-foot wide raised landscape median separating eastbound traffic from westbound traffic. A negative declaration was adopted on February 19, 2009 and is now undergoing the permitting process through CalTrans (Appendix B). All necessary permits are expected to be completed in early 2010. Although the I-215 NB Ramps at Alessandro Boulevard are projected to operate at LOS F in the AM and PM peak hours (Year 2010), it is important to note – as mentioned above - that this level of service would exist with or without the project. Although this information is provided in the text of the DEIR and the traffic Study (DEIR, Appendix G), the Year 2010 conditions without the project have been added to Table 3.10-5: LOS and Level of Significance With and Without Project (2010) (DEIR, Page 3.10-13). The revisions to Table 3.10-5 are provided on the following page. The revision to the Table 3.10-5 does not change the analysis or conclusion of the Traffic Study of the DEIR but further breaks down information. Furthermore, CalTrans also requested an analysis breakdown that does not combine ambient growth plus cumulative project impacts. The table in Appendix C further breaks down this information and does not change the conclusion in the DEIR.

As noted by commenter, implementation of the proposed mitigation provided in the DEIR, would improve the LOS at the I-215 NB Ramps to LOS D in the AM and LOS C in the PM (DEIR, Page 3.10-13). These levels of service would meet the target of LOS C and LOS D on State facilities set forth in the Guide for the Preparation of Traffic Impact Studies. Accordingly, the project would have a less than significant impact on the ramp intersections. With the intersections operating sufficiently, the project would not lead to considerable backup on the mainline of I-215. Analysis of the project's impact on the mainline of I-215 is also provided in the form of a merge/diverge/weaving analysis, as requested by Caltrans and discussed below in the Response to Comment D-5.

**Table 3.10-5. LOS and Level of Significance With and Without Project (2010)**

Intersection	Existing Condition			Year 2010 Without Project <sup>1</sup>		Year 2010 With Project <sup>4</sup>							
						Without Mitigation				With Mitigation			
	Delay	LOS	Peak Hour	Delay	LOS <sup>2</sup>	Delay	LOS	Project Impact <sup>3</sup>	Significant Impact?	Delay	LOS	Project Impact <sup>3</sup>	Significant Impact?
Trautwein Rd. (NS) at Alessandro Blvd.(EW)	38.7	D	AM	76.9	E	79.9	E	3.6	Yes	30.9	C	-45.4	No
	59.5	E	PM	104.6	F	106.3	F	1.7	No*	27.6	C	-77.0	No
Mission Grove Pkwy. (NS) at Alessandro Blvd. (EW)	32.1	C	AM	48.3	D	49.3	D	1.0	No*	40.7	D	-7.6	No
	37.0	D	PM	57.8	E	60.8	E	3.0	Yes	39.0	D	-18.8	No
San Gorgonio Drive (NS) at Alessandro Blvd. (EW)	10.0	B	AM	349.4	F	351.7	F	2.3	Yes	23.1	C	-326.3	No
	10.9	B	PM	325.2	F	325.5	F	0.3	No*	36.1	D	-289.1	No
Sycamore Canyon Blvd. (NS) at Alessandro Blvd. (EW)	12.6	B	AM	412.6	F	422.3	F	9.7	Yes	25.1	C	-387.5	No
	14.3	B	PM	237.4	F	244.5	F	7.1	Yes	27.9	C	-209.5	No
I-215 Freeway SB Ramps (NS) at Alessandro Blvd. (EW)	10.7	B	AM	15.2	B	16.1	B	0.9	No	N/A	N/A	N/A	N/A
	10.7	B	PM	23.2	C	28.2	C	5.0	No				
I-215 Freeway NB Ramps (NS) at Alessandro Blvd.(EW)	36.7	D	AM	121.9	F	138.9	F	17.0	Yes	35.1	D	-86.8	No
	26.1	C	PM	111.3	F	126.4	F	15.1	Yes	26.0	C	-85.3	No

<sup>1</sup> To account for areawide growth on roadways, opening year (2010) traffic volumes were calculated based on a 2.0% annual growth rate of existing traffic volumes over a 3-year period. The areawide growth rate was obtained from discussions with City staff. Areawide growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated and other development

<sup>2</sup> Level of service

<sup>3</sup> A significant impact occurs when the addition of project generated trips adds 2.0 seconds of delay at an intersection operating at Level of Service E or F.

<sup>4</sup> Includes ambient growth plus cumulative projects plus project

\* Although no significant impacts, improvement are already programmed by the City.

N/A-no impact therefore mitigation not required.

Source: Kunzman 2007.

## Response to Comment D-3

The I-215 is not a Transportation Uniform Mitigation Fee (TUMF) facility, therefore the City has not relied upon the TUMF Program to mitigation for any impacts to the I-215

Implementation of the Mitigation Measures TRN-1 through TRN-12 would fully mitigate significant direct project impacts to traffic to a level of less than significant. (Draft EIR pp. 3.10-16 and 3.10-18.) Accordingly, the City has fully analyzed and mitigated the proposed project's direct impacts. All fair share contributions are programmed for a particular segment to be improved. In any case, Mitigation Measures TR-11 and TR-12 have been fully completed by the City.

Regarding cumulative impacts, the City of Riverside proposed Mitigation Measure TRN-15 as additional project mitigation that further reduces already insignificant cumulative traffic impacts. (See Draft EIR pp. 3.10-16 [mitigation measures TRN-1 through TRN-10 fully mitigate roadway impacts] and 3.10-18 [mitigation measures TRN-8 through TRN-12 will also fully mitigate for intersection impacts].) The City of Riverside is requiring project contribution of fair share funds to help satisfy funding needs for planned improvements to the Alessandro/I-215 Interchange. The Alessandro Boulevard NB/SB I-215 Ramp Improvements project is currently proposed to address impacts associated with level of service at the ramps. This is an independent project that is sponsored by the City of Riverside and March Joint Power Authority, and will be completed regardless of whether the proposed project ever goes forward. Fair share funding may be provided by other projects, however, the Alessandro Boulevard NB/SB I-215 Ramp Improvements project is planned for implementation regardless to address the projected level of service (LOS F) for the NB ramp in 2010. This condition is projected to occur with or without the proposed project (DEIR, Page 3.10-13). The City has already begun to design these planned improvements, as shown in Appendix D.

The project is currently in review by the applicable jurisdictions (City of Riverside and March JPA) and is expected to be approved by 2011. The City of Riverside has determined that the following mitigation measure will be added to the FEIR. Because this mitigation measure directly relates to Mitigation Measure TRN-17, it has been included in the FEIR as Mitigation Measure TRN-18, and the measure listed as TRN-18 in the Draft EIR has been renumbered to TRN-19 to maintain the measures' logical numerical sequence.

### **Mitigation Measure TRN-18:**

In the event that the Alessandro Boulevard EB/SB I-215 Ramp Improvements Project is not constructed by 2013, the City of Riverside will restripe the I-215 Freeway NB ramp at Alessandro Boulevard to create a dual eastbound left lane and shared westbound right through lane.

Therefore, the analysis conducted by the City in 2009 fully analyzed the potential for impacts associated with the project and mitigates the potential for impacts associated with traffic to a level of less than significant.

## Response to Comment D-4

The commenter confirms that “the proposed project does not directly abut State facilities,” and states that the proposed “may” impact stated facilities “if” the proposed project causes the existing facilities to exceed capacity. No evidence was provided by the commenter to indicate that stormwater would be discharged to state right of way. As demonstrated by the analysis in the EIR, the proposed project includes construction of an underground stormdrain system, including curb inlets and catch basins, to collect stormwater runoff and direct it into the proposed 1.8-acre detention basin at the northwest corner of the project site (DEIR, Page 3.11-13). The proposed basin has been sized to retain stormwater runoff generated by a 2-, 5-, 10-, and 100-year storm such that the runoff generated in the built condition does not significantly exceed existing conditions (DEIR, Page 3.11-13). The proposed detention basin discharges to Sycamore Canyon Creek, which flows west through Sycamore Canyon Wilderness Park, away from the I-215 to the east of the project, which represents the nearest state right of way. In fact, the entire project site – which is which is over 0.5 miles from the I-215 – is sloped away from the I-215 and Alessandro, such that no stormwater flows will travel towards or into state-owned facilities. (Draft EIR Figure 2-3 [topographical map showing relationship of project site to I-215].) No stormwater flows associated with the proposed project would be discharged directly or indirectly to stormwater drainage facilities within state right of way. Accordingly, the EIR’s less than significant conclusions are supported by substantial evidence.

## Response to Comment D-5

The 2007 Traffic Impact Analysis provided in the Draft EIR (see Appendix G) incorporated most of Caltrans’s requests stated in this comment, with the exception of the Synchro analysis and the merge/diverge analysis. In response to Caltrans’s request, the City prepared a Synchro analysis for the Alessandro/I-215 ramp intersections and all intersections between the project site and the ramp intersections pursuant to the specifications Caltrans requested. The results of the analysis were submitted to Caltrans in October 2009 and are presented in the Final EIR as Appendix E. The Synchro analysis provided additional detail and clarification of impacts and did not reveal new significant impacts on any of the studied intersections. This information supplements analysis already presented in the Draft EIR and confirms the significance conclusions set forth therein. Because this information merely clarifies and amplifies analysis that was already presented in the Draft EIR, recirculation of the EIR is not required. (See Master Response # 4.) In response to Caltrans’s request, a merge/diverge/weaving analysis report was prepared for the I-215 Freeway/Alessandro Boulevard interchange by Kunzman Associates in October 2009. This analysis was

submitted to Caltrans and is incorporated into the Final EIR as Appendix F. The analysis includes ramp LOS for existing conditions, opening year + project conditions (without mitigation), and opening year + project (with mitigation) scenarios, as requested by Caltrans. The analysis also examines queuing on the ramps, as requested by Caltrans. The results of the analysis indicate that the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours for Opening Year (2010) with Project traffic conditions, with improvements. Level of Service D meets the target of LOS C and LOS D on State facilities set forth in the Guide for the Preparation of Traffic Impact Studies. Accordingly, this supplemental information confirms the analysis and significance conclusions already set forth in the City's Draft EIR and merely clarifies and amplifies that analysis. As such, recirculation of the EIR is not required. (See Master Response # 4.)

## Response to Comment D-6

The proposed stormwater and drainage facilities are limited to curbs and catch basins located throughout the business park and the proposed 1.8-acre detention basin. These facilities are depicted in the project site plan (DEIR, Figure 2-6). As indicated above in the Response to Comment D-4, the project will not result in a discharge of stormwater to a state right of way.

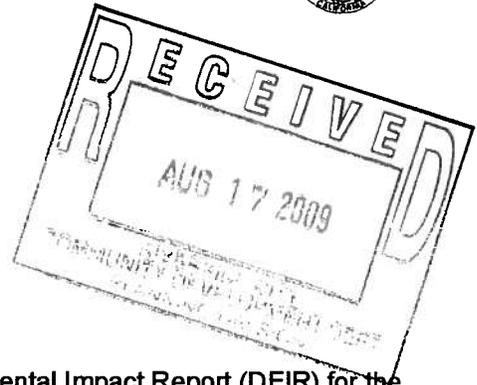
Unnamed Drainage 2 is a natural streambed which is not connected to any man-made drainage system. This unnamed drainage will not be disturbed by the proposed project. Unnamed Drainage 2 is located within 36.23-acres of property to be dedicated as part of the proposed project to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. (See Draft EIR Figures 3.1-1 and 3.11-1.) The proposed basin has been sized to retain stormwater runoff generated by a 2-, 5-, 10-, and 100-year storm such that the runoff generated in the built condition does not significantly exceed existing conditions that could cause erosion in the streambed at the discharge location (DEIR, Page 3.11-13). There are no existing or connecting stormwater facilities.

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 653-6251  
Fax (916) 657-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
e-mail: [ds\\_nahc@pacbell.net](mailto:ds_nahc@pacbell.net)



August 13, 2009



Ms. Patricia Brenes, Senior Planner  
**CITY OF RIVERSIDE PLANNING DIVISION**  
1800 Main Street, Third Floor  
Riverside, CA 92522

Re: SCH#2007021005: CEQA Notice of Completion: draft Environmental Impact Report (DEIR) for the Alessandro Business Center Project ; located in the City of Riverside; Riverside County, California

Dear Ms. Brenes:

The Native American Heritage Commission (NAHC) is the state 'trustee agency' pursuant to Public Resources Code §21070 for the protection and preservation of California's Native American Cultural Resources. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE)', and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

The Native American Heritage Commission did perform a Sacred Lands File search and no Native American Cultural resources were identified. Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the nearest tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. A Native American Tribe or Tribal Elder may be the only source of information about a cultural resource.. Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation Coordinator's office (at (916) 653-7278, for referral to the nearest Information Center of which there are 11..

E-1

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f])*et se*, and NAGPRA (25 U.S.C. 3001-3013), as appropriate. .

E-2

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'. Discussion of these should be included in your environmental documents, as appropriate.

E-3

A Sacred Lands File search was conducted at this location for Native American cultural resources and cultural resources were identified. This record search is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10). However, Native Americans on the attached contact list are not prohibited from and may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of the NHPA or at the Secretary of the Interior's discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C, 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

E-4

CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

E-5

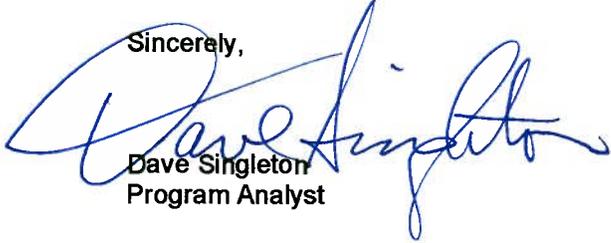
Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that construction or excavation be stopped in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery until the county coroner or medical examiner can determine whether the remains are those of a Native American. . Note that §7052 of the Health & Safety Code states that disturbance of Native American cemeteries is a felony.

Again, Lead agencies should consider avoidance, as defined in §15370 of the California Code of Regulations (CEQA Guidelines), when significant cultural resources are discovered during the course of project planning and implementation

E-6

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,



Dave Singleton  
Program Analyst

Attachment: List of Native American Contacts

Cc: State Clearinghouse

## Native American Contact

Riverside County

August 13, 2009

Pechanga Band of Mission Indians  
Paul Macarro, Cultural Resource Center  
P.O. Box 1477 Luiseno  
Temecula , CA 92593  
pmacarro@pechanga-nsn.gov  
(951) 308-9295 Ext 8106  
(951) 676-2768  
(951) 506-9491 Fax

Ramona Band of Cahuilla Mission Indians  
Joseph Hamilton, Chairman  
P.O. Box 391670 Cahuilla  
Anza , CA 92539  
admin@ramonatribe.com  
(951) 763-4105  
(951) 763-4325 Fax

San Manuel Band of Mission Indians  
James Ramos, Chairperson  
26569 Community Center Drive Serrano  
Highland , CA 92346  
(909) 864-8933  
(909) 864-3724 - FAX  
(909) 864-3370 Fax

Gabrieleno/Tongva San Gabriel Band of Mission  
Anthony Morales, Chairperson  
PO Box 693 Gabrielino Tongva  
San Gabriel , CA 91778  
(828) 286-1262 -FAX  
(626) 286-1632  
(626) 286-1758 - Home  
(626) 286-1262 Fax

Santa Rosa Band of Mission Indians  
John Marcus, Chairman  
P.O. Box 609 Cahuilla  
Hemet , CA 92546  
srtribaloffice@aol.com  
(951) 658-5311  
(951) 658-6733 Fax

Gabrielino Tongva Nation  
Sam Dunlap, Tribal Secretary  
P.O. Box 86908 Gabrielino Tongva  
Los Angeles , CA 90086  
samdunlap@earthlink.net  
(909) 262-9351 - cell

Morongo Band of Mission Indians  
Michael Contreras, Cultural Heritage Prog. Manager  
13000 Fields Road Cahuilla  
Banning , CA 92220 Serrano  
(951) 755-5025  
(951)201-1866 - cell  
(951) 922-0105 Fax

San Manuel Band of Mission Indians  
Ann Brierty, Policy/Cultural Resources Department  
26569 Community Center. Drive Serrano  
Highland , CA 92346  
abrierty@sanmanuel-nsn.gov  
(909) 864-8933 EXT-3250  
(909) 649-1585 - cell  
(909) 862-5152 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. and federal NEPA (42 USC 4321-43351), NHPA Sections 106, 4(f) (16 USC 470(f) and NAGPRA (25 USC 3001-3013)

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SSCH#2007021005; CEQA Notice of Completion; draft Environmental Impact Report; located in the City of Riverside; Riverside County, California.

**Native American Contact**  
Riverside County  
August 13, 2009

Willie Pink  
48310 Pechanga Road  
Temecula, CA 92592  
wjpink@hotmail.com  
(909) 936-1216  
Prefers e-mail contact

Luiseno

Ernest H. Siva  
Morongo Band of Mission Indians Tribal Elder  
9570 Mias Canyon Road  
Banning, CA 92220  
(951) 849-4676  
siva@dishmail.com

Serrano  
Cahuilla

Serrano Nation of Indians  
Goldie Walker  
6588 Valaria Drive  
Highland, CA 92346  
(909) 862-9883

Serrano

Soboba Band of Luiseno Indians  
Joseph Ontiveros, Cultural Resources Manager  
P.O. Box 487  
San Jacinto, CA 92581  
jontiveros@soboba-nsn.gov  
(951) 654-2765  
FAX: (951) 654-4198

Luiseno

Cahuilla Band of Indians  
Luther Salgado, Sr.  
PO Box 391760  
Anza, CA 92539  
tribalcouncil@cahuilla.net  
915-763-5549

Cahuilla

**This list is current only as of the date of this document.**

**Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code, and federal NEPA (42 USC 4321-43351), NHPA Sections 106, 4(f) (16 USC 470(f) and NAGPRA (25 USC 3001-3013)**

**This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SSCH#2007021005; CEQA Notice of Completion; draft Environmental Impact Report; located in the City of Riverside; Riverside County, California.**

## Comment Letter E. Dave Singleton, Native American Heritage Commission

### Response to Comment E-1

Comment noted. The City of Riverside has complied with the Native American contact and records search requested by the Native American Heritage Commission. A cultural resources literature and records search was conducted for the proposed project at the Eastern Archaeological Information Center, University of California, Riverside, in December 2005 (DEIR, Page 3.4-16).

The Native American Heritage Commission (NAHC) was contacted regarding the proposed project on December 2, 2005. A request was made for review of the NAHC sacred lands file and provision of a list of potentially interested Native American representatives for the project area. The NAHC responded on December 15, 2005, stating that the search of their sacred lands database did not yield any sacred lands or traditional cultural properties within the project area (DEIR, Page 3.4-16). Letters describing the project area and indicating the project location were sent to 11 Native American representatives on January 31, 2006. Additionally, in accordance with the requirements of SB 18, the City of Riverside contacted the NAHC in April 2006 and was provided with a list of potentially interested Native American representatives for the project area. The lists of Native American contacts consulted with for the proposed project are provided in Tables 3.4-2 and 3.4-3 of the DEIR (DEIR, Pages 3.4-17 and 3.4-18).

Two comments were received from the Cahuilla Band of Indians and the Morongo Band of Mission Indians during the Native American contact made in 2005. Mr. Alvino Siva with the Cahuilla Band of Indians responded via telephone that the area was known to be sensitive. The Morongo Band of Mission Indians responded separately and also indicated that the area was known to be sensitive. The Morongo Band, in a letter dated February 8, 2006, requested testing at CA-RIV-2518, and suggested standard conditions regarding inadvertent discoveries and human remains. The tribe requested that if human remains are found, the County Coroner should be contacted. Further, the Morongo Band requested that if Native American cultural resources are found, the find be evaluated by an archaeologist and the tribe consulted if a Treatment Plan is required (DEIR, Page 3.4-17).

One response from the tribes was received by the City of Riverside in response to their notification and request for consultation under Senate Bill 18 in 2006. Mr. Britt Wilson, representing the Morongo Band of Mission Indians sent an e-mail dated June 7, 2006, which requested an update of the site records for the milling stations that would be removed by the project and submittal of the updated records to the Eastern Information Center at UC Riverside (DEIR, Page 3.4-17)

Phase II archeological testing was conducted (Sites CA-RIV-2505, CA-RIV-2518, CA-RIV-2523, CA-RIV-2524, and CA-RIV-2519) and the site records

updated for submittal to the UC Riverside Eastern Information Center. Additionally, recommendations related to site monitoring, the disposition of recovered artifacts, and discovery of Native American human remains have been incorporated into the mitigation measures and conditions of approval for the proposed project, including Mitigation Measures CR-1, CR-2 and CR-3.

## Response to Comment E-2

Comment noted. The City has undertaken consultation with potentially interested Tribes as discussed in Responses E-1 and the Responses to Comment Letter C. Section 15088 of the State CEQA Guidelines states that, “The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response.” (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].) Please see also Master Response # 2.

## Response to Comment E-3

Comment noted. Avoidance of cultural resources has been achieved to the extent feasible, as recommended by the NAHC. A total of ten archeological sites within the 80.07-acre property were identified during the archeological surveys (Phase I and testing) conducted for the proposed project. Four of the sites occur within the proposed project footprint. Phase II testing and evaluation conducted by Jones & Stokes for the project determined that based on the current evidence, these four sites, CA-RIV-2505, CA-RIV-2518, CA-RIV-2523 and CA-RIV-2524, are not eligible for the California Register of Historical Places due to insufficient ability to yield information important in prehistory. Additionally, these four sites are not eligible for Landmark or Structure of Merit nomination under the City of Riverside Title 20 Cultural Resources Ordinance. Site records were updated for the sites and submitted to the UC Riverside Eastern Information Center (DEIR, Page 3.4-26). Regarding the two sites that are within the development footprint, it is not feasible to redesign the project to avoid those sites because it would introduce new environmental impacts on other areas of the site (see Response C-7), nor is redesigning the site required because impacts to cultural resources are already less than significant (State CEQA Guidelines, § 15126.4(a)(3) [“Mitigation measures are not required for effects which are not found to be significant.”]).

The remaining five sites, CA-RIV-2514, CA-RIV-2516, CA-RIV-2517, CA-RIV-2521, and CA-RIV-2522, are located within the 36.23-acre property that would be dedicated to the City of Riverside Parks, Recreation & Community Services Department for inclusion within the City’s Sycamore Canyon Wilderness Park. These sites would be managed by the City of Riverside Parks,

Recreation, and Community Services Department under the existing Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan (DEIR, Page 3.4-27).

The project site is not known to contain human remains nor was evidence of long-term human habitation of the site found during the cultural resources records search, assessment, and Phase II testing. Mitigation Measure CR-3 is proposed to address the potential for discovery of Native American human remains during excavation activities.

### **Response to Comment E-4**

Refer to Response E-1. The City has fully analyzed and mitigated for the project's potential to impact cultural resources.

### **Response to Comment E-5**

Refer to Response E-1 and E-3. The City has fully analyzed and mitigated for the project's potential to impact cultural resources.

### **Response to Comment E-6**

Refer to Response E-3.

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 8

PLANNING

464 WEST 4<sup>th</sup> STREET, 6<sup>th</sup> Floor MS 725

SAN BERNARDINO, CA 92401-1400

PHONE (909) 383-4557

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August 18, 2009

Ms. Patricia Brenes  
City of Riverside  
Planning Division  
3900 Main Street, Third Floor  
Riverside, CA 92522

Alessandro Business Center, Draft Environmental Impact Report SCH No. 2007021005, RIV-215-PM 36.419

Dear Ms. Brenes:

This letter amends our previous letter dated August 12, 2009 addressing the above noted project. Through further analysis of the Traffic Impact Analysis (TIA) we recommend the following to be provided:

- Include the northbound and southbound ramps in the Merge/Diverge Analysis.
- Figure 5 and 27 of the TIA exhibit inconsistent traffic volumes at the Alessandro/I-215 SB intersection. The WB traffic volumes do not equate to the volumes flowing from the Alessandro/I-215 NB intersection.
- Synchro analysis is recommend to be use to obtain the 50<sup>th</sup> and 95<sup>th</sup> percentile for left-turn queuing worksheets.

F-1

These recommendations are preliminary and summarize our review of materials provided for our evaluation. If you have questions concerning these comments, or would like to meet to discuss our concerns, please contact me at (909) 383-4557 for assistance.

Sincerely,

A handwritten signature in black ink that reads "Daniel Kopulsky".

DANIEL KOPULSKY

Office Chief

Community Planning/IGR-CEQA

c: Carl Ballard, Kunzman Associates  
Manuel Jabson, Traffic Operations D8

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STATE OF CALIFORNIA \* DEPARTMENT OF TRANSPORTATION  
**FACSIMILE COVER**



Attention: Ms. Patricia Brenes		From: Caltrans - District 8 Office of Transportation Planning IGR/CEQA-Local Development Review 464 West Fourth Street, MS 725 San Bernardino, CA 92401-1400	
Unit/Company  Planning Division		Name of Sender Rahe Gorginfar	
District/City City of Riverside		Date 08-18-09	Total Pages (plus cover) 2
Phone # (include area code) 951-826-5933	FAX # (include area code) 951-826-5981	FAX # (include area code) 909-383-6890	ATSS FAX 8-670-6890
Per Request For Approval Information Comment URGENT		Phone #(include area code) 909-388-7139	ATSS
ORIGINAL DISPOSITION: DESTROY RETURN CALL FOR PICKUP			

**Comment:**

Dear Ms. Brenes:

Attached is a letter addressing the Alessandro Business Center Draft Environmental Impact Report SCH No. 2007021005. Due to the comment deadline we are faxing a copy of this letter and an original copy will be mailed.

Thank You

## **Comment Letter F. Daniel Kopulsky, California Department of Transportation (Caltrans)**

### **Response to Comment F-1**

Comment noted. Refer to Response D-5. A merge/diverge/weaving analysis report was prepared for the I-215 Freeway/Alessandro Boulevard interchange (including both the northbound and southbound ramps) by Kunzman Associates in October 2009 (Refer to Appendix F of the FEIR). The analysis included the northbound and southbound ramps of the I-215 Freeway.

The differences in the traffic volumes at the Alessandro/I-215 SB and NB intersections noted by Caltrans in the Traffic Impact Assessment report (DEAR, Appendix G), is not statistically significant (approximately 3% total). The traffic volumes for the morning peak hour are the same for both the Alessandro/I-215 SB and NB intersections. The difference in volumes across the bridge is approximately two percent which is expected to be the result of duplicate vehicle counts and/or illegal U-turns. During the evening peak period, the traffic patterns are different at the two intersections causing the peak hours to be different therefore the traffic volumes are different at the two intersections. This difference in traffic volumes is typical and part of accepted traffic engineering practice.

In response to Caltrans's request, the City prepared a Synchro analysis for the Alessandro/I-215 ramp intersections and all intersections between the project site and the ramp intersections pursuant to the specifications Caltrans requested. The results of the analysis were submitted to Caltrans in October 2009 and are presented in the Final EIR as Appendix E. The Synchro analysis provided additional detail and clarification of impacts and did not reveal new significant impacts on any of the studied intersections. This information supplements analysis already presented in the Draft EIR and confirms the significance conclusions set forth therein. Because this information merely clarifies and amplifies analysis that was already presented in the Draft EIR, recirculation of the EIR is not required. (See Master Response # 4.) Accordingly, the analysis and significance conclusions in the Draft EIR remain accurate, and no changes to the analysis are required.



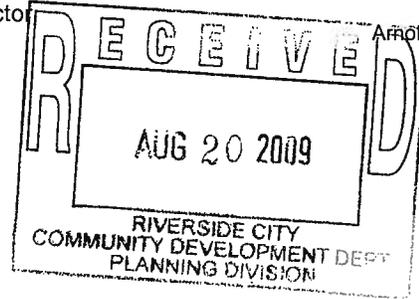
# Department of Toxic Substances Control



Linda S. Adams  
Secretary for  
Environmental Protection

Maziar Movassaghi, Acting Director  
5796 Corporate Avenue  
Cypress, California 90630

Arnold Schwarzenegger  
Governor



August 18, 2009

Ms. Patricia Brenes, Senior Planner  
Planning Division  
City of Riverside  
3900 Main Street,  
Riverside, California 92522  
pbrenes@riversideca.gov

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT (EIR)  
FOR THE ALESSANDRO BUSINESS CENTER PROJECT, ALESSANDRO  
BOULEVARD/SAN GORGONIO DRIVE, ASSESSOR'S PARCEL NO. 263-0060-021,  
WITHIN THE SYCAMORE CANYON PARK SPECIFIC PLAN, RIVERSIDE  
(SCH#2007021005)

Dear Ms. Brenes:

The Department of Toxic Substances Control (DTSC) has received your submitted Environmental Impact Report (EIR) and the several appendices for the above-mentioned project. The following project description is stated in the document: "Proposal by Western Realco for an Environmental Impact Report, Tentative Parcel Map, Specific Plan Amendment, General Plan Amendment, Zone Change and Design Review of a Plot Plan and Building Elevations for the development of a 36.91-acre business center for light industrial, warehouse distributions, and office uses. The business center would consist of four buildings totaling approximately 662,018 square feet, ranging in size from approximately 36,243 square feet to approximately 440,374 square feet. Additionally, 36.23 acres would be dedicated to the City of Riverside Parks, Recreations, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. The 80.07-acre property is currently vacant." The majority of DTSC's comments from our letter dated November 2, 2007 sent to the City of Riverside have been addressed in the documents. DTSC has the following additional comments; please address if applicable:

G-1

- 1) The document states the following: "The March Air Reserve Base (MARB) is located approximately 1.75 miles southeast of the project site, which occurs within the MARB influence area. Since MARB does not have an airport master plan, the Riverside County ALUC utilizes the land use compatibility guidelines

G-2

Ms. Patricia Brenes  
August 18, 2009  
Page 2

set forth in the 2005 MARB Airport Installation Compatible Use Zone (AICUZ) Study (MARB 2005). This study identifies areas (also known as influence areas) subject to aircraft safety concerns and identifies appropriate land uses for those areas subject to these concerns." The March Air Reserve Base is under the base's Installation Restoration Program under the oversight of DTSC, with the current Project Manager, Stephen Niou.

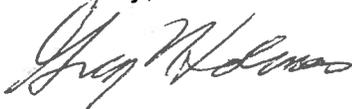
- 2) Any future site-specific EIRs should identify the mechanism to initiate any required investigation and/or remediation for any site that may be contaminated, and the government agency to provide appropriate regulatory oversight. If necessary, DTSC would require an oversight agreement in order to review such documents. DTSC can provide cleanup oversight through an Environmental Oversight Agreement (EOA) for government agencies, or a Voluntary Cleanup Agreement (VCA) for private parties. For additional information on the EOA or VCA, please see [www.dtsc.ca.gov/SiteCleanup/Brownfields](http://www.dtsc.ca.gov/SiteCleanup/Brownfields), or contact Ms. Maryam Tasnif-Abbasi, DTSC's Voluntary Cleanup Coordinator, at (714) 484-5489.
- 3) Please change the mailing list addressee from Maureen F. Gorsen to Greg Holmes.

G-3

G-4

If you have any questions regarding this letter, please contact Ms. Teresa Hom, Project Manager, at [thom@dtsc.ca.gov](mailto:thom@dtsc.ca.gov) or by phone at (714) 484-5477.

Sincerely,



Greg Holmes  
Unit Chief  
Brownfields and Environmental Restoration Program

cc: Governor's Office of Planning and Research  
State Clearinghouse  
P.O. Box 3044  
Sacramento, California 95812-3044  
[state.clearinghouse@opr.ca.gov](mailto:state.clearinghouse@opr.ca.gov)

Ms. Patricia Brenes  
August 18, 2009  
Page 3

cc: CEQA Tracking Center  
Department of Toxic Substances Control  
Office of Environmental Planning and Analysis  
1001 I Street, 22nd Floor, M.S. 22-2  
Sacramento, California 95814  
[nritter@dtsc.ca.gov](mailto:nritter@dtsc.ca.gov)

CEQA # 2648

## **Comment Letter G. Greg Holmes, California Department of Toxic Substances Control**

### **Response to Comment G-1**

Comment noted. The City of Riverside incorporated a comment letter (dated November 2, 2007) provided by the Department of Toxic Substances (DTSC) into the DEIR. The comments provided in the letter were addressed in the analysis provided in the DEIR. (See Draft EIR § 3.6.)

### **Response to Comment G-2**

Comment noted. The City of Riverside understands that the March Air Reserve Base is under the base's Installation Restoration Program under the oversight of DTSC, with the current Project Manager, Stephen Niou. The Draft EIR analyzed the potential for safety hazards associated with airport uses, and concluded that they were not significant. (Draft EIR p. 3.6-7 through 3.6-9, Figure 3.6-1 [overlying project site onto airport hazard zones].)

### **Response to Comment G-3**

Comment noted. The Draft EIR prepared and circulated by the City is a site-specific EIR for the proposed project. As discussed in the Notice of Preparation Environmental Checklist (DEIR, Appendix A at pp. 12-13), no potential for contamination of soils by hazardous materials within the proposed project boundary was found to exist because the site has not been previously developed. In the highly unlikely event that any contamination is found on the site, both the City and the project applicant would be subject to all local, state, and federal laws regarding remediation of that contamination. Accordingly, no mitigation measures are required to address this impact. The City of Riverside understands that DTSC can provide hazardous materials remediation oversight for future projects.

### **Response to Comment G-4**

The mailing list addressee for receipt of the FEIR has been updated from Maureen F. Gorsen to Greg Holmes.



San Bernardino Valley  
Audubon Society



---

*via electronic and US mail*

August 19, 2009

Patricia Brenes, Senior Planner  
City of Riverside  
Community Development Department  
Planning Division  
3900 Main ST, Third Floor  
Riverside CA. 92522  
951-826-5933  
[pbrenes@riversideca.gov](mailto:pbrenes@riversideca.gov)

RE: Comments on the Draft Environmental Impact Report for the Western Realco-Alessandro Business Center SCH # 2007021005

These comments are submitted on behalf of the Center for Biological Diversity, San Bernardino Valley Audubon Society, and the Sierra Club (collectively “Conservation Groups”) on the Draft Environmental Impact Report (“DEIR” of “EIR”) for the Western Realco-Alessandro Business Center (“Project”), SCH # 2007021005, located northwest of the intersection of Alessandro Blvd and San Gorgonio Drive. The Conservation Groups appreciate the opportunity to provide comments and recommendations regarding the impacts of this project.

The Project, proposing over 650,000 square feet of commercial and industrial warehouse development, will result in numerous significant impacts to the environment and community that are unfortunately neglected in the DEIR, including significant negative impacts to biological resources and the already poor air quality in the region. The Project is proposed for habitat that has been designated as a core reserve for the federally endangered Stephens’ kangaroo rat and threatens to sever important habitat linkages to adjacent wildlife preserves. The project also has the potential to impact sensitive wildlife and community resources at the adjacent Sycamore Creek Wilderness Park.

The Project would result in significant impacts to air quality contributing tons of diesel exhaust and other pollutants into an area recognized as having severely impacted air quality. Furthermore, the Project poses a significant impact to climate change, which is neglected in the EIR. The EIR fails to adequately analyze a range of environmental impacts, mitigation

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351 California St., Ste. 600 • San Francisco, CA 94104  
tel: (213) 598.1466 fax: (415) 436.9683 email: [jevans@biologicaldiversity.org](mailto:jevans@biologicaldiversity.org)  
[www.BiologicalDiversity.org](http://www.BiologicalDiversity.org)

H-1

measures, and alternatives. At a minimum, the EIR must be revised and recirculated to remedy these deficiencies. However, because of the permanent and irreconcilable conflicts with the Stephens' Kangaroo Rat Habitat Conservation Plan the Project must be denied or the HCPs must be amended and consultation must be re-initiated under the Endangered Species Act to accommodate the project.

The Center for Biological Diversity is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center for Biological Diversity has over 200,000 members and e-activists throughout California and the United States, including residents of western Riverside County. The Center has worked for many years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life for people in the Inland Empire.

The San Bernardino Valley Audubon Society (SBVAS) is a local chapter of the National Audubon Society, a 501(c)3 corporation. The SBVAS chapter area covers almost all of Riverside and San Bernardino Counties and includes the project area. We have about 2,000 members, about half of whom live in Riverside County. Part of our chapter's mission is to preserve habitat in our area, not just for birds, but for other wildlife, and to maintain the quality of life in the Inland Empire.

The Sierra Club is a national nonprofit organization of over 732,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. Over 193,500 Sierra Club members reside in California. The San Geronio Chapter of the Sierra Club focuses on issues within the inland empire, including western Riverside County.

## **I. THE EIR MUST FULLY EVALUATE AND ANALYZE IMPACTS TO THE STATE AND FEDERALLY PROTECTED STEPHENS KANGAROO RAT**

As mentioned by the Conservation Groups in comments on the Notice of Preparation for the DEIR, and incorporated herein by reference, the Project poses a potentially significant threat to Stephens' kangaroo rat (*Didpodomys sphensi*) ("SKR") and the surrounding SKR populations because the development is planned in a crucial linkage for SKR populations at the Sycamore Canyon Core Reserve and March SKR Reserve (collectively "the Sycamore Canyon Core Reserve" as defined by the SKR Habitat Conservation Plan). (SKR HCP Figure 26, Sycamore Canyon Core Reserve). Instead of analyzing the Project's impacts to SKR populations, the SKR onsite, the SKR Sycamore Canyon Core Reserve, and important habitat linkages the EIR dismisses any substantive analysis of SKR on the project site. (DEIR at § 3.3). This fails to take into consideration the direct impacts to SKR on site and the indirect impacts to adjacent populations from the impacts of the crucial linkage between the Sycamore Canyon and March SKR populations.

The DEIR claims that as a result of a change to the HCP reserve boundary in 2007 that the Project is no longer part of the Sycamore Canyon Core Reserve because new maps have been issued by the Riverside County Habitat Conservation Authority (“RCHCA”). (DEIR at 3.3-7, 3.3-10, 3.3-29). However, the RCHCA cannot unilaterally amend the Stephens’ Kangaroo Rat Habitat Conservation Plan. Material changes to the HCP that involve reducing the acreage of core reserves or segmenting the preserve into isolated parcels, as is proposed by the revised map, must undergo a formal amendment and section 7 consultation under the Endangered Species Act.

The EIR fails to discuss the March SKR reserve to the south of the Project, which is currently being managed for the benefit of threatened and endangered species, in particular the SKR. (CNLM March SKR webpage; CNLM March SKR brochure, CNLM March SKR Preserve Sensitive bird locations). Omission of this important wildlife area constitutes an informational omission contrary to CEQA and imposes an improper baseline by failing to consider the existing environment. The DEIR cannot pretend the March SKR reserve does not exist as it does in the EIR. (DEIR at 3.3-29). The March portion of the Sycamore Canyon-March Core Reserve still contains occupied SKR habitat and continues to be managed as an SKR preserve. The proper baseline for environmental analysis is the existing environment at the time of the project’s Initial Study. This existing environment includes actual SKR populations in both Sycamore Canyon and March. Crucial connectivity exists between these populations through the project site.

The SKR is listed as endangered by the United States Fish and Wildlife Service under the Federal Endangered Species Act and threatened by the California Department of Fish and Game under the California Endangered Species Act. The potential impacts to SKR occupying the habitat, adjacent SKR populations, and the SKR HCP must be fully disclosed, analyzed, mitigated, and avoided in the EIR. There is no indication, however, that the project site was even surveyed for SKR, despite the fact that other surveys indicated the presence of SKR.

The proposed project would result in an overall direct loss of over 39 acres of currently existing open space that is a critical linkage between the populations of SKR within the existing Sycamore Canyon-March Core Reserve for the SKR. Populations of SKR exist within the Sycamore Canyon Wilderness Park north of Alessandro Blvd. Additionally, there is known occupied habitat for SKR within the March Air Force Base property south of Alessandro Blvd. and west of Highway 215, and on the Project site. The linkage between populations is essential in maintaining the integrity of the overall Sycamore Canyon reserve, allowing genetic flow and animal dispersal between the two component parts of the reserve.

The 1999 Biological Opinion (“BO”) issued by the U.S. Fish and Wildlife Service recognizes that Sycamore Canyon is unlikely to maintain a viable population of Stephen’s kangaroo rats, absent the connection to the March portion of the core reserve (1999 BO 1-6-99-F-13 on the Disposal and Reuse of March Air Force Base at pg. 21). The 1999 BO thus indicates that if the connection is severed between the Sycamore Canyon and March units of the Sycamore Canyon Core Reserve, the longterm viability of the Sycamore Canyon unit could be jeopardized. Already habitat fragmentation has affected the genetic diversity of SKR. (McClenaghan and Truesdale 2002). The EIR must disclose and analyze the Project’s potential to impact genetic flow and population viability for the SKR.

H-3

Protection of SKR movement across Alessandro Boulevard has long been seen as essential for SKR conservation. The 1990 Biological Opinion for the Highway 215 improvement project required Caltrans to construct culverts under Alessandro to maintain the biological connection between SKR populations. (Final SKR HCP 5(e); 1990 BO 1-6-90-F-29 Regarding Proposed Improvements to State Route 215 at pg. 4).<sup>1</sup> However, this improvement has not been implemented. Despite this, the animals currently successfully cross Alessandro Blvd in order to achieve this crucial genetic interchange. According to the 1999 Biological Opinion for the Disposal and Reuse of March Air Force Base, the large, contiguous, and intact Sycamore Canyon/March AFB Core SKR Reserve is important:

because small isolated populations of SKR in the plan area and reserve system are at risk simply because of their small sizes. Small populations have a higher probability of extinction than larger populations because their low abundance renders them susceptible to stochastic (random naturally occurring) events such as inbreeding, the loss of genetic variation, high variability in age and sex ratios, and catastrophes such as floods, droughts, or disease epidemics ...

Another factor that renders populations vulnerable to stochastic events is isolation, which often acts in concert with small population size to increase the probability of extinction for endangered populations. Urbanization and land conversion has fragmented the historic ranges of the SKR such that remaining blocks of occupied habitat now function independently of each other. Isolated populations are more susceptible to extirpation by accidental or natural catastrophes because their recolonization has been precluded.

(1999 BO 1-6-99-F-13 at pp. 20-21.) Based on modeling, the U.S. Fish and Wildlife Service estimated the long-term probability of persistence of the Sycamore Canyon SKR population would drop from 66 percent to 42 percent if the March population were lost. (1999 BO 1-6-99-F-13 at p. 21.) The same result necessarily applies if the linkage between these populations is severed or severely impacted from development and disturbance that SKR are no longer able to utilize the corridor. Accordingly, the Fish and Wildlife Service modeling indicates that the Project and the EIR's assumptions will result in the likely elimination of the Sycamore Canyon SKR population – an impact that is entirely ignored in the DEIR.

The Environmental Impact Statement/Environmental Impact Report for the SKR HCP (“HCP EIS/EIR”) also indicates that SKR can and do move across Alessandro between the project site and areas to the south. The HCP EIS/EIR states that:

Chance crossings of the road by SKR and manual relocation of SKR from one portion of the reserve to the other would be a practical and biologically acceptable way to maintain connectivity among SKR populations in the reserve. Relocation, however, will require coordination of efforts by the City of Riverside Park and Recreation Department (the

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<sup>1</sup> The EIR must analyze the Project's potential to interfere with the terms of the 1990 Biological Opinion 1-6-90-F-29 Regarding Proposed Improvements to State Route 215 that require the construction of a culvert under Alessandro Blvd. to provide habitat connectivity for SKR.

manager of Sycamore Canyon Park) and The Nature Conservancy (the manager of the MAFB conservation areas).

(SKR HCP EIS/EIR p. C-5.) We are unaware of any current relocation efforts by the City, further increasing the importance of the project site as a linkage between Sycamore Canyon and SKR populations to the south.

These statements in the Biological Opinion and HCP EIS/EIR indicate that SKR movement between Sycamore Canyon and March is both possible and extremely important to the viability of the Sycamore Canyon preserve. The project will sever and/or substantially degrade the remaining connection between the March and Sycamore Canyon SKR populations because it is placed on a narrow constrained linkage, or pinch point, between the March and Sycamore Canyon populations. (SKR HCP Sycamore Canyon, Cropped Map). The effect on the long-term viability of the Sycamore Canyon SKR population is potentially significant and must be disclosed and fully mitigated or avoided during the EIR process.

The EIR cannot rely on the March Air Force Base tradeout as a basis for determining that the impacts to the Stephen's kangaroo rat would be less than significant. The SKR HCP requires that the March Air Force Base tradeout must be subject to environmental review and Endangered Species Act consultation before the March portion of the Core Reserve is made available for development. (Final SKR HCP 5(C)(1)(e)). The 1999 Biological Opinion for the Disposal and Reuse of March Air Force Base further states that the SKR HCP must be amended prior to any impacts to the Core Reserve not addressed in the SKR HCP. (1999 BO 1-6-99-F-13 at p. 20.) To date, none of these requirements – environmental review, Endangered Species Act consultation, or HCP amendment - have been met for the tradeout. Notably, the 1999 Biological Opinion is not an Endangered Species Act consultation on the tradeout, but merely anticipates that the effects of the tradeout will be reviewed in the future. (1999 BO 1-6-99-F-13 at pp. 19-21.)

The EIR should also analyze the potential for night lighting to impact SKR populations both on and off the Project site. SKR often forages and moves around at night. Natural and artificial lighting impacts kangaroo rats because it inhibits their nocturnal foraging and makes them more susceptible to the chance of predation. (COSEWIC 2006). The EIR must discuss the extent that the proposed lighting will reduce SKR habitat adjacent to the project because of predation or avoidance.

Importantly, the EIR should disclose and analyze impacts to SKR on the Project site and not simply dismiss the obligation for disclosure and analysis required by CEQA under the guise that the Project applicant must pay the appropriate mitigation fee. (DEIR at 3.3-2). (SKR HCP Figure 26, Sycamore Canyon Core Reserve (Project site mapped as known occupied SKR habitat). Surveys for SKR should be conducted on the project site and adjacent to the project site to determine the potential impact from the project. Surveys are necessary to disclose to the responsible agencies what the overall impact of the project site would be to the existing SKR population, to determine the potential impacts to adjacent SKR populations, and to provide sufficient tracking and monitoring data. Without SKR surveys and the disclosure of accurate information regarding the presence of SKR on the Project site, the EIR would violate the

H-3

information requirements of CEQA to disclose and evaluate impacts to rare, threatened, sensitive, or endangered species.

The CEQA Guidelines require mandatory findings of significance when a project “has the potential to ... substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten or eliminate a plant or animal community, [or] reduce the number or restrict the range of an endangered, rare or threatened species ...” (CEQA Guidelines § 15065(a).) The project will do all of these things. It has the potential to substantially reduce the habitat of the SKR, cause the Sycamore Canyon SKR population to drop below self-sustaining levels, and/or threaten or eliminate the Sycamore Canyon SKR population by reducing the long-term viability of the population. In addition, it will manifestly reduce the number and/or restrict the range of the endangered SKR by directly destroying occupied habitat and severing the connection between Sycamore Canyon and March populations.

H-3

#### **A. THE EIR MUST FULLY EVALUATE AND ANALYZE IMPACTS TO THE AFFECTED HCPS AND BIOLOGICAL OPINIONS**

The Project has the potential to conflict with the established SKR Habitat Conservation Plan, which must be fully disclosed and analyzed. CEQA requires the evaluation of a project’s potential to conflict with an established HCP. CEQA Guidelines App. G. The Project would impact the important connection between the Sycamore Canyon and March Air Force Base SKR populations that provides a tenuous connectivity relied upon in the SKR HCP. Furthermore, the elimination of the connection acts as the functional separation of the Sycamore Canyon and March Air Force Base populations reducing the population viability of SKR within the Core Reserve, and reducing the overall population viability analysis of the SKR HCP. (1999 BO 1-6-99-F-13 at p. 21.)

H-4

Moreover development of the parcel threatens the implementation of requirements under the SKR HCP and associated Biological Opinions. As referenced above the SKR HCP and 1990 Biological Opinion for Interstate 215 (1-6-90-P-29) required Caltrans to "provide for a crossing for SKR under Alessandro Boulevard to connect the Sycamore Canyon Study Area to habitat on MAFB." (SKR HCP 5(E)(1)(a)). The industrial development of this land and conversion of it precludes the necessary mitigation measures required by Caltrans as part of their obligation to provide for a connection across Alessandro or the conservation of privately held parcels south of Alessandro to maintain functional connectivity as required by the SKR HCP. 54. (SKR HCP 5(E)(1)(a)). The EIR has not disclosed how Caltrans has achieved that conservation and whether the development of this privately held land would prohibit the implementation of the SKR HCP and conditions of the 1990 Biological Opinions for Interstate 215.

As discussed above this Project would potentially conflict with the existing SKR HCP and re-open the HCP for evaluation and amendment, pending section 7 consultation. 50 C.F.R. § 402.16(a-d). These impacts must be fully disclosed in the EIR.

## II. THE EIR FAILS TO ADEQUATELY DISCLOSE AND ANALYZE IMPACTS TO AESTHETIC AND RECREATIONAL RESOURCES

The location of the project will cause a significant impact on the aesthetic character of the area. Any substantial negative effect of a project on view and other features of beauty could constitute a significant environmental impact under CEQA. See *Quail Botanical Gardens Foundation, Inc. v. City of Encinitas*, (4<sup>th</sup> Dist. 1994), 29 Cal.App.4th 1597, 1604. Personal observations on nontechnical issues such as aesthetics and affects upon a viewshed can constitute substantial evidence that there will be a significant impact under CEQA. *Ocean View Estates Homeowners Assn., Inc. v. Montecito Water Dist.*, (2<sup>nd</sup> Dist 2004), 116 Cal. App. 4th 396, 402. These comments emphasize that the project would create a significant detrimental effect on the aesthetic quality of the area.

The project will have a significant effect on the visual character of the area by creating a aesthetically undesirable large scale industrial warehouse project, contributing to increased urbanization of existing natural areas, destroying visually desirable wildlife, plant species, and natural areas, impacting the viewshed of the regionally important Sycamore Canyon Wilderness Park, and increasing tractor trailer diesel truck traffic. On the Project site the EIR and Biological Surveys document numerous wildlife species and scenic vistas of the surrounding Sycamore Canyon Wilderness Park, Box Springs Mountains, and March Preserve. (See DEIR § 3.1 and App D.). The Conservation Groups find the large industrial project aesthetically unpleasant in its own right. The project will also result in the further destruction of the native plants, rock outcroppings, natural grasslands, and low rolling hills that provide aesthetic, spiritual, and scientific values for the Conservation Groups from adjacent parklands and thoroughfares. Increasing the amount of automobile and heavy truck traffic in the area will further degrade the character of the community. The destruction of additional habitat for listed species is a substantial negative effect of the project that will impact the visual character of the area. The detrimental effect on the viewshed would be seen by adjacent residents within the project vicinity, individuals passing along the roadway, and the many public individuals enjoying the regionally important Sycamore Canyon Wilderness Park across the road and to the north of the project. As a matter of law these observations represent the substantial evidence necessary to for a finding of significance and the required mitigation under CEQA.

Furthermore, the EIR disregards the impacts to the recreational resources of Sycamore Canyon Wilderness Park. The Project would result in the permanent conversion of area that was designated as parkland under the Riverside General Plan 2025. (See e.g. DEIR at 3.7-17). The dedication of open space in an area previously designated as open space does not provide adequate mitigation to offset these impacts to recreational resources. This represents a cumulative decrease in available open space and parkland in the City. It also prevents the Conservation Groups from recreational pursuits related to the scientific, spiritual, and aesthetic use of wildlife and open space in the City of Riverside. The project would also limit the ability of recreational users to access the park from the intersection of Alessandro Blvd and San Gorgonio Drive by placing a massive industrial project on what is currently open space. Finally, the EIR fails to analyze the project's inconsistency with General Plan Ordinances relating to recreation and aesthetics contrary to CEQA.

H-5

### **III. THE DEIR FAILS TO ADEQUATELY ANALYZE THE PROJECT'S NOISE IMPACTS**

The EIR fails to adequately disclose and analyze the impacts to adjacent communities and public resources from the noise related to construction and operation. For example the EIR discloses that typical construction noise at 50 feet would range from 78 to 89 dBA, (DEIR at 3.8-14), while the applicable noise thresholds for the City are 55-65 dBA. (DEIR at 3.8-18). Even with the construction mitigation measures that would reduce the impacts from 3-5 dBA the noise related impacts would be significant for users of the Sycamore Canyon Wilderness Park or the residents that live across Alessandro Blvd. from the Project. Furthermore, the EIR admits that the operational emissions will contribute to an increase in the existing noise levels that exceed the City of Riverside General Plan Guidelines, yet fail to adequately disclose and mitigate this significant impact. (DEIR 3.8-17). The EIR must engage in a good faith disclosure and analysis of the significant impacts from noise (DEIR 3.8-14, 3.8-17, 3.8-18, 7-6), and hide behind conflicting determinations of significance contrary to CEQA's information disclosure requirements.

H-6

### **IV. THE EIR MUST ADEQUATELY ANALYZE AND MITIGATE AIR QUALITY IMPACTS**

The EIR fails to adequately analyze and mitigate the significant impacts to air quality resulting from the project. Californians experience the worst air quality in the nation, with annual health and economic impacts estimated in at 8,800 deaths (3,000–15,000 probable range) and \$71 billion (\$36–\$136 billion) per year (Cayan 2006). Ozone and particulate matter (PM) are the pollutants of greatest concern (maximum levels are about double California's air quality standards) and the current control programs for motor vehicles and industrial sources cost about \$10 billion per year. In light of these underlying conditions it is critical that the air quality analysis be rigorous. The EIR is required to properly analyze the Projects' direct, indirect, and cumulative contribution to deteriorating air quality.

H-7

#### **A. SIGNIFICANT AIR QUALITY HAZARDS IN RIVERSIDE COUNTY**

Riverside County has the dubious distinction of being one of the most polluted areas in the country. (American Lung Association 2005; American Lung Association 2008). The Project will directly result in an increase in construction emissions and vehicle trips per day which will increase the level of a broad number of criteria pollutants under the Clean Air Act. The Project will result in significant impacts to air quality that result from significant levels of emissions of Volatile Organic Compounds (VOCs), Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Particulate Matter of 10 microns and 2.5 microns or less (PM10 and PM2.5). Increased diesel exhaust is particularly detrimental to long term human and lung health.

H-8

Ozone (O<sub>3</sub>) is the chief component of the common pollutant known as "smog." Ozone is formed when emissions including reactive organic gases (ROG) and oxides of nitrogen (NOx)

undergo photochemical reactions in sunlight and are transformed to O<sub>3</sub>. Ozone irritates lung airways and causes inflammation much like a sunburn. Ozone causes wheezing, coughing, pain when taking a deep breath, and breathing difficulties during outdoor activities. The American Lung Association focuses on ozone as one of the most hazardous of the common air pollutants. (American Lung Association 2008). Repeated exposure to ozone pollution for several months may cause permanent lung damage. Children, the elderly, and those with respiratory problems are most at risk, but anyone who spends time outdoors may be affected. Even at very low levels, ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to pneumonia and bronchitis. Ozone also interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, and weather, and damages the leaves of trees and plants, ruining the appearance of cities, national parks, and recreation areas. Ozone also reduces crop yields, and is, in fact, responsible for 98% of air quality related crop damage in California. A revised EIR must adequately discuss the proposed project's production of ozone precursor emissions and the direct, indirect, and cumulative impact both on human health and on vegetation and wildlife habitat, especially habitat for threatened, endangered, and sensitive species.

Particulate matter (PM) is a category of pollutant which includes the respirable particles suspended in the the air. PM is classified into "coarse" particles, PM<sub>10</sub>, or those under 10 microns in diameter, and "fine" particles, PM<sub>2.5</sub>, or those under 2.5 microns in diameter, and comes from a variety of sources including diesel exhaust, windblown dust from agriculture and construction and motor vehicles. Because the human respiratory system's ability to filter out harmful particles decreases as particles size decreases, the smallest particles lodge deepest in the lungs and are especially dangerous. PM can contain at least 40 toxic chemicals including heavy metals, nitrates, sulfates, and aerosols, as well as soot, soil, and dust.

PM is associated with extreme health consequences. PM causes premature death, aggravates asthma, increases coughing, painful breathing, and chronic bronchitis, and decreases lung function. Lung inflammation caused by inhaling PM can also lead to changes in heart rhythm, constriction of blood vessels, blood coagulation, and increased risk of heart attacks. Unlike what is believed about some other air pollutants, there is no "safe" level of PM pollution: even very low levels of PM lead to health impacts. (EWG 2002 at 25). One study found that in Riverside County alone, 353 deaths per year are due to current PM<sub>10</sub> levels, and 42,149 asthma attacks per year are due to current PM<sub>10</sub> levels. (EWG 2002 at 19). The EIR's failure to adequately analyze the link between air quality, health impacts, and impacts to biological resources render it inadequate. This and other information must be analyzed in a revised EIR so that the project's air quality impacts can be analyzed in the full environmental context.

## **B. THE EIR FAILS TO ADEQUATELY DESCRIBE THE PROJECT AND ENVIRONMENTAL SETTING AND ADEQUATELY ANALYZE IMPACTS**

The EIR must provide a stable and accurate project description in order to properly inform decision makers and the public, as well as provide a proper basis for analysis of impacts and mitigation to address those impacts. Here the EIR fails to fully disclose and analyze the air quality impacts from diesel emissions. One of the project objectives is the "transportation of

H-8

H-9

goods and services” provided by over 400,000 square feet of industrial warehouse/distribution. Much of the transportation and traffic associated with industrial warehouse and distribution facilities will be diesel truck traffic, which poses a much greater threat to human health due to the carcinogenic effects of diesel exhaust and fine particulates associated with diesel emissions. However, the EIR fails to describe what types of vehicles will be accessing the facility, in what volumes, at what frequency, and during what times. The EIR must fully disclose the types of vehicles that will be associated with the Project because those different vehicles pose very different threats and must be analyzed and mitigated in different fashions.

The EIR also fails to adequately describe the environmental baseline of the area affected and regional setting in order to properly inform the CEQA process. CEQA Guidelines § 15125(a) &(c). The California Air Resources Board and others confirm close proximity to high traffic and the associated emissions may lead to adverse health effects beyond those associated with regional air pollution in urban areas. (CARB 2005). Specifically, these studies found reduced lung function and increased asthma in children within 1,000 feet of heavy traffic. Id. In addition to the respiratory health effects, proximity to freeways increases potential cancer risk. Id. The Project compounds the existing negative air quality from adjacent industrial warehouse facilities, and freeway interchanges. These combined cumulative air quality impacts must be scrupulously analyzed. Furthermore the EIR fails to analyze the conflicts with the City policies regarding the development of large industrial warehouse facilities. (City of Riverside 2008). Given the sensitive receptors and significant impacts to human health that could result from the Project’s impacts it is troubling that the EIR chooses to omit information from the analysis. For example the EIR fails to include offsite delivery and haul trucks in its analysis of the exposure of sensitive receptors to the Project’s air quality impacts. (DEIR at 3.2-26).

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. The South Coast Air Quality Management District ("SCAQMD") includes in its list of sensitive receptors, residences, schools, playgrounds, childcare centers, convalescent homes, retirement homes, rehabilitation centers, and athletic facilities. The Project is adjacent to the Sycamore Canyon Wilderness Park, recognized by the City as a sensitive reception. (City of Riverside 2008). Sensitive population groups include children, the elderly, and the acutely and chronically ill, especially those with cardiorespiratory diseases. Residential areas are also considered to be sensitive to air pollution because residents tend to be home for extended periods of time, resulting in sustained exposure to any pollutant present. The Project fails to adequately identify the number and type of sensitive receptors that would be affected by this proposed Project. For example, the sensitive receptors in the residential community across Alessandro are not adequately addressed, neither are the sensitive receptors in the regionally important Sycamore Canyon Wilderness park where many in the local community go to exercise and recreate. Exercise increases the impacts of air pollution on pulmonary function.

The EIR must analyze consistency with the 2007 Air Quality Management Plan (“AQMP”) issued by the South Coast Air Quality Management District (SCAQMD 2007). It is critical that the EIR use a uniform metric for analysis and not rely upon any outdated AQMP to assure that the significant impacts from air quality are analyzed appropriately. Moreover, the

Conservation Groups have concerns regarding the EIR's analysis and disclosure of the air quality analysis. VMTs were severely undercounted for the air quality emissions leading to a distorted project description and omission of significant impacts. (DEIR App. B). For example, the EIR fails to explain the default trip values for vehicle miles traveled in the EIR to assure that those projections are accurate for the current circumstances. A warehouse distribution facility would draw from across the region from such areas as the Ports of Los Angeles and Long Beach, and other national distribution location, which contribute to substantial negative air quality impacts (Daily News 2009; Bluffstone 2007). This leads other similarly situated projects to find numerous significant air quality impacts (County of Riverside 2009). The EIR must further assure that assumptions used for traffic projections properly correspond with the assumptions used for the air quality analysis. Failure to properly account for the full description of the project and its impacts violates CEQA.

H-9

### **C. THE EIR FAILS TO ADEQUATELY EXAMINE THE PROJECT'S HEALTH RISKS**

The EIR's air quality analysis fails to adequately address the Project's effect on the community's health. Although the DEIR acknowledges that proximity to roads is related to adverse health outcomes, including respiratory problems, the document fails to conduct this critical study of demonstrating what the qualitative or quantitative risk is associated to nearby residents as result of the Project. The Project can lead to increased rates of asthma, decreased, lung or cardiac function, and other threats, but there is no analysis of what that means for the regional residents or visitors. Without this information, it is all but impossible to accurately and effectively gauge the severity and extent of the health', effects that would result from building the proposed Project. Again, the agencies have a duty to "painstakingly ferret out" the Project's impacts. *Env't'l Planning and Information Council of W. El Dorado County v. County of El Dorado* (1982) 131 Cal. App. 3d 350,357. It is critically important that the EIR emphasize the cumulative impacts of negative air quality and not simply dismiss those issues without thorough analysis and mitigation.

H-10

The Project will exacerbate the existing non-attainment for several criteria pollutants such as ozone, PM10, and PM2.5, yet fails to adequately disclose and analyze the Project's cumulatively significant contribution to those impacts. Because it neglects to recognize the significance of the impacts the EIR fails to analyze and adopt all the feasible mitigation measures.

### **D. THE EIR FAILS TO ADEQUATELY ANALYZE AND IMPOSE MITIGATION MEASURES FOR SIGNIFICANT IMPACTS TO AIR QUALITY**

In an attempt to subvert the procedural requirements of CEQA the EIR fails to adopt feasible mitigation measures that would have substantially lessened significant environmental impacts resulting from the Project. To effectuate its overarching purpose of reducing environmental harm, CEQA requires that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen" a Project's significant environmental effects. Pub. Res. Code § 21002;

H-11

Guidelines 15021. CEQA's substantive mandate is clear, "each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so." Pub. Res. Code § 21002.1(b) (emphasis added).. Mitigation of a project's significant impacts is one of the "most important" functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal.App.3d 30, 41 (1990).

There are numerous mitigation measures that could be adopted to reduce the significant air quality impacts associated with this project. Many of the mitigation measures outlined to reduce the significant impacts associated with greenhouse gas emissions can reduce criteria pollutants. Therefore the EIR should fully analyze all greenhouse gas and criteria pollutant mitigation measures, including those attached (CAPCOA 2008 at Appendix B; California Office of the Attorney General 2008), in order to reduce the significant impacts to air quality, or describe why those mitigation measures are infeasible. Guidelines § 15126.4(a)(1)(B). In accordance with CEQA's substantive mandate the Project cannot be approved when there are feasible mitigation measure to reduce those significant impacts. Pub. Res. Code §§ 21002, 21002.1(b).

H-11

## **V. THE EIR MUST ADEQUATELY ADDRESS THE IMPACTS OF GLOBAL WARMING AND CLIMATE CHANGE**

As discussed in the comments provided on the NOP, as a potential significant impact, the Draft EIR must thoroughly evaluate alternatives and mitigation measures that would reduce the Project's greenhouse gas emissions. Curbing greenhouse gas emissions to limit the effects of climate change is one of the most urgent challenges of our time. Fortunately, the California Environmental Quality Act ("CEQA"), Cal. Pub. Res. Code §§ 21000 et seq., 14 Cal. Code Regs. § 15000 et seq. ("Guidelines"), set forth a clear and mandatory process to address the Project's greenhouse gas and global warming impacts. This letter sets forth how this analysis should be completed.

H-12

### **A. THE EIR MUST ADDRESS THE IMPACT GLOBAL WARMING WILL HAVE ON THE PROJECT**

The Supreme Court has acknowledged that "[t]he harms associated with climate change are serious and well recognized." *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007). Environmental review requires the consideration of climate change, including how climate change has and will continue to impact the affected environment. *See e.g. Center for Biological Diversity v. NHTSA*, 508 F.3d 508 (9th Cir. 2007) ("Global warming has already affected plants, animals, and ecosystems around the world. Some scientists predict that 'on the basis of mid-range climate-warming scenarios for 2050, that 15-37% of species in our sample of regions and taxa will be 'committed to extinction.'"). Global warming's well-established impacts on resources including air quality, water resources, and biological resources will combine with and exacerbate the effects of development under the Project, and the EIR must address this critically important aspect of the problem. The EIR must also account for the dramatic impacts of global warming in determining a viable threshold for significance of the Project's impacts, and adopt all

feasible mitigation measures or alternatives in order to reduce the significant impacts of the project.

## **1 The EIR Must Analyze the Project and Impacts in the Context of a Changed Climate**

Climate change is already impacting California in severe and irreversible ways (CCCC 2008). Global warming affects California's climate, resulting in increased temperatures, sea level rise, and wildfires, and a reduction in snowpack and precipitation levels and water availability. These factors impact the project and the environmental setting of the Project, as well as exacerbate the Project's environmental impacts. Therefore, the City must adequately consider these impacts in the DEIR. *See* Guidelines § 15126.2(a) (as EIR "shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected.") The EIR must analyze global warming's impacts on the planning, land use, biological resources, wildfire, water supply, and other related areas of interest for this project. The EIR must use its best efforts to find out and disclose all it reasonably can about the impacts of climate change on the environment and—most importantly—use that information to form an educated opinion about how to plan and adapt for the impacts of climate change.

Scientists model future impacts based on different emissions scenarios (Cayan et al. 2006). Under a low emissions scenario, by the end of this century heat waves and extreme heat in Los Angeles will quadruple in frequency and heat-related mortality will increase two to three times (Hayhoe et al. 2004). Alpine and subalpine forests are reduced by 50-75%, and Sierra snowpack is reduced 30-70% (Hayhoe et al. 2004). Under a higher emissions scenario, heat waves in Los Angeles will be six to eight times more frequent, with heat-related excess mortality increasing five to seven times (Hayhoe et al. 2004). Alpine and subalpine forests would be reduced by 75-90%, and snowpack would decline 74-90%, with impacts on runoff and streamflow that, combined with projected declines in winter precipitation, and could fundamentally disrupt California's water rights system (Hayhoe et al. 2004).

H-12

### **a The Impacts of Climate Change on Threatened, Endangered, Rare, and Special Status Species**

Climate change has impacted a range of ecosystem processes leading to large-scale shifts in the ranges of species and the timing of the seasons and animal migration (USGCRP 2009). Threats to ecosystems and their species from fires, insect pests, disease pathogens, and invasive weed species have increased and will likely continue to increase (USGCRP 2009). For areas like the arid southwest (including the project area) deserts and drylands are likely to become hotter and drier, feeding a self reinforcing cycle of invasive species, drought, and wildfire that will transform ecosystems (USGCRP 2009).

Climate change is a leading threat to California and the world's biological diversity. Climate change will become one of the major drivers of extinction in the 21st century (IUCN 2009; Mayhew 2007). Under a relatively high emissions scenario, 35%, under a medium emissions scenario 24%, and under a relatively low emissions scenario, 18% of the world's

species studied would be committed to extinction by the year 2050 (Thomas 2004). The IPCC, the world's pre-eminent authority on global climate change, projected that approximately 20-30% of plant and animal species are likely to be at increased risk of extinction (IPCC 2007). In listing species under the ESA, FWS has also recognized that climate change poses an ongoing threat to wildlife posing a threat that can lead to extinction. *See e.g.* 71 Fed. Reg. 26852, Endangered and Threatened Species: Final Listing Determinations for Elkhorn Coral and Staghorn Coral; 73 Fed. Reg. 28212, Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range; 74 FR 1937, Endangered and Threatened Wildlife and Plants: Endangered Status for Black Abalone.

Scientists have predicted three categories of impacts from global warming: (1) earlier timing of spring events, (2) extension of species' range poleward or upward in elevation, and (3) a decline in species adapted to cold temperatures and an increase in species adapted to warm temperatures (Parmesan and Galbraith 2004). A survey of more than 30 studies covering about 1600 hundred species summarized empirical observations in each of these three categories and found that approximately one half of the species were already showing significant impacts (Parmesan and Galbraith 2004). Changes in the life cycles and behaviors of organisms such as plants blooming and birds laying their chicks earlier in the spring were some of the first phenomena to be observed. Depending on the timing and interactions between species, these changes may be very harmful.

The Edith's checkerspot butterfly, in California, provides a clear example of a species that has been severely impacted by such changes in the lifecycles of organisms. The Edith's checkerspot's host plant, *Plantago erecta*, now develops earlier in the spring while the timing of caterpillar hatching has not changed. Caterpillars now hatch on plants that have completed their lifecycle and dried up, instead of on young healthy plants (Parmesan and Galbraith 2004). The tiny caterpillars are unable to move far enough to find other food and therefore starve to death (Parmesan and Galbraith 2004). Because of this, many Edith's checkerspot butterfly populations have become extinct. Many more populations have been lost in the southern portion of the species' range than in the northern portion, resulting in a net shift of the range of the species northward and upwards in elevation. All these changes have occurred in response to "only" 1.3° Fahrenheit regional warming (Parmesan and Galbraith 2004).

The southernmost subspecies of the Edith's checkerspot butterfly, the Quino checkerspot butterfly, already listed as endangered under the Endangered Species Act due to habitat destruction from urban development and other impacts, has disappeared from nearly 80% of otherwise suitable habitat areas due to global warming (Parmesan and Galbraith 2004). The Bay checkerspot and Taylor's checkerspot butterflies, also listed under the Endangered Species Act, have been similarly impacted (Parmesan and Galbraith 2004).

Butterfly species are impacted in other ways as well. The northward expansion of the treeline into alpine meadow butterfly habitat can impede dispersal, fragment habitat, and increase mortality via butterfly collisions with the trees (Krajick 2004).

H-12

While theoretically some species can adapt by shifting their ranges in response to climate change, species in many areas today, in contrast to migration patterns in response to paleoclimatic warming, must move through a landscape that human activity has rendered increasingly fragmented and inhospitable (Walther 2002). When species cannot shift their ranges northward or to increased elevations in response to climate warming, they will become extinct (Parmesan and Galbraith 2004). Therefore, the least mobile species will be the first to disappear.

Species are also at great risk because climate change can alter conditions for diseases and their vectors in a way that allows the incidence of disease to increase and spread. Global warming can exacerbate plant disease by altering the biological processes of the pathogen, host, or disease-spreading organism (Harvell et al. 2002). For example, cold winter temperatures limit disease in some areas because the cold kills pathogens. Warmer winter temperatures can decrease pathogen mortality and increase disease (Harvell et al. 2002). Warmer temperatures can also increase pathogen growth through longer growing seasons and accelerated pathogen development (Harvell et al. 2002). The most severe and least predictable disease outbreaks will likely be when climate change alters host and pathogen geographic ranges, so that pathogens are introduced to new and vulnerable hosts (Harvell et al. 2002).

Climate change will also influence wildlife diseases by affecting the free-living, intermediate, or vector stages of pathogens (Harvell et al. 2002). Many vector-transmitted diseases are currently climate limited because the parasites cannot complete development before the vectors are killed by cold temperatures (Harvell et al. 2002). Well studied vector borne human diseases such as malaria, Lyme disease, tick-borne encephalitis, yellow fever, plague, and dengue fever have expanded their ranges into higher latitude areas as temperatures warm (Harvell et al. 2002).

Climate change will also elevate the importance of wildlife linkages to connect species populations or provide for migratory corridors for wildlife species impacted by changing ecosystem conditions. One of the critical functions of wildlife corridors or wildlife linkages is buffer the negative impacts of climate change on wildlife through facilitating migration and genetic flow (Servheen 2007, Halpin 1997). The project is part of the critical linkage connecting habitat for imperiled wildlife. Thus the importance of that wildlife connection or linkage must be analyzed in the context of its elevated importance to provide for wildlife migration due to climate change.

It is clear that some impacts from climate change are inevitable, and thus adaptation strategies to account for climate change impacts in long term habitat planning will be an essential component of any comprehensive strategy to manage the impacts of climate change on species. Unfortunately the EIR fails to account for the impacts of climate change on species impacted by the Project. The EIR's analysis of biological resources fails to adequately analyze global warming or climate change, and fails to include a substantive analysis of the impacts of climate change on the species that will be negatively impacted by the Project. This omission falls short of the information disclosure requirements under CEQA in considering the environmental effects of the permitted harm, harassment, and destruction of imperiled wildlife and wildlife habitat.

H-12

## **b The DEIR Must Analyze Global Warming's Affect on Water Supply in Determining Project Water Supply Impacts**

The DEIR fails to adequately address the impacts of climate change on water resources and availability relied upon by the Project. The IPCC projects with “high confidence” that water supplies stored in mountain snowpacks such as the Sierra Nevada will decline around the world, reducing water availability in regions supplied by meltwater (IPCC. 2007a). Most montane ice fields are predicted to disappear during this century, further exacerbating water shortages in many areas of the world (Epstein, P.R. and E. Mills 2005). The IPCC specifically identified the American West as vulnerable, warning, “[p]rojected warming in the western mountains by the mid-21st century is very likely to cause large decreases in snowpack, earlier snow melt, more winter rain events, increased peak winter flows and flooding, and reduced summer flows.” (IPCC. 2007b at 62). These changes would shift available water supplies from summer — when they are most needed by people, agriculture, and ecosystems — to earlier in the year (The Rocky Mountain Climate Organization, NRDC 2008). The IPCC also warned that the results would include “a projected increase in the chance of summer drying in the mid-latitudes,” which includes the American West, “with associated increased risk of drought.” (IPCC. 2007c) All in all, the IPCC concluded that in North America, including the fast-growing western United States, “[r]educed water supplies coupled with increases in demand are likely to exacerbate competition for over-allocated water resources.” (IPCC. 2007b)

The U.S. National Assessment water sector report also summarizes similar concerns:

“More than 20 years of research and more than 1,000 peer-reviewed scientific papers have firmly established that a greenhouse warming will alter the supply and demand for water, the quality of water, and the health and functioning of aquatic ecosystems.”

(Gleick 2000). In California the Legislature has recognized that greenhouse gas emissions and global warming pose serious threats to natural resources and the environment of California, from the potential adverse reduction in the quality and supply of water to the state from the Sierra snowpack (Health and Safety Code § 38501(a)). A dry climate caused by global warming would impose large costs and challenges on California, severely affecting the economies of some rural and agricultural regions of the state (CCCC 2006a). There is strong evidence that wildfires, precipitation patterns, and snowmelt are already being influenced by anthropogenic climate change (Westerling, et al. 2006). The recognized environmental impacts in the local and regional vicinity of the Project must be accounted for in the DEIR.

The impacts of climate change that must be addressed in water resources planning are varied and far reaching. The most significant impacts of global warming on water management are rising temperatures, increasing proportions of annual precipitation in the form of rainfall, disrupted streamflow timing, altered snowpack conditions, increased evaporation and transpiration, greater risk of fires, and sea level rise (NRDC 2007). Climate change and variability will affect the timing, amounts, and form of precipitation, which in turn will affect all elements of water systems, from watershed catchment areas to reservoirs, conveyance systems,

H-12

and wastewater treatment plants (Miller, Kathleen and David Yates. 2005). These systems are already stressed today due to a multitude of factors including limitations on supply from the Sacramento San Joaquin Delta (Tepper, Bruce 2008). Overdraft and contamination of groundwater sources have reduced the availability of groundwater supplies in many areas (NRDC 2007). Saltwater intrusion in coastal aquifers is a problem in many areas. *Id.* Climate change has the potential to exacerbate these situations, requiring increased attention from water managers and municipal planners.

The combined threats of climate change and population growth pose serious threats to the water supply of the Sierra Nevada (Sierra Nevada Alliance 2003). Evidence of warming trends is already being seen in winter temperatures in the Sierra Nevada, which rose by almost 2 degrees Celsius (4 degrees Fahrenheit) during the second half of the 20th century (NRDC 2007). Trends toward earlier snowmelt and runoff to the San Francisco Bay-Delta over the same period have also been detected (Dettinger, Michael D. and Dan R. Cayan 1994). Future changes in snowpack are a great concern because snow levels have been predicted to retreat 500 feet in elevation in California for every rise of one degree Celsius (Roos 2005). Under a low emissions scenario Sierra snowpack is reduced 30-70% (Hayhoe, K., et al. 2004). Under a higher emissions scenario snowpack would decline 74-90%, with impacts on runoff and streamflow. Combined with projected declines in winter precipitation, these changes could fundamentally disrupt California's water rights system. *Id.*

A significant body of analysis suggests that total streamflows in the future will be reduced in comparison with historical levels (NRDC 2007). Analysis by the California Climate Change Center in 2006 found that climate change could lead to significant reductions in total reservoir inflows and total Delta inflows (CCCC 2006b). Approximately two-thirds of model runs revealed likely reductions in total inflows for major northern California reservoirs, with maximum projected reductions of approximately 12 percent (CCCC 2006b).

Sea level rise also has potentially severe impacts on water supply (NRDC 2007). For example, for the San Francisco Bay and the Sacramento-San Joaquin River Delta, global warming impacts will compromise ecosystem health, water supply, and water quality. *Id.*

Scientists indicate that climate change will also exacerbate the problem of flooding by increasing the frequency and magnitude of large storms, which in turn will cause an increase in the size and frequency of flood events. *Id.* The increasing cost of flood damages and potential loss of life will put more pressure on water managers to provide greater flood protection. *Id.* At the same time, changing climate conditions (decreased snowpack, earlier runoff, larger peak events, etc.) will make predicting and maximizing water supply more difficult. *Id.* These changes in hazard risk and water supply availability must be considered during environmental review.

Water quality, in addition to water quantity and timing, will also be impacted. Changes in precipitation, flow, and temperature associated with climate change will likely exacerbate water quality problems. *Id.* Changes in precipitation affect water quantity, flow rates, and flow

H-12

timing.<sup>2</sup> Shifting weather patterns are also jeopardizing water quality and quantity in many countries, where groundwater systems are overdrawn (Epstein, P.R. and E. Mills 2005). Decreased flows can exacerbate the effect of temperature increases, raise the concentration of pollutants, increase residence time of pollutants, and heighten salinity levels in arid regions (Schindler, D.W. 1994). These issues must be accounted for in the EIR.

**c The EIR Must Analyze Global Warming’s Affect on Wildfire in Determining Wildfire Impacts**

Global warming will greatly affect the rate and intensity of wildfires (IPCC 2007c). Wildfires are already increasing due to increased warming in the US (USGRP 2009). If temperatures rise into the medium warming range, the risk of large wildfires in the state could increase by 55% (Cayan, et al. 2007). This is almost twice the increase expected if temperatures stay in the lower warming range. *Id.* The risk of wildfire is determined by a combination of factors in addition to temperature rise, including precipitation, winds, landscape and vegetation conditions, and, as a result the risk will not be identical throughout the state. *Id.* Thus, the DEIR must analyze how global warming will exacerbate project impacts on the likelihood and intensity of wildfires on the Project. This analysis should be conducted not only in the project setting, but within the area of hazards posed to the project and people.

The EIR fails to adequately address and analyze the impacts of climate change on the increasing intensity and frequency of fire for communities in the Wildland Urban Interface (WUI). Much of the Project site is within the WUI because the industrial and commercial developments are adjacent to open space that is prone to high severity fire. Global warming is partly responsible for an increase in numbers of large wildfires across the Western United States since the late 1980s with longer wildfire seasons and an increased number and more potent wildfires (Westerling et al. 2006). The length of the active wildfire season (when fires are actually burning) in the western United States has increased by 78 days, and the average burn duration of large fires has increased from 7.5 to 37.1 days (Westerling et al. 2006). Factors resulting from global warming such as earlier snowmelt, higher summer temp, and longer fire season increase fire intensity (Running 2006).

H-12

**d The EIR Must Analyze Global Warming’s Affect on Air Quality in Determining Project Air Quality Impacts**

Californians experience the worst air quality in the nation and global warming is worsening our air quality. More than 90 percent of the population of California lives in areas that violate state air quality standards for ground-level ozone or small particles (particulate matter) (USGRP 2009). Current annual health impacts associated with poor air quality are estimated at 8,800 deaths (3,000–15,000 probable range) and over a billion dollars in health care costs per year (USGCRP 2009). Higher temperatures due to global warming increase the

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2 The following examples are cited in: Gleick, Peter H. et al., 2000. “Water: The Potential Consequences of Climate Variability and Change for the Water Resources of the United States.” The report of the Water Sector Assessment Team of the National Assessment of the Potential Consequences of Climate Variability and Change,” U.S. Global Change Research Program, Pacific Institute for Studies in Development, Environment, and Security.

frequency, duration and intensity of conditions conducive to air pollution formation (USGCRP 2009). For example, in Los Angeles and San Joaquin counties the number of days conducive to air pollution formation could increase from 25-85% by the end of the century (USGRP 2009). Furthermore, air quality could be further impacted by the increased wildfires predicted by global warming (USGRP 2009). As such, the City must consider this impact in its environmental analysis.

These are only examples of how global warming will impact development of the project and intensify the environmental impacts it will already have. It is not an exhaustive list. Thus, when analyzing the risk of wildfire posed, or assessing the impact of the Project on water supply, air quality, wildfires and biological resources, the DEIR must take into account the effects of global warming on these resources.

Without adequate information on greenhouse gas emissions and their relationship to climate change, the EIR cannot adequately describe the existing environment, nor can it properly analyze the reasonably foreseeable direct, indirect, and cumulative impacts of the development facilitated by the project. The EIR must place the project into context by fully assessing the project's impacts within this environmental context of a changing climate. As detailed above, this information is readily available and the EIR must evaluate and reveal such information before approving a project that will permit the construction of a project impacted by climate change.

Similarly, to effectively evaluate the significance of impacts, it is important to establish a baseline against which to compare the impacts of a proposed action, consisting of the pre-project environmental considerations. The EIR fails to account for climate change in establishing a baseline against which to measure many of the environmental impacts of the project. The EIR's omission of the impacts to the affected environment from climate change and improper minimization of the significance of the impacts of the project prevents the EIR from properly disclosing the significance of the climate change impacts from the project.

H-12

### **B. The EIR Fails to Adequately Disclose and Analyze the Project's Impact on Climate Change**

The EIR fails to properly disclose and analyze the Project's significant impacts on global warming and climate change. As discussed above, the impacts of climate change are immediate and real. However, the DEIR improperly asserts that the greenhouse gas emissions associated with this project will be less than significant. (DEIR at ES-5). This analysis fails to recognize the need to avoid dangerous anthropogenic interference (DAI) with the climate system. The significance analysis should be revised to recognize the severe impacts of global warming on the state from numerous emissions like the proposed project, analyze California's long term emission targets set by Executive Order S-3-05, and consider the extent to which these reductions are consistent with the emission reduction pathway necessary to avoid DAI.

The relevant environmental objective with regard to a project's impact on global warming is stabilization of greenhouse gas concentrations in the atmosphere at a level that would

prevent dangerous anthropogenic interference (“DAI”) with the climate system. Framing the objective of a threshold of significance in the context of preventing DAI with the climate system is consistent with the policy of CEQA. As set forth in Public Resources Code Section 21000(d), “The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.” With regard to climate change, the prevention of DAI is the critical threshold to protect the health and safety of the people of California. The prevention of DAI with the climate is also the objective adopted by the international community. As set forth in the United Nations Framework Convention on Climate Change, to which the United States is a party: “The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”<sup>3</sup>

Dangerous anthropogenic interference with the climate system is a defined concept from which a threshold of significance under CEQA can be derived. While environmental impacts from global warming are already being experienced, dangerous anthropogenic interference has typically been defined at temperature increases above 2°C from pre-industrial levels, or a 450 ppm atmospheric concentration of CO<sub>2</sub> eq. (Union of Concerned Scientists 2007). 2050 is the time frame commonly set by scientists in which to achieve the emission reductions necessary for climate stabilization. The emission reduction scenario set by AB 32 and Executive Order S-3-05, whereby emissions are reduced to 1990 levels by 2020 and then to 80% below 1990 levels by 2050, is consistent with a stabilization scenario in the +/- 450 ppm range.<sup>4</sup>

However, climate scientists, including NASA’s premier climatologist, James Hansen, are increasingly calling for more stringent stabilization targets in order to sufficiently reduce the risk of catastrophic outcomes.<sup>5</sup> The best available scientific evidence now indicates that a 2°C temperature increase from pre-industrial levels is well past the point where severe and irreversible impacts will occur. It is now estimated that a mean global temperature increase of 1.5°C above pre-industrial levels has the potential to trigger irreversible melting of the Greenland ice sheet, a process that would result in an eventual 7m sea level rise over and above that caused by thermal expansion of the oceans, and potentially causing an additional sea level rise of 0.75m as soon as 2100. (Warren 2006 at 95). Specific consequences of a 2°C temperature rise from pre-industrial levels include the loss of 97% of the world’s coral reefs and the transformation of

H-12

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3 United Nations Framework Convention on Climate Change (UNFCCC), art. 2, May 9, 1992, available at [http://unfccc.int/essential\\_background/convention/background/items/1349.php](http://unfccc.int/essential_background/convention/background/items/1349.php).

4 While the emission reduction targets embodied in AB 32 and Executive Order S-3-05 can inform a determination of significance thresholds, this is because they reflect scientific data on needed emissions reductions. Under CEQA, regulatory standards can serve as proxies for significance only to the extent that they accurately reflect the level at which an impact can be said to be less than significant. See, e.g., *Protect the Historic Amador Waterways v. Amador Water Agency*, 116 Cal. App. 4th 1099, 1109 (2004).

5 James Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCI. J. 217, 226 (2008). 450 CO<sub>2</sub>eq is approximately equivalent to 400 ppm CO<sub>2</sub> stabilization, and 400 CO<sub>2</sub>eq is approximately equivalent to 350–375 ppm CO<sub>2</sub> stabilization. Michel den Elzen & Malte Meinshausen, *Multi-Gas Emission Pathways for Meeting the EU 2°C Climate Target*, in AVOIDING DANGEROUS CLIMATE CHANGE 300, 305 (2006).

16% of global ecosystems. Approximately one to three billion people would experience an increase in water stress, sea level rise and cyclones would displace millions from the world's coastlines and agricultural yields would fall in the developed world. (Warren 2006). In the Arctic, ecosystem disruption is predicted owing to complete loss of summer sea ice, with only 42% of the tundra remaining stable. This would destroy the Inuit hunting culture and cause the extinction of the polar bear and large losses in global populations of birds. Moreover, because Arctic ice functions to reflect heat back into the atmosphere, its loss would allow more sunlight to heat the Arctic Ocean and further accelerate the buildup heat and the melting of the Greenland ice sheet. In the Antarctic, key marine mollusks are predicted to become extinct with damaging ramifications for the rest of the Antarctic marine ecosystem. (Warren 2006). As the devastating and irreversible impacts resulting from a 2°C mean global temperature rise are far in excess of any reasonable definition of “dangerous” interference with the climate, a 2°C target is not an acceptable objective for climate policy.

Moreover, equating a particular atmospheric concentration of greenhouse gases with a specific temperature increase involves a significant degree of uncertainty. This is because climate sensitivity – the extent to which temperatures will rise as a result of increasing concentrations of heat-trapping gases – depends on Earth's response to certain physical processes that are not fully understood. (Cayan 2007 at 4). For example, as greenhouse gas emissions cause temperatures to rise, the atmosphere can hold more water vapor, which traps heat and raises temperatures further – a positive feedback. Clouds created by this water vapor could absorb and re-radiate outgoing infrared radiation from Earth's surface (another positive feedback) or reflect more incoming shortwave radiation from the sun before it reaches Earth's surface (a negative feedback). (Cayan 2007). Thus, due to uncertainty in climate sensitivity, scientists estimate that the mean probability of exceeding 2°C where stabilizing greenhouse gases at a CO<sub>2</sub>eq level of 450 ppm is 54% with a 30% probability that global average temperature would rise more than 3°C. (Cayan 2007; Union of Concerned Scientists 2007). This is effectively the equivalent of flipping a coin in the hopes that our children and grandchildren will not be confronted with the displacement of millions of people due to sea level rise, irreversible loss of entire ecosystems, and the triggering of multiple climatic “tipping points” wherein climate change begins to feed on itself and spin rapidly out of control.

As noted by the Attorney General in a recent guidance on the treatment of climate change in general plans, “the targets set by AB 32 and Executive Order S-3-05 can inform the CEQA analysis.” (California Attorney General 2009 at 4). However, while the emission reduction targets embodied in AB 32 and Executive Order S-3-05 can inform a determination of significance thresholds, this is because they reflect scientific data on needed emissions reductions. *See* Guidelines § 15064(b) (“[t]he determination of whether a project may have a significant effect on the environment calls for careful judgment ... based to the extent possible on scientific and factual data.”). Under CEQA, regulatory standards can serve as proxies for significance only to the extent that they accurately reflect the level at which an impact can be said to be less than significant. *See, e.g., Protect the Historic Amador Waterways v. Amador Water Agency*, 116 Cal. App. 4th 1099, 1109 (2004). Thus, to properly address the question of the significance of Project impacts, the EIR should set forth the environmental objective of stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent

H-12

DAI with the climate system, discuss California's emission reduction targets and the extent to which these targets are sufficient to meet avoid DAI. In this manner, the EIR will set forth the issues related to the significance of Project impacts in a manner that accurately informs decision makers and the public.

Although the EIR asserts that the Project would not interfere with the goals of AB 32, the EIR fails to provide any data on Project emissions as compared with 1990 levels. Accordingly, it is impossible to analyze the extent to which the Project exceeds AB 32 emission reduction mandates. Furthermore, the EIR's failure to disclose the emissions in a metric that provides for a reliable comparison to greenhouse gas emissions thresholds fails to properly inform the public and decision makers. For example, the EIR provides a quantification of emissions in pounds per day that far exceeds the recommended emissions thresholds established in tons per year by state and local air quality expert agencies, and lead agencies. (CARB 2008, CAPCOA 2008, SCAQMD 2008, County of Riverside 2008). In light of the significant impacts the threshold should be set accordingly low. See *Communities for Better Env't v. California Resources Agency*, 103 Cal.App.4th 98, 120 (2002) ("the greater the existing environmental problems are, the lower the threshold for treating a project's contribution to cumulative impacts as significant."). The EIR must be revised to provide this data and properly evaluate impacts.

H-12

### **C. THE EIR MUST ANALYZE AND ADOPT ALL FEASIBLE MITIGATION MEASURES TO REDUCE THE PROJECT'S GREENHOUSE GAS EMISSIONS**

In addition to thoroughly evaluating project alternatives, because it is clear that the project's greenhouse gas emissions will cumulatively contribute to global warming, "the EIR must propose and describe mitigation measures that will minimize the significant environmental effects that the EIR has identified." *Napa Citizens for Honest Gov't v. Napa County Bd. of Supervisors*, 91 Cal.App.4th 342, 360 (2001). CEQA requires that agencies "mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so." Pub. Res. Code § 21002.1(b). Mitigation of a project's significant impacts is one of the "most important" functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal.App.3d 30, 41 (1990). Therefore, it is the "policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures which will avoid or substantially lessen the significant environmental effects of such projects." Pub. Res. Code § 21002. Importantly, mitigation measures must be "fully enforceable through permit conditions, agreements, or other measures" so "that feasible mitigation measures will actually be implemented as a condition of development." *Federation of Hillside & Canyon Ass'ns v. City of Los Angeles*, 83 Cal.App.4th 1252, 1261 (2000).

H-13

There are any number of feasible measures that can be incorporated to reduce vehicle miles traveled, energy use, waste, water consumption and other sources of emissions. Attached to these comments are numerous mitigation measures that should be evaluated to reduce the significant impacts of this project. Guidelines § 15126.4(a)(1)(B). The California Air Pollution Control Officer's Association (CAPCOA) White Paper on CEQA and Climate Change identifies existing and potential mitigation measures that could be applied to projects during the CEQA process to reduce a project's GHG emissions. (CAPCOA 2008 at Appendix B). The California

Office of the Attorney General also has developed a list of reduction mechanisms to be incorporated through the CEQA process. (California Office of the Attorney General 2008). These resources provide a rich and varied array of mitigation measures to be incorporated in both the programmatic and project level. Because CEQA requires the adoption of all feasible mitigation measures to reduce significant impacts like climate change the Project must adopt all feasible mitigation measures to reduce GHGs or provide substantial evidence as to why the mitigation measures are infeasible. Pub. Res. Code § 21081(a)(3).

H-13

After all measures have been implemented to reduce emissions in the first instance, remaining emissions that cannot be eliminated may be mitigated through offsets. Preference should be given to offset mitigation measures in that are in close proximity to the project. (SCAQMD 2008). In other words project applicants should prioritize first on mitigation onsite, then on mitigation in the neighborhood or air district, next in state, then finally out of state. (SQAQMD 2008). Care should be taken to ensure that offsets purchased are real (additional), permanent, and verified, and all aspects of the offsets should be discussed in the EIR. As demonstrated by the Office of the Attorney General and SCAQMD offsets are a feasible CEQA mitigation measures<sup>6</sup> once all feasible mitigation measures have been adopted to reduce the Project's carbon footprint and produce energy using renewable sources. (SCAQMD 2008).

## **VI. THE EIR FAILS TO PROVIDE AN ADEQUATE DESCRIPTION OF THE PROJECT**

The EIR fails to provide an adequate depiction of the project and environmental setting by segmenting portions of the project from full disclosure and analysis. CEQA mandates “that environmental considerations do not become submerged by chopping a large project into many little ones—each with a minimal potential impact on the environment—which cumulatively may have disastrous consequences.” *Bozung v. Local Agency Formation Commission* (1975) 13 Cal.3d 263, 283-284. In order to avoid such a result CEQA defines the term “project” broadly. CEQA Guidelines §§15002(d); 15378(a). The EIR runs afoul of this requirement by failing to adequately disclose and analyze the impacts associated with converting a portion of the project area from parkland designation to industrial. (See e.g. DEIR Figure 2-14). The EIR claims that the 6.15 acre parcel is unplanned and thus is not subject to analysis in the DEIR (DEIR at 2-4), the EIR fails to make good faith efforts at full disclosure of what the projected indirect impacts of converting this land from open space to industrial development would be. The EIR cannot hide behind its failure to find assumptions for future development on the site. Considering the significant impacts to air quality that already result from the project the EIR should disclose the cumulative and indirect impacts of facilitating the development on the parcel for air quality, biological resources, aesthetics, and recreation.

H-14

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<sup>6</sup> The California Attorney General's Office has adopted CEQA settlements calling for the auditing, reduction, and offsetting of greenhouse gas emissions related with a Project demonstrating that offsets are a feasible way to reduce a Project's negative environmental effects on global warming. See

<http://ag.ca.gov/newsalerts/release.php?id=1466&category=global%20warming> See generally <http://ag.ca.gov/globalwarming/ceqa.php>

## VII. THE EIR MUST CONSIDER A REASONABLE RANGE OF ALTERNATIVES

The EIR fails to provide a meaningful analysis of a reasonable range of alternatives to the Project in order to lessen or avoid the Project's significant impacts. CEQA mandates that significant environmental damage be avoided or substantially lessened where feasible. Pub. Res. Code § 21002; Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d). A rigorous analysis of reasonable alternatives to the project must be provided to comply with this strict mandate. "Without meaningful analysis of alternatives in the EIR, neither courts nor the public can fulfill their proper roles in the CEQA process." *Laurel Heights Improvement Ass'n v. Regents of University of California*, 47 Cal.3d 376, 404 (1988). Moreover, "[a] potential alternative should not be excluded from consideration merely because it 'would impede to some degree the attainment of the project objectives, or would be more costly'" even when that alternative includes Project development on an alternative site. *Save Round Valley Alliance v. County of Inyo*, 157 Cal. App. 4th 1437, 1456-57 (2007) (quotations omitted).

The EIR must consider a reasonable range of alternatives including, but not limited to, the following: creation of the Project so that it does not directly impact the Sycamore Canyon Core Reserve as outlined in the SKR HCP, or sale of the land or conservation easement to a conservation entity.

The EIR must also consider adopting Alternative 3, the Reduced Site Plan, so that it incorporates the contribution of land to Sycamore Canyon Wilderness Park and repair of the existing storm drain under Alessandro Blvd. The EIR demonstrates that latter components are feasible project options that can be incorporated into the project design as easily for the Reduced Project Alternative as for the Proposed Project. The EIR cannot narrow the project objectives in such a fashion as to limit the feasibility of a project alternative that meets most of the project objectives. Conversely, the EIR cannot design an alternative that blatantly avoids the achievement of the project objectives when the components that achieve the project objective are readily available and adapted to the project in the proposed alternative. Finally, the EIR cannot assert that a project alternative is not economically feasible without substantial evidence. See e.g. *Uphold Our Heritage v. Town of Woodside*, 147 Cal.App.4th 587, 599 (2007); *Save Round Valley Alliance v. County of Inyo*, 157 Cal. App. 4th 1437, 1457 (2007).

An analysis of alternatives should also quantify the estimated greenhouse gas emissions, quantify impacts to biological resources, water resources including water quality and water availability, energy resources, and traffic resulting from each proposed alternative.

## CONCLUSION

Thank you for your attention to these comments. We look forward to working with the City to assure that the EIR conforms to the requirements of CEQA to assure that all significant impacts to the environment are fully analyzed, mitigated or avoided. Should you have any questions feel free to contact Jonathan Evans at the contact information listed above.

H-15

H-16

The Center for Biological Diversity, San Bernardino Valley Audubon Society, and Sierra Club wish to be placed on the mailing list for all future notices regarding this project. Please mail all notices to CBD at the address listed above (via email at [jevans@biologicaldiversity.org](mailto:jevans@biologicaldiversity.org)); San Bernardino Valley Audubon Society at P. O. Box 10973, San Bernardino, California 92423-0973; and Sierra Club, San Gorgonio Chapter, Moreno Valley Group, 26711 Ironwood Ave, Moreno Valley, CA. 92555.

H-16

Best regards,



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**EXHIBITS**  
(enclosed on CD)

American Lung Association 2005, webpage printout of Riverside County, California, State of the Air 2005.

American Lung Association 2008, State of the Air 2008.

American Lung Association 2008, Highlights of Recent Research on Particulate Air Pollution: Effects of Long-Term Exposure, October 2008.

Barnett et al., "Human-Induced Changes in the Hydrology of the Western United States," Science, Jan. 31, 2008.

Bluffstone, Randall A.; Brad Ouderkirk,. "Warehouses, trucks, and [PM.sub.2.5]: human health and logistics industry growth in the eastern Inland Empire.(Report)." Contemporary Economic Policy. 2007. Retrieved August 19, 2009 from accessmylibrary:  
[http://www.accessmylibrary.com/coms2/summary\\_0286-34357857\\_ITM](http://www.accessmylibrary.com/coms2/summary_0286-34357857_ITM)

California Office of Planning and Research 2008, Technical Advisory, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act Review, June 17, 2008.

California Office of the Attorney General 2008, The California Environmental Quality Act: Addressing Global Warming at the Local Agency Level, Mitigation Measures. Available at [http://ag.ca.gov/globalwarming/pdf/GW\\_mitigation\\_measures.pdf](http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf)

California Office of the Attorney General 2009, Climate Change, The California Environmental Quality Act, and General Plan Updates: Straightforward Answers to Some Frequently Asked Questions (updated March 6, 2009). [http://ag.ca.gov/globalwarming/pdf/CEQA\\_GP\\_FAQs.pdf](http://ag.ca.gov/globalwarming/pdf/CEQA_GP_FAQs.pdf)

CAPCOA 2008. CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.

CARB 2005, California Air Resources Board, AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE

CARB 2008, California Air Resources Board, Climate Change Proposed Scoping Plan, October 2008.

Cayan et al. 2006, Cayan, D., A.L. Luers, M. Hanemann, G. Franco, and B. Croes. 2006. Scenarios of Climate Change in California: An Overview, California Climate Change Center, CEC-500-2005-186-SF.

Cayan, et al. 2007. Our Changing Climate: Assessing the Risks to California. California Climate Change Center. Available at:  
[http://www.climatechange.ca.gov/biennial\\_reports/2006report/index.html](http://www.climatechange.ca.gov/biennial_reports/2006report/index.html).

CCCC 2006a, California Climate Change Center. 2006a. Climate Warming and Water Supply Management in California. (J. Medellin et al. University of California, Davis.)

CCCC 2006b, California Climate Change Center. 2006. Estimated Impacts of Climate Warming on California Water Availability Under Twelve Future Climate Scenarios. (Tingju Zhu et al, University of California, Davis.)

CCCC 2008. California Climate Change Center. Moser, Susie, Guido Franco, Sarah Pittiglio, Wendy Chou, Dan Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy, Related Environmental Research Program. CEC-500-2008-071.

Center for Natural Lands Management (CNLM), webpage of March SKR Preserve

Center for Natural Lands Management (CNLM), March SKR Preserve Brochure

Center for Natural Lands Management (CNLM), March SKR Preserve, Sensitive Bird Locations Spring 2008, Map produced Dec. 12, 2008.

City of Riverside 2008, Planning Department, City of Riverside Good Neighbor Guidelines for Siting New And/Or Modified Warehouse Distribution Facilities, Resolution No. 21734, Adopted October 14, 2008.

COSEWIC 2006, COMMITTEE ON THE STATUS OF ENDANGERED WILDLIFE IN CANADA, Assessment and Update Status Report on the Ord's kangaroo rat (*Dipodomys ordii*) in Canada

County of Riverside 2009, Environmental Impact Report for the Alessandro Commerce Centre, State Clearinghouse #2008061136, Prepared by Michael Brandman Associates, January 15, 2009, excerpt.

Daily News 2009, Daily News of Los Angeles, Susan Abram, Air over Los Angeles fails test again, Report: Area is nation's worst for ozone pollution, April 29, 2009.

EWG 2002, Environmental Working Group, Particle Civics, How Cleaner Air in California Will Save Lives & Money.

Epstein, P.R. and E. Mills (eds.). 2005. "Climate change futures health, ecological, and economic dimensions." The Center for Health and the Global Environment, Harvard Medical School. Cambridge, Massachusetts, USA.

Gleick, Peter H. et al., 2000. Water: “The Potential Consequences of Climate Variability and Change for the Water Resources of the United States.” The report of the Water Sector Assessment Team of the National Assessment of the Potential Consequences of Climate Variability and Change,” U.S. Global Change Research Program, Pacific Institute for Studies in Development, Environment, and Security.

Halpin P. 1997. GLOBAL CLIMATE CHANGE AND NATURAL-AREA PROTECTION: MANAGEMENT RESPONSES AND RESEARCH DIRECTIONS. *Ecological Applications*: Vol. 7, No. 3, pp. 828-843. (doi: 10.1890/1051-0761(1997)007[0828:GCCANA]2.0.CO;2)

Harvell, C. D., C. E. Mitchell, J. R. Ward, S. Altizer, A. P. Dobson, R. S. Ostfeld, and M. D. Samuel. 2002. Climate warming and disease risks for terrestrial and marine biota. *Science* 296:2158-2162.

Hayhoe, K., D. Cayan, C.B. Field, P.C. Frumhoff, E.P. Maurer, N.L. Miller, S.C. Moser, S.H. Schneider, K.N. Cahill, E.E. Cleland, L.Dale, R. Drapek, R.M. Hanemann, L.S. Kalksetin, J. Lenihan, C.K. Lunch, R.P. Neilson, S.C. Sheridan, and J.H. Verville. 2004. Emissions pathways, climate change, and impacts on California. *PNAS* 101 no. 34:12422-12427.

IPCC 2007a, Summary for Policymakers, in *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007).

IPCC. 2007b. Technical Summary in *CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY, CONTRIBUTIONS OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* at 62 (M. Parry et al., eds. Cambridge Univ. Press 2007).

IPCC, G. Meehl et al. 2007c, *Global Climate Projections in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* (Susan Solomon et al., eds., Cambridge Univ. Press 2007).

IUCN 2008, Red List, Species Susceptibility to Climate Change Impacts.

IUCN 2009, Vié, J.-C., Hilton-Taylor, C. and Stuart, S.N. (eds.) (2009). *Wildlife in a Changing World – An Analysis of the 2008 IUCN Red List of Threatened Species*. Gland, Switzerland: IUCN. 180 pp.

Krajick, K. 2004. All Downhill From here? *Science* 303: 1600-1602.

Mayhew 2007, A long-term association between global temperature and biodiversity, origination and extinction in the fossil record. *Proceedings of the Royal Society B*, (doi:10.1098/rspb.2007.1302)

McClenaghan, Jr., L.R. and H.D. Truesdale 2002. Genetic Structure of Endangered Stephens' Kangaroo Rat Populations in Southern California. *The Southwestern Naturalist*, 47(4):539-549

Miller, Kathleen and David Yates. 2005. *Climate Change and Water Resources: A Primer for Municipal Water Providers*, AWWA Research Foundation and the University Corporation for Atmospheric Research (2005).

NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al. available at <http://www.nrdc.org/globalWarming/hotwater/contents.asp>

NRDC 2008, "Hotter and Drier: The West's Changed Water Supply." S. Saunders et al.

Parmeson, C. and H. Galbraith. 2004. Observed impacts of global climate change in the U.S. Pew Center on Global Climate Change. 56 pp.

Rocky Mountain Climate Organization, NRDC 2008, "Hotter and Drier: The West's Changed Water Supply." S. Saunders et al.

Roos, Maurice, 2005, *Accounting for Climate Change* in California Water Plan Update, Vol. 4, Reference Guide, Public Review Draft, California Department of Water Resources, at 5.

Running, S. 2006. Is Global Warming Causing More, Larger Wildfires? *Science* 313: 927.

Schindler, D.W. 1994. Widespread Effects of Climatic Warming on Freshwater Ecosystems in North America, *Hydrological Processes*, Vol. 11, No. 8, pp.1043-1067 (2004); Mulholland et al., Effects of Climate Change on Freshwater Ecosystems of the South-eastern United States and the Gulf Coast of Mexico, *Hydrological Processes*, Vol. 11, pp.949-970 (1994).

SCAQMD 2007, South Coast Air Quality Management District. Final 2007 Air Quality Management Plan.

SCAQMD 2008, South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008.

Servheen, Christopher, Rebecca Shoemaker, and Pat Basting. "Measuring the Success of Wildlife Linkage Efforts". In *Proceedings of the 2007 International Conference on Ecology and Transportation*, edited by C. Leroy Irwin, Debra Nelson, and K.P. McDermott. Raleigh, NC: Center for Transportation and the Environment, North Carolina State University, 2007. pp. 409-421.

Sierra Nevada Alliance. 2003. "Troubled Water of the Sierra."

SKR HCP EIS/EIR, Riverside County Habitat Conservation Agency, Final Environmental Impact Statement Report for the Long Term Stephens' Kangaroo Rat Habitat Conservation Plan.

SKR HCP, Riverside County Habitat Conservation Agency, Habitat Conservation Plan for the Stephens' Kangaroo Rat, 1996.

SKR HCP Figure 26, Riverside County Habitat Conservation Agency, Habitat Conservation Plan for the Stephens' Kangaroo Rat, 1996

Tepper, Brue. 2008. "Delta Blues," *Los Angeles Lawyer*.

Thomas 2004, Extinction risk from climate change, *Nature* 427, 145-148 (8 January 2004) | doi:10.1038/nature02121

Union of Concerned Scientists 2007. How to Avoid Dangerous Climate Change: A Target for U.S. Emissions Reductions, available at [www.ucsusa.org/assets/documents/global\\_warming/emissions-target-report.pdf](http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf)

United States Fish and Wildlife Service, Biological Opinion Regarding Proposed Improvements to State Route 215 between Van Buren Boulevard and State Route 60, Riverside County, California (1-6-90-F-29), 1990.

United States Fish and Wildlife Service, Memorandum to Henri Bisson, District Manager, from Gail Kobetich re: March AFB Lands – Conditions for Removing from Consideration in Long-Term SKR HCP, (1994).

United States Fish and Wildlife Service, Formal Section 7 Consultation on the Disposal and Reuse of March Air Force Base, Riverside County, California (1-6-99-F-13), 1999.

USGCRP 2009, U.S. Global Change Research Program, Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.

USFWS BO, United States Fish and Wildlife Service, Intra-Service Formal Section 7 Consultation for Issuance of an Endangered Species Act Section 10(a)(1)(B) Permit (TE-088609-0) for the Western Riverside County Multiple Species Habitat Conservation Plan, Riverside County, California, June 22, 2004.

Walther, G. R., S. Beissner, and C. A. Burga. 2005. Trends in the upward shift of alpine plants. *Journal of Vegetation Science* 16:541-548.

Westerling, et al. 2006. "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity." *Scienceexpress*, p.1, 10.1126, *Science*, 1128824 (July 6, 2006).

**References**  
(not enclosed)

- 71 Fed. Reg. 26852 (May 9, 2006) Endangered and Threatened Species: Final Listing Determinations for Elkhorn Coral and Staghorn Coral;
- 73 Fed. Reg. 28212 (May 15, 2008) Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range;
- 74 Fed. Reg. 1937 (January 14, 2009) Endangered and Threatened Wildlife and Plants: Endangered Status for Black Abalone.
- California Office of Planning and Research, Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions, Jan. 8, 2009.
- California Office of Planning and Research, CEQA Guidelines Sections Proposed to be Added or Amended, Apr. 13, 2009.
- Dettinger, Michael D. and Dan R. Cayan 1994. Large-scale Atmospheric Forcing of Recent Trends Toward Early Snowmelt Runoff in California, *Journal of Climate*, 8:606-23.
- Hansen, J et al. 2008, *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCI. J. 217, 226 (2008). 450 CO<sub>2</sub>eq is approximately equivalent to 400 ppm CO<sub>2</sub> stabilization, and 400 CO<sub>2</sub>eq is approximately equivalent to 350–375 ppm CO<sub>2</sub> stabilization.
- Warren 2006, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases in AVOIDING DANGEROUS CLIMATE CHANGE* (Cambridge Univ. Press) (2006) [not attached].

## **Comment Letter H. Jonathan Evans, Center for Biological Diversity/Drew Feldman, San Bernardino Audubon Society/George Hague, Sierra Club**

### **Response to Comment H-1**

All potentially significant impacts to the environment and the community, including air quality and biological resources, have been fully addressed in the EIR as required by CEQA. (See Draft EIR §§ 3.2 and 3.3 [analyzing potential impacts to air quality, global warming, and biological resources] and Chapter 4 [analyzing cumulative impacts to these resource areas].) The air quality of the region is included in all analyses and determinations of cumulative impacts. (See Draft EIR § 3.2 and pp. 4-5 through 4-6.) These issues are further addressed in Response to Comments H-7 through H-11, which are incorporated by reference herein.

The project will not sever linkages but would rather result in the merging of currently isolated portions of open space, which would provide a more consistent corridor for wildlife. (Draft EIR pp. 3.3-29, 3.3-30, 3.3-52, 3.3-53.) The project site contains areas planned for Industrial and Business Manufacturing Park development and is therefore not designated as an important habitat linkage. (See *ibid.*) Furthermore, the project incorporates the dedication of over 36.23 acres of open space which is currently held in private lands. (Draft EIR p. 3.3-48.) This would result in a net benefit to biological resources. (*Ibid.*)

As addressed below in greater detail, the proposed project does not conflict with the SKR HCP and therefore, recirculation of the DEIR would not be required or appropriate.

### **Response to Comment H-2**

Comment noted.

### **Response to Comment H-3**

Although the entire project area is within the jurisdiction of the SKR HCP plan area, it is located entirely outside of the SKR HCP Core Reserve as depicted in Figure 3.3-6 of the DEIR. (See also Draft EIR p. 3.3-29.) The SKR HCP established seven core reserves for SKR within western Riverside County and provides for the ongoing management of the occupied SKR habitat within those reserves. (Draft EIR p. 3.3-29.) All other properties within the SKR HCP plan are within the plan's "fee area," where development is permitted and project compliance with the plan is achieved through the payment of a mitigation fee. (*Ibid.*) As such, the SKR HCP authorizes actions by private land owners that

could result in an incidental take of SKR and the only project-level requirement for such activities outside of reserves is payment of an SKR mitigation fee for each acre of land disturbed by the project. (Draft EIR p. 3.3-29) An Environmental Impact Report for plan fully analyzed the impacts to the SKR and other environmental resources. The EIR for the Plan was certified and the Plan was approved in 1996. The EIR and the Plan subsequently withstood extensive legal challenge regarding their adequacy under CEQA and other laws, and are now beyond further challenge under CEQA.

The DEIR does not dismiss analysis of SKR on the site. Impacts to SKR are discussed throughout Section 3.3. The DEIR states for example that “the project would entail take of SKR outside of the SKR reserve and add land that permanently connects two segments of an existing SKR Reserve. This take is authorized under the SKR HCP because the project site is outside the SKR Reserve,” (DEIR, Page 3.3-7) (FEIR, Appendix G, Attachment 15). Focused surveys are not required under the SKR HCP and were therefore not conducted; however, SKR were assumed to use the site.

Since the RCHCA is the management authority for the HCP, the maps provided by it are accurate and are the official current boundaries of the HCP. This project does not propose changes to any HCP maps nor does the City have the ability to make such changes.

The March Air Base lands (MAB) were discussed in the DEIR, on Page 3.3-29 (referred to as the MAB component of the SKR reserve system). As stated in the DEIR, the SKR HCP anticipated that the realignment of lands would occur and would eliminate the MAB component of the SKR reserve system. The acquisition of SKR habitat in Potrero Valley to replace the MAB component (tradeout of lands) occurred in late 2003 with concurrence of CDFG and USFWS as per the 1999 Biological Opinion provision to release the SKR Management Area. (Refer to FEIR, Appendix G, Pages 1 – 4) Development of this project site does not depend upon the Potrero land swap. The DEIR for this project does not rely on this exchange of lands to determine that impacts are less than significant as the commenter states, but rather the fact that the project complies with the MSHCP, the SKR HCP, includes payment of fees for SKR protection, includes dedication of 36.23 acres of land as open space, preserves the connection between the Core Reserve areas through the northern portion of the site, and includes mitigation measures devised to benefit biological resources as a whole, including SKR (DEIR, Pages 3.3-33-3.3-40). Also, the subject property was not part of the acreage required to meet the RCHCA’s Core Reserve Expansion requirements. The RCHCA successfully met their minimum acreage requirement through the Potrero site acquisition and other areas, which did not include or need the subject property.

Furthermore, the DEIR does not ignore that connectivity may exist through the site and states that “the drainages function as wildlife linkages/movement corridors for a wide variety of species,” (DEIR, Page 3.3-30). The DEIR later describes impacts to SKR as potentially significant impacts that include “temporary and permanent impacts on drainages potentially used by SKR as movement corridors,” (DEIR, Page 3.3-34). The baseline of the EIR does

include SKR populations in Sycamore Canyon Core Reserve, the previous MAB component of the SKR reserve system, as well as the project site (the project site is assumed to be occupied by SKR [DEIR, page 3.3-19 and 3.3-22], and all analysis throughout the DEIR reflects this assumption).

Impacts to SKR have been fully disclosed, analyzed, and mitigated in the DEIR. As stated previously, SKR was assumed present onsite and impacts to SKR were conservatively taken as the maximum impact area for the project. Furthermore, both the SKR HCP and the Western Riverside County MSHCP contain incidental take provisions, including payment of fees designed to purchase compensatory occupied habitat. The documents establishing these two programs, including the supporting analysis per CEQA in the EIR/EIS documents, examined impacts to the species from loss of individuals in non-core areas and determined that purchasing identified habitat was sufficient mitigation for impacts to SKR. Since these analyses were performed as part of the SKR HCP and the MSHCP, no additional analysis is required. As a result, and based on guidelines within each document, formal surveys for SKR are not required.

Regardless of what the 1999 Biological Opinion (BO) for the Disposal and Reuse of MAB says re connectivity, between Sycamore Canyon and the March component neither the SKR HCP nor the MSHCP identified the project site as a part of the overall solution for connectivity. Rather, other solutions for retaining linkages were found, including other areas and Caltrans culverts. No empirical evidence has been submitted that shows that development of this project would sever or substantially degrade the remaining connection between the March and Sycamore Canyon SKR populations. Furthermore, the project also contains measures that would preserve connectivity for SKR through the dedication of 36.23 acres of land to the City of Riverside Parks, Recreation and Community Services Department for inclusion into the wilderness park. This dedication will benefit SKR by providing a permanent connection between the two components of the Sycamore Canyon Wilderness Park, which are currently bisected by privately owned property which is part of the SKR Core Reserve. Although the lands being added to the wilderness park have not been specifically evaluated for habitat suitability for SKR, they provide an additional buffer to SKR in the core reserve from adjacent development and provide connectivity between two isolated areas of the core reserve. In addition, the project includes the repair of blocked stormdrains that would connect to the area south of Alessandro Boulevard. These repairs are proposed as part of hydrological improvements to the site, but they may provide an additional connection that SKR could use to cross Alessandro Boulevard. Therefore, development of the project will not hinder or otherwise preclude other opportunities or avenues for SKR population migration.

The commenter is correct that the undercrossings proposed as mitigation for Caltrans were not constructed. After the 1990 BO was issued, Caltrans performed preliminary studies for the proposed Alessandro Boulevard SKR undercrossing, and the results of those studies were reviewed with USFWS. In a January 1994 letter the USFWS concluded that due to the presence of underground utility pipelines the “construction of the necessary linkage under

Alessandro Boulevard would be extremely expensive and of uncertain biological value.” Instead, USFWS recommended that Caltrans perform the following:

1. Two privately held parcels of land south of Alessandro would be acquired and conserved as SKR habitat. An amount equal to ten percent of the purchase price would be set aside to finance a "periodic, managed translocation of SKR between suitable SKR habitat areas in Sycamore Canyon Park and March ARB and monitoring of such translocation efforts"; and
2. Funding would be provided for a two-year monitoring study of SKR movement between MAB and Sycamore Canyon Park.

Statements in the comment letter, the BO, and the EIR/EIS for the SKR HCP indicate that sufficient movement of SKR does currently occur and that manual relocation is a practical and biologically acceptable means of maintaining connectivity and genetic diversity. However, the proposed project does not prevent the migration of SKR between the two areas since the northern portion of the site (as well as the area to the west of the site) would be dedicated as open space and the project would not prevent SKR from crossing Alessandro Boulevard as currently occurs under existing conditions. Repair of the stormdrains below Alessandro Boulevard may also provide an alternative route for SKR to cross the major roadway, although the repairs were not designed for that purpose. Therefore, the requirement of manual relocation is not appropriate or warranted for the proposed project.

The Potrero land swap demonstrates an agreement by multiple resource agencies at the County, state, and federal level that area on MAB referred to as the SKR Management area was not required for the survival of SKR and that the area does not need to be maintained as a Core Reserve. A letter dated December 29, 2003 (see FEIR Appendix G, Attachment 11) was issued jointly by CDFG and USFWS confirming that the land acquisition portion of the expansion requirement of the Long-Term SKR HCP was completed as a result of:

- Core Reserve expansion requirement of 2,540 acres, of which USFWS and CDFG agreed that 1,454 acres remained to be protected.
- Potrero site acquisition to yield 2,488 acres of occupied SKR habitat
- Exchange of March Air Force Base SKR Management Area to Potrero site meaning a loss of 1,300 acres of habitat at March;
- Resulting 1,188 acres are credited toward the remaining 1,454 acres needed to meet the expansion requirement.

Furthermore, development of this project site does not depend upon the Potrero land swap. The DEIR for this project does not rely on this exchange of lands to determine that impacts are less than significant as the commenter states, but rather the fact that the project complies with the MSHCP, the SKR HCP, includes payment of fees for SKR protection, includes dedication of 36.23 acres of land as open space, preserves the connection between the Core Reserve areas through the northern portion of the site, and includes mitigation measures devised

to benefit biological resources as a whole, including SKR (DEIR, Pages 3.3-33-3.3-40).

The DEIR contains measures to address lighting impacts to all species. Mitigation Measure BIO-15 states “Any night lighting will be directed away from natural open space areas and direct downward and towards the center of the development. Energy-efficient LPS or HPS lamps will be used exclusively to damper glare,” (DEIR, Page 3.3-37). The use of such lighting will ensure that “any project light spillage would be restricted to the business park development and associated slopes. Light would not spill into the adjacent Conservation Areas.” (Draft EIR at p. 3.3-50.)

Contrary to the commenter’s assertion, the DEIR does analyze the impacts to SKR on the project site. The entire project area was assumed to be occupied; therefore impacts were calculated at permanent removal of 36.91 acres of SKR habitat (DEIR, Page 3.3-34). Surveys are not necessary according to the SKR HCP for non-core areas (DEIR, Page 3.3-22). Additionally, given the known populations occurring near the project site, it is reasonable to assume their presence. Furthermore, SKR surveys, when required by the SKR HCP, are not intended to be a full population census for the species, but rather a method to document presence. For this project, presence was assumed and, thus, it is inaccurate for the commenter to state that a full census would be necessary to disclose impacts.

As described above, the RCHCA does not include the project area within the SKR Core Reserve (also see DEIR, Page 3.3-7, 3.3-10, and 3.3-29) and it is therefore not a crucial linkage or necessary area for preservation. As a matter of fact, there are other areas shown as SKR reserve throughout the HCP that are not part of a linkage but rather stand alone reserve areas. The commenter’s speculation, argument, and unsupported opinions are not substantial evidence that the viability of the population relies solely on the project site remaining undeveloped or that significant impacts will result. (See State CEQA Guidelines, § 15384.) To the contrary, the evidence shows that the project will not cause the isolation of SKR Core Reserve areas but rather would preserve a connection between the two currently isolated areas by placing current private property in permanent open space to be managed by City of Riverside Parks, Recreation and Community Services Department as wilderness park lands. (Draft EIR pp. 3.3-52 and 3.3-53.)

## Response to Comment H-4

As demonstrated in the DEIR, the proposed project is consistent with both the SKR HCP and the MSHCP (DEIR, Pages 2-5, 2-6, 3.1-16, 3.3-2, 3.3-3, 3.3-7-3.3-10, 3.3-21-3.3-40, 3.3-46-3.3-52, 3.7-23-3.7-25, 3.8-21, 3.9-11, 4-7, 4-11, 6-1-6-2). The project will not fragment the SKR Core Reserve area and will not eliminate connectivity to lands outside the parcel. Rather, the proposed project includes the dedication of lands which would preserve both and east-west

crossing at the northern end of the site and north-south crossing east of the proposed development. (See, e.g., Draft EIR p. 3.3-53.)

The proposed project does not threaten the implementation of requirements under the SKR HCP and BO documents. As stated previously, the USFWS concurred that construction of the undercrossings would be infeasible and of uncertain biological value. Further, the requirements clearly state that a parcel south of Alessandro be purchased, but the proposed project site is located north of Alessandro Boulevard. (Draft EIR Figure 2-4.) Based on the above, plus the detailed discussion included in the DEIR in Section 3.3, the project is consistent with the SKR HCP. Also see response to comment H-3.

## Response to Comment H-5

The commenter is inaccurate. The DEIR fully discloses impacts to aesthetics (Section 3.1) and recreational resources (Section 3.9). The relevant General Plan policies for aesthetics and recreation are discussed in both of these sections of the DEIR (Pages 3.1-3 to 3.1-5, 3.1-9, 3.1-13, 3.1-17, 3.9-3 to 3.9-4, 3.9-10). As noted by the commenter, personal observations can sometimes constitute substantial evidence of potentially significant aesthetic impacts, that then requires the lead agency to prepare an EIR to further analyze those aesthetic impacts. However, the City has prepared an EIR for this project, and the detailed analysis provided in that EIR concluded that impacts to aesthetics were less than significant. (Draft EIR p 3.1-1.)

The visual character of the area was a major influence on project design. Viewer groups and viewpoints were selected to assess visual impacts (DEIR, Pages 3.1-9 to 3.1-16). The potential viewers listed by the commenter, including adjacent residents, individuals passing on the roadway, and Sycamore Canyon Wilderness Park users, are all included in the DEIR (Viewer Group 1, 2, and 3, respectively). (Draft EIR pp. 3.1-9 through 3.1-10 and Figures 3.1-5 through 3.1-8.) Consideration of the adjacent land uses was included in the project design and, as a result, the view from Sycamore Canyon Wilderness Park includes reduced visibility of the project development through a screen wall and planting tall trees to provide vegetative cover. (E.g., Draft EIR pp. 3.1-14, 2-6, 2-7 and Figure 2-7a.) Furthermore, the view from the park of the site is compatible with the nature of the park within the existing business park specific plan. (Draft EIR p. 3.1-14.) An 8-foot high tilt-up concrete screen walls to shield views of loading docks and trash enclosures from Alessandro Boulevard and San Gorgonio Parkway were also included in the proposed project design. (See, e.g., Draft EIR Figure 2-9 [screening plan].) Rock outcroppings were preserved wherever feasible, and the majority of the outcrops on the site would be preserved in the lands that will be dedicated to the Sycamore Canyon Core Reserve. (Draft EIR pp. 3.1-12 through 3.1-13 and Figure 3.1-10.) Based on the above as well as additional details documented in the aesthetics chapter of the DEIR, visual impacts were found less than significant. (DEIR, Page 3.1-12 to 3.1-18). Therefore, and contrary to the commenter's statement, a finding of significance is not warranted. (See State CEQA Guidelines § 15064(b) [There is no "iron clad" definition of a significant

impact, and the determination of significance “calls for careful judgment on the part of the public agency.”].)

The direct and indirect impacts on recreation caused by the proposed project were included in the DEIR under Impact REC-1 (DEIR, Pages 3.9-9 to 3.9-11). The dedication of 36.23 acres of land will convert privately held open space lands (which could be developed in the future) to City-owned lands that will be managed as a wilderness park, resulting in a net-increase in parklands and a beneficial impact on recreation. (See Draft EIR p. 3.7-17.) These lands represent a significant increase in City-owned parkland and provide a connection between City parkland located northwest and northeast of the subject property. Accordingly, there would be no direct or cumulatively significant impacts on recreational resources. (Draft EIR pp. 3.9-1 and 4-13 through 4-14.) The access point described by the commenter from Alessandro Boulevard and San Gorgonio Drive is currently an unauthorized access point to the park that has led to damage within the area from users creating multiuse unauthorized trails (DEIR, Page 3.9-9; Figure 2-9). The City has required that the proposed project include building fences to prevent such unauthorized activity and degradation of the area (DEIR, Page 2-6), as is also required by the MSHCP urban/wildlands interface guidelines (DEIR, Page 3.3-51). The proposed dedication of lands would allow the City to create official trails throughout the area to enhance the recreational use while minimizing disturbance.

Finally, and contrary to what the commenter states, the City has analyzed the project’s consistency with the General Plan and other City requirements related to aesthetics and recreation. (See, e.g., Draft EIR pp.3.1-15 [discussing project’s consistency with City’s lighting standards], 3.1-17 [discussing project’s consistency with Specific Plan and General Plan aesthetic and land-use compatibility requirements], 3.9-9 through 3.9-11 [analyzing consistency with General Plan recreational requirements and City’s park development fee requirements].) Because the commenter’s statement is vague in that it does not identify the specific “General Plan Ordinance” requirements as to which it is concerned, no further response is required. (See Master Response # 3.)

## Response to Comment H-6

The DEIR has engaged in good faith disclosure and analysis of impacts from noise, as can be evidenced by the commenter’s inclusion of the noise measurements expected to be caused by the project. The project has included mitigation measures to reduce noise during construction to the extent feasible.

Although on-site construction noise could reach 89 dBA as the commenter states (DEIR, Page 3.8-13 to 3.8-14), the nearest receptor (users of the Sycamore Canyon Wilderness Park ) is 600 feet away at the edge of the park boundary which would result in a noise level of 67 dBA (DEIR, Page 3.8-14). At the nearest residential land uses located approximately 1,500 feet away from the center of construction activity, construction noise during the noisiest phases of work is predicted to be approximately 57 dBA  $L_{eq}$ . Based on the measurements

conducted in the residential neighborhood, noise from construction likely would be audible at times but would be lower in magnitude than existing traffic noise along Alessandro Boulevard (DEIR, Page 3.8-14).

Additionally, temporary blasting may be required during the initial phase of the project for a period of approximately 2 weeks prior to grading, due to existing granitic soils that underlay the site. At the near edge of the Sycamore Canyon Wilderness park approximately 600 feet away from the center of construction, the probable peak noise level would be between 123 dB and 119 dB (DEIR, Page 3.8-20). At the nearest residential land uses approximately 1,500 feet away, the probably peak noise level would be approximately 112 dB. These noise levels would be very brief (on the order of several milliseconds each) and occur for a short time prior to grading.

The noise levels from airblast are likely to exceed the City of Riverside's Noise Code standards for operations for brief durations (i.e., the applicable noise standard or the measured ambient noise level, plus 20 decibels, for any length of time) (DEIR, Page 3.8-20). However, the City's Noise Code does not apply to construction activities and specifically exempts temporary construction activities from the operational noise standards, if activities are not permitted during specified hours (DEIR, Page 3.8-9, 3.8-14). The City has imposed limitations on construction to assure that construction will not occur during nighttime hours, on Sunday, or on federal holidays. (Final EIR pp. 3.8-1 through 3.8-3 [including mitigation measures NOISE-2.]) Mitigation Measures Noise-1 was incorporated to further reduce construction-related noise and would result in a reduction of approximately 3 to 5 dBA (DEIR, Page 3.8-18 to 3.8-19). Accordingly, the City's conclusion that construction noise is less than significant with mitigation is supported by substantial evidence.

The noise levels suggested by the commenter are for operational noise, which are also addressed in the DEIR. (Draft EIR pp. 3.8-15 3.8-18.) As noted above, those operational noise standards do not apply to construction-generated noise. Contrary to the commenter's statement, the City's analysis demonstrates that the operational noise added by the project will not result in a cumulatively significant impact. (See Draft EIR pp. 3.8-17 and 4-11 through 4-12.) The EIR shows that the project would add to the existing noise levels by only zero to two dBA, and thus "would not materially worsen an existing exceedance." (Draft EIR pp. 3.8-16 and 3.8-17.) The City's conclusion is thus supported by both substantial evidence and the law. (See, e.g., *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 120 ["This does not mean, however, that any additional effect in a nonattainment area for that effect necessarily creates a significant cumulative impact; the one additional molecule rule is not the law."].)

## Response to Comment H-7

The DEIR provides a comprehensive air quality analysis in Section 3.2 and Appendix B. This analysis addresses each of the air quality significance criteria

required by Appendix G of the CEQA Guidelines plus, although this is not an adopted threshold under the CEQA Guidelines at this time, an analysis related to the State goal of reducing greenhouse gas (GHG) emissions to 1990 levels. Several significance thresholds were used in examining the project's air quality impacts, consisting of SCAQMD established methods and thresholds for regional and local air quality impacts, CO, health risk/sensitive receptors, and cumulative impacts, as published in SCAQMD's *CEQA Air Quality Handbook*. Finally, for operational contributions to violating air quality standards was determined to be significant and unavoidable, even with mitigation incorporated. Cumulative air quality impacts were also analyzed in the EIR. (See, e.g., Draft EIR pp. 4-5 through 4-6.) Additional air quality issues are described in the following comments (H-8 to H-11).

This comment expresses specific concern for existing conditions and project-related impacts related to ozone (O<sub>3</sub>) and particulate matter (PM). Existing conditions for O<sub>3</sub> and PM are discussed on pages 3.2-15 and 3.2-16 of the Draft EIR. Project impacts related to these two pollutants are discussed on pages 3.2-22 through 3.2-25. Please note that though project-specific O<sub>3</sub> emissions and the associated impacts are not identified in the Draft EIR, impacts with respect to this pollutant are properly analyzed. As explained on page 3.2-6 of the Draft EIR, O<sub>3</sub> is formed when reactive organic gases (ROG, also known as "reactive organic compounds, or "ROC") and oxides of nitrogen (NO<sub>x</sub>) react in the presence of sunlight. Projects generally do not directly emit O<sub>3</sub>, and, accordingly, SCAQMD guidelines do not suggest analyzing O<sub>3</sub> on a project level. Rather, SCAQMD maintains significance thresholds for emissions of the two identified "ozone precursors," and the project's emissions of these pollutants were properly analyzed in the Draft EIR on pages 3.2-22 through 3.2-25. Project-level emissions of NO<sub>x</sub> are identified as significant and unavoidable. This project-level significant impact is also acknowledged in Chapter 4 of the Draft EIR for its contribution to the significant cumulative impact of O<sub>3</sub> emissions in the Basin. Page 4-5 states that because the Basin has non-attainment status for O<sub>3</sub> and the project would result in significant emissions of the ozone precursor NO<sub>x</sub>, "the proposed project would contribute to a significant cumulative air quality impact" with respect to ozone.

As noted on pages 3.2-23 and 3.2-24 of the Draft EIR, the project's construction and operational emissions of PM do not exceed SCAQMD thresholds and, therefore, PM impacts are less than significant.

Because the air quality analysis was properly conducted for this project and properly presented in the Draft EIR, and because commenter's statement is vague in that it does not identify any specific concerns regarding the air quality analysis, no further response is required. (See Master Response # 3.)

## Response to Comment H-8

Implementation of the proposed project will result in an increase of temporary construction traffic, as well as an increase in truck and passenger car trips during

operations of the business center. Impacts AQ-1 through AQ-3 in Section 3.2 of the DEIR is supported by substantial evidence presented in the air quality study, Health Risk Assessment, and modeling results provided in Appendix B of the DEIR (DEIR, Pages 3.2-21 to 3.2-30). In addition, the air quality study followed the data requirements and methodologies recommended by the SCAQMD for assessing impacts of these air pollutants, and the information requested in the comment is provided in a similar fashion in the air quality study (including the health effects of various pollutants).

CEQA requires the analysis of project-specific impacts and consistency of projects with the locally adopted Air Quality Management Plan, which is addressed in Impact AQ-1 (DEIR, Page 3.2-21 to 3.2-22). As shown in Table 3.2-6 (DEIR, Page 3.2-25), regional emissions resulting from the proposed project would not exceed regional SCAQMD thresholds for reactive organic compounds (which the commenter states as ROG), SO<sub>x</sub>, CO, or PM<sub>10</sub>. Regional emissions would, however, exceed the SCAQMD threshold for NO<sub>x</sub>. Thus, regional operations emissions would result in a significant long-term regional air quality impact. Mitigation measures AQ-1 to AQ-8 were incorporated to reduce these emissions to the extent feasible, but would still lead to emissions above the threshold. Therefore, as disclosed in the DEIR, operations-period NO<sub>x</sub> emissions would be significant and unavoidable, and a Statement of Overriding Considerations will be required should the City choose to approve the project (DEIR, Page 3.2-26). Additionally, as discussed above in the response to comment H-7, O<sub>3</sub> impacts are properly addressed through examination of the project-specific emissions of ROG and NO<sub>x</sub>, and through their contribution to cumulative O<sub>3</sub> emissions.

The SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulates (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions. Since the proposed 673,825-square foot business park is expected to generate approximately 627 daily truck trips, a human health risk assessment (HRA) that evaluates the potential cancer risks to nearby sensitive receptor locations that may result from the onsite diesel emissions associated with long-term facility operations was prepared for the project (DEIR, Appendix B). The carcinogenic exposure due to diesel emissions that would occur under the proposed project would result in a risk of less than 1 in 1,000,000 at the residential receptor location, and 9.15 in 1,000,000 at the nonresidential receptor location. Both of these carcinogenic risk values are below the SCAQMD established significance threshold of 10 in 1,000,000 (DEIR, Page 3.2-30). Additionally, the Draft EIR explains that existing health risks in the South Coast Air Basin as a whole is already at 1,400 per million. (Draft EIR p. 3.2-16.) Accordingly, the project's potential increase in cancer risk is both insignificant according to the AQMD's standard and also in the context of the existing conditions within the South Coast Air Basin. It should be noted that the HRA prepared for the project was based on a specific set of conservative and health-protective assumptions, and as such, the actual levels of human exposure to diesel emissions (and related potential cancer risks) at the sensitive receptor locations are likely to be substantially less than the quantitative estimates derived in the health risk assessment. It should also be noted that according to the

SCAQMD's MATES-II study, the cancer risk in the project vicinity is approximately 250 to 500 in 1,000,000 (DEIR, Page 3.2-30). Therefore, the health effects from local air quality on sensitive receptor locations present within the general project vicinity would not be substantially different as a result of the proposed project. In addition, the incremental health risk impact from the proposed project would be below the applicable significance threshold, and as such, project development would result in a less than significant impact on human health (DEIR, Page 3.2-30).

## Response to Comment H-9

A comprehensive analysis of the project's emissions, including diesel emissions is provided in Appendix B of the DEIR. Furthermore, the types of vehicles, volume of trips, frequency, and timing of these trips are all required inputs into the URBEMIS 2007 emissions inventory model used for calculating air quality emissions. The vehicle trips input into the URBEMIS model rely on estimates determined in the traffic study prepared for the project by Kunzman Associates (Appendix G of the Draft EIR), as explained on page 3.2-24 of the Draft EIR. These trip estimates were determined by industry standard practices for traffic engineers, and are based on trip-generation factors published in the Institute of Transportation Engineers *Trip Generation* manual (7<sup>th</sup> edition, 2003), and in the City of Fontana's *Truck Trip Generation Study* (January 2007). Project trip generation data are provided in the Transportation and Circulation section of the DEIR (Section 3.10 and Appendix G) and are therefore fully disclosed in the document.

As described above, the air quality analyses included describing the existing conditions of air pollution in the area and also analyzed impacts to sensitive receptors. Sensitive receptors, contrary to the information provided in the comment, are described in the document (DEIR, Page 3.2-16), and include the residential community located on the south side of Alessandro Boulevard – which are more than 1,000 feet away from the Project site.

Contrary to the commenter's statement, the City's EIR fully analyzed the project's consistency with City policies. (See generally Response H-5.) Because the commenter's statement is vague in that it does not identify any specific "policies" about which it is concerned, no further response is required. (See Master Response # 3.)

Contrary to the commenter's statement, the City's EIR fully analyzed health risk impacts and disclosed the project's potential impacts. (Draft EIR pp. 3.2-29 through 3.2-30.) That analysis specifically linked health risks to both residential and non-residential receptors. (Draft EIR p. 3.2-30.) See also Response H-8.

The comment states that the DEIR must address consistency with the SCAQMD air quality management plan. This is fully addressed in Impact AQ-1 (DEIR, Pages 3.2-21 and 3.2-22). Furthermore, as stated previously, the traffic assumptions are used by the air quality analysis as inputs and are therefore

consistent. VMT was calculated as described in the DEIR and Methodology section of the Traffic Study (DEIR, Page 3.10-9). Kunzman Associates applied trip generation rates and procedures contained in the 2003, 7<sup>th</sup> Edition, Institute of Transportation Engineers' *Trip Generation*, and the 2007 Fontana Truck Trip Generation Study (Kunzman 2007).

## Response to Comment H-10

The EIR fully analyzed the project's potential impacts on air quality. A detailed Health Risk Assessment is provided in Appendix B of the DEIR and summarized in Section 3.2. Furthermore, all direct, reasonably foreseeable indirect, and cumulative emissions related to the project are fully disclosed and analyzed in the document. (See Response H-8 and H-9.) As stated above, the project would result in significant and unavoidable impacts contributing to a violation of an air quality standard for NO<sub>x</sub> Impact AQ-2 (DEIR, Page, 3.2-26; also see Response to Comment H-8). The only significant and unavoidable impact identified by the air quality analysis is the emission of NO<sub>x</sub> during operations. (Draft EIR p. 3.2-26.) Although the City imposed all feasible mitigation to reduce this impact, NO<sub>x</sub> emissions during operations will nonetheless be significant and unavoidable. (*Ibid.*) Contrary to the commenter's statements, the potential health risks associated with prolonged exposure to high concentrations of NO<sub>x</sub> are fully described and disclosed on Draft EIR p. 3.2-7.

## Response to Comment H-11

The Commenter's assertion that the EIR fails to adopt feasible mitigation measures that would have substantially lessened significant environmental impacts resulting from the project in an attempt to subvert the procedural requirements of CEQA is not true. Detailed in Table 3.2-1 (Summary of Project Impacts and Mitigation on Air Quality), provided on page 3.2-1 of the Draft EIR, there is a list of 18 feasible mitigation measures prescribed to reduce Project NO<sub>x</sub> emissions to the extent feasible.

The Commenter is correct in stating that measures proposed by the California Air Pollution Control Officers Association (CAPCOA) and the California Office of the Attorney General (AG) to reduce GHG emissions have the co-benefit of reducing criteria pollutant NO<sub>x</sub> emissions, and therefore, should be considered in reducing the significant NO<sub>x</sub> emissions that would occur with approval of the proposed project. As demonstrated below, all feasible GHG-reducing, and therefore criteria pollutant reducing measures, recommended by CAPCOA and/or the state AG have been adopted.

### Discussion of CAPCOA GHG Reduction Measures

CAPCOA provides a list of 97 GHG-reducing measures in Appendix B of their publication *CEQA & Climate Change* (January 2008). As shown therein, Table 16 (Mitigation Measure Summary) contains a list of 74 measures; and Table 17

(General Planning Level Mitigation Strategies Summary) contains a list of 23 measures. As stated in the table title, the 23 measures provided under Table 17 are General Plan-level mitigation options that are not applicable for the proposed project. Examples of such measures include “Provide for convenient and safe local travel,” and “Achieve optimum use of regional rail transit,” among other measures. As such, none of the 23 measures provided in Table 17 are feasible mitigation options appropriate for the proposed project, because the proposed project is not a General Plan or Specific Plan. All feasible project-level mitigation options have been adopted.

Table 16 (Mitigation Measure Summary) provides a list of 74 measures that are organized under seven categories: transportation (21 measures), design (19), energy efficiency/building component (24), social awareness/education (2), construction (4), Regional Transportation Plan (2), and miscellaneous (2). As detailed in Table 16, the 27 measures listed under the categories transportation, social awareness/education, Regional Transportation Plan, and miscellaneous are clearly not applicable for the proposed project. Examples of such measures include “Bike parking at multi-unit residential,” and “Dedicate high occupancy vehicle (HOV) lanes prior to adding capacity to existing highways,” among other measures. As such, none of the 27 measures included under these categories are feasible mitigation options appropriate for the proposed project, because the proposed project is not a transportation, social awareness/education, or Regional Transportation Plan type project. All feasible mitigation options that are appropriate for a warehouse distribution center type project have been adopted. In addition, since project NO<sub>x</sub> and all other criteria pollutant emissions during construction would be less than significant, there is no CEQA requirement to consider the 4 measures included under the “construction” category in Table 16.

Of the 19 measures included in Table 16 under the “design” category, only four measures: **MM D-14** Enhanced recycling/waste reduction, reuse, composting, **MM D-15** LEED certification, **MM D-16** Retro-commissioning, and **MM D-17** Landscaping, are measures suitable for the proposed project. None of the remaining 15 measures included under this category are feasible mitigation options appropriate for proposed warehouse distribution center type project. With respect to **MM D-14**, this measure is currently prescribed in the Draft EIR under Mitigation Measure AQ-17, which reads “Provide interior and exterior storage areas for recyclables and green waste, and adequate recycling containers located in public areas.” While the project would not seek LEED certification as offered under **MM D-15**, existing Draft EIR mitigation measures AQ-1 through AQ-8, AQ-12 and AQ-15, would meet the same energy and water conservation goals pursued under LEED certification; and as such, would achieve similar reductions in GHG and criteria pollutant emissions. Proposed measure **MM D-16** (retro-commissioning) is the application of the commissioning process to existing buildings. As the proposed project would involve construction of a new facility, it will undergo a commissioning process prior to issuance of Certificate of Occupancy. With respect to **MM D-17**, this measure is currently prescribed in the Draft EIR under Mitigation Measure AQ-12, which reads “Landscape to preserve natural vegetation and maintain watershed integrity.”

Of the 24 measures included in Table 16 under the “energy efficiency/building component” category, at least 16 of said measures are currently prescribed as air quality mitigation measures and/or currently incorporated into project design. Other measures from this category such as **MM E-10** (Vegetated Roof) and **MM E-24** (Goods transport by rail), among other measures, are not applicable and/or feasible mitigation options appropriate for the proposed project.

### **Discussion of California AG Office GHG Reduction Measures**

The 24 energy efficiency, water conservation/efficiency and solid waste reduction measures recommended by the California AG Office are similar to and/or duplicative of the CAPCOA measures discussed above. As such, all such measures that are applicable and feasible for the proposed project are currently prescribed as air quality mitigation measures and/or incorporated into project design. Proposed measures from categories such as Renewable Energy, Land Use (General Plan type), Transportation and Motor Vehicles, Off-site Mitigation and General Plan Measures are not applicable and/or feasible mitigation options appropriate for a warehouse distribution center type project.

In conclusion, numerous mitigation measures were identified to address and reduce the significant NO<sub>x</sub> emissions anticipated to occur as a result of the proposed project and disclosed in the Draft EIR. All feasible mitigation measures with a more than speculative ability to reduce impacts were incorporated into the project. Furthermore, the South Coast Air Quality Management District (SCAQMD) has reviewed the air quality section and appendix circulated as part of the Draft EIR for adequacy of air quality impact analysis and prescribed mitigation measures. No additional mitigation measures were recommended or provided.

## **Response to Comment H-12**

As stated on pages 3.2-31 through 3.2-32 of the Draft EIR, greenhouse gas emissions are believed to be responsible for the phenomenon of global climate change. The following is a partial list of ways climate change could impact the natural environment:

- Rising sea levels along the coastline;
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- An increase in heat-related human deaths, infectious diseases, and risk of respiratory problems caused by deteriorating air quality;
- Reduced snow pack and stream flow in the Sierra Nevada mountains, affecting winter recreation and water supplies;
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding;

- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- changes in hydrologic cycles.

These environmental conditions would not only affect humans, but also plants and wildlife, as increased temperatures and changes in the availability of water would likely change various species' distribution patterns and lead to increased competition from colonizing species. The City also acknowledges the effects of global warming discussed at length in this comment letter. However, please note that the EIR for this project is not the proper venue to comprehensively analyze global warming's impact on the environment, as this comment suggests. The project's impacts in terms of greenhouse gas emissions and their influence on global climate change were properly analyzed in detail in Section 3.2 (see a discussion of potential impacts of climate change on DEIR, Page 3.2-12 to 3.2-13 and project-related GHG emissions on DEIR, Page 3.2-18 to 3.2-20, and 3.2-31 to 3.2-35). There are currently no established guidelines or regulations issued on significance thresholds or methodologies for assessing impacts of global warming. Nonetheless, the City fully analyzed GHG emissions, quantified those emissions, and concluded that impacts would be less than significant. (See, e.g., Draft EIR pp. 3.2-31 through 3.2-33.) Additionally, mitigation measures to further reduce those already insignificant impacts by the greatest extent feasible were imposed by the EIR. (Draft EIR pp. 3.2-34 through 3.2-35.) Furthermore, the additional environmental issues the commenter says should be addressed (including biological resources and water supply) have all been incorporated into their respective sections in the document and addressed according to the CEQA Guidelines.

## Response to Comment H-13

As stated in response to the previous comment, there are no established criteria for addressing global warming and GHG emissions in the CEQA Guidelines. Impact AQ-5 (conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020) was incorporated into the project's impact analysis although it has not been adopted under the CEQA Guidelines at this time (DEIR, Page 3.2-31 to 3.2-35). The emissions of GHG related to the project were determined to be at less-than-significant levels before mitigation was incorporated. (Draft EIR p. 3.2-32.) Nevertheless, mitigation measures were incorporated to specifically address GHG emissions reductions during construction and operations. AQ-9 through AQ-13 include changes in materials and waste minimization in order to reduce impacts related to construction (DEIR, Page 3.2-34). AQ-14 through 18 include measures to change the types of vehicles used, enhance efficiency, and restrict activities which would lead to excess GHG emissions (DEIR, Pages 3.2-34 to 3.2-35). In addition to reducing operations-related criteria pollutant emissions for Impact AQ-2, mitigation measures AQ-1 through AQ-8 would also serve to reduce GHG emissions through energy conservation. Therefore, the project and the EIR adequately address global warming and GHG emissions. Because the project's potential impacts to global warming are already less than significant and because the City

has further reduced those already-insignificant impacts through the imposition of mitigation measures, no further mitigation is required. (State CEQA Guidelines, 15126.4(a)(3) [“Mitigation measures are not required for effects which are not found to be significant.”].)

## Response to Comment H-14

The commenter is incorrect. The potential development of the 6.15-acre parcel is addressed in the DEIR on Page 2-4: “No development of the 6.15-acre parcel has been proposed at this time, and so any possible future uses are unknown. As such, any analysis of potential future development or the impacts associated therewith would be speculation and is not required by CEQA (see State CEQA Guidelines Section 15145). Nonetheless, future development of the 6.15-acre parcel of land, if any, would be subject to additional CEQA review by the City of Riverside.” Because the future development – if any – and uses of that 6.15-acre parcel are completely unknown, there is not yet enough information available to allow the City to complete a meaningful environmental review. (State CEQA Guidelines, § 15004.) Accordingly, any analysis of those future uses would be entirely speculative and is not required under CEQA. (State CEQA Guidelines, §§ 15145 and 15004.) Since environmental review under CEQA would be required by any future development, the impacts of development of this parcel would be addressed at that time.

## Response to Comment H-15

As required by CEQA, a range of reasonable alternatives were examined in the DEIR based on the identified significant impacts and that would feasibly obtain most of the objectives of the proposed project. (State CEQA Guidelines, §15126.6.) There is no requirement that the EIR include every conceivable alternative to, or every possible permutation of, the proposed project. (*Ibid.* at subd. (a).) Furthermore, there is no ironclad rule governing the selection of a range of alternatives. (*Ibid.* citing *Citizens of Goleta Valley v. Bd. of Supervisors* (1990) 52 Cal.3d 553. Here, the City fully analyzed three separate alternatives, which constitutes a reasonable range. (See additional discussion at Reponse M-4.) Moreover, during the review of the feasibility of these alternatives as well as potentially significant impacts, a number of additional Alternative Projects were considered but ultimately rejected as infeasible. (Draft EIR pp. 7-4 through 7-6.) Accordingly, the City’s analysis of alternatives is supported by substantial evidence.

## Response to Comment H-16

Comments noted. The Center for Biological Diversity, San Bernardino Valley Audubon Society, and Sierra Club are included on the City’s mailing list for all future notices related to this project.

## Response to Comment H-17

Sixty-three attachments to this letter were submitted to the City of Riverside on CD. The attachments are not project specific but rather provide general information on environmental issues, including air quality, climate change, Stephan's kangaroo rat, water supply, wildlife movement, and the Western Riverside MSHCP. Accordingly, and because the materials submitted are general nature, a general response to those materials is sufficient. (See Master Response #3.) The attachments were reviewed and responses by topic are provided as follows:

### Air Quality

American Lung Association 2005, webpage printout of Riverside County, California, State of the Air 2005.

American Lung Association 2008, State of the Air 2008.

American Lung Association 2008, Highlights of Recent Research on Particulate Air Pollution: Effects of Long-Term Exposure, October 2008.

Bluffstone, Randall A.; Brad Ouderkirk,. "Warehouses, trucks, and [PM.sub.2.5]: human health and logistics industry growth in the eastern Inland Empire.(Report)." Contemporary Economic Policy. 2007. Retrieved August 19, 2009 from accessmylibrary:  
[http://www.accessmylibrary.com/coms2/summary\\_0286-34357857\\_ITM](http://www.accessmylibrary.com/coms2/summary_0286-34357857_ITM)

CARB 2005, California Air Resources Board, AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE

Daily News 2009, Daily News of Los Angeles, Susan Abram, Air over Los Angeles fails test again, Report: Area is nation's worst for ozone pollution, April 29, 2009.

EWG 2002, Environmental Working Group, Particle Civics, How Cleaner Air in California Will Save Lives & Money.

SCAQMD 2007, South Coast Air Quality Management District. Final 2007 Air Quality Management Plan.

SCAQMD 2008, South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA GHG Significance Threshold, October 2008.

### Project Analysis

The potential for project specific and cumulative impacts associated with construction and operations period air quality emissions and toxic air

contaminants (diesel particulates) is addressed in the project air quality study (Appendix B), Chapter 3.2 (Air Quality) and Chapter 4 (Cumulative Impacts) of the DEIR. The results of the project air quality analysis concluded that construction-related daily (short-term) emissions would not exceed SCAQMD regional significance thresholds for CO, NO<sub>x</sub>, PM<sub>10</sub>, ROC, or SO<sub>x</sub> (DEIR, Page 3.2-23).

The results of the project air quality analysis also concluded that operational emissions resulting from the proposed project would not exceed regional SCAQMD thresholds for ROC, SO<sub>x</sub>, CO, or PM<sub>10</sub>; however, they would exceed the SCAQMD threshold for NO<sub>x</sub>. Mitigation Measures AQ-1 through AQ-8 would result in a reduction of stationary-source NO<sub>x</sub> emissions during long-term project operations by approximately 3 to 5%. As such, NO<sub>x</sub> emissions would be reduced by 2 to 3.5 pounds per day, which would net roughly 65.5 to 67 pounds per day. The NO<sub>x</sub> threshold is 55 pounds per day. Therefore, operations-period NO<sub>x</sub> emissions would be significant and unavoidable, and a Statement of Overriding Considerations will be required should the City choose to approve the project (DEIR, Page 3.2-26).

Additionally, in accordance with SCAQMD's recommendation for sources of diesel particulates (e.g., truck stops and warehouse distribution facilities) a Health Risk Assessment was prepared by ICF Jones & Stokes to analyze the potential cancer risk to nearby sensitive receptors (DEIR, Appendix B). The carcinogenic risk values for both the residential and nonresidential maximally exposed individual (MEI) receptor locations are less than 1 in 1,000,000 at the residential MEI receptor location, and 9.15 in 1,000,000 at the nonresidential MEI receptor location. Both of these carcinogenic risk values are below the SCAQMD established significance threshold of 10 in 1,000,000 (DEIR, Page 3.2-29).

## Climate Change

California Office of Planning and Research 2008, Technical Advisory, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act Review, June 17, 2008.

California Office of the Attorney General 2008, The California Environmental Quality Act: Addressing Global Warming at the Local Agency Level, Mitigation Measures. Available at [http://ag.ca.gov/globalwarming/pdf/GW\\_mitigation\\_measures.pdf](http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf)

California Office of the Attorney General 2009, Climate Change, The California Environmental Quality Act, and General Plan Updates: Straightforward Answers to Some Frequently Asked Questions (updated March 6, 2009). [http://ag.ca.gov/globalwarming/pdf/CEQA\\_GP\\_FAQs.pdf](http://ag.ca.gov/globalwarming/pdf/CEQA_GP_FAQs.pdf)

- CAPCOA 2008. CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.
- CARB 2008, California Air Resources Board, Climate Change Proposed Scoping Plan, October 2008.
- Cayan et al. 2006, Cayan, D., A.L. Luers, M. Hanemann, G. Franco, and B. Croes. 2006. Scenarios of Climate Change in California: An Overview, California Climate Change Center, CEC-500-2005-186-SF.
- Cayan, et al. 2007. Our Changing Climate: Assessing the Risks to California. California Climate Change Center. Available at:  
[http://www.climatechange.ca.gov/biennial\\_reports/2006report/index.html](http://www.climatechange.ca.gov/biennial_reports/2006report/index.html).
- CCCC 2006a, California Climate Change Center. 2006a. Climate Warming and Water Supply Management in California. (J. Medellin et al. University of California, Davis.)
- CCCC 2006b, California Climate Change Center. 2006. Estimated Impacts of Climate Warming on California Water Availability Under Twelve Future Climate Scenarios. (Tingju Zhu et al, University of California, Davis.)
- CCCC 2008. California Climate Change Center. Moser, Susie, Guido Franco, Sarah Pittiglio, Wendy Chou, Dan Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy, Related Environmental Research Program. CEC-500-2008-071.
- Epstein, P.R. and E. Mills (eds.). 2005. "Climate change futures health, ecological, and economic dimensions." The Center for Health and the Global Environment, Harvard Medical School. Cambridge, Massachusetts, USA.
- Gleick, Peter H. et al., 2000. Water: "The Potential Consequences of Climate Variability and Change for the Water Resources of the United States." The report of the Water Sector Assessment Team of the National Assessment of the Potential Consequences of Climate Variability and Change," U.S. Global Change Research Program, Pacific Institute for Studies in Development, Environment, and Security.
- Halpin P. 1997. GLOBAL CLIMATE CHANGE AND NATURAL-AREA PROTECTION: MANAGEMENT RESPONSES AND RESEARCH DIRECTIONS. Ecological Applications: Vol. 7, No. 3, pp. 828-843. (doi: 10.1890/1051-0761(1997)007[0828:GCCANA]2.0.CO;2)
- Harvell, C. D., C. E. Mitchell, J. R. Ward, S. Altizer, A. P. Dobson, R. S. Ostfeld, and M. D. Samuel. 2002. Climate warming and disease risks for terrestrial and marine biota. Science 296:2158-2162.

Hayhoe, K., D. Cayan, C.B. Field, P.C. Frumhoff, E.P. Maurer, N.L. Miller, S.C. Moser, S.H. Schneider, K.N. Cahill, E.E. Cleland, L.Dale, R. Drapek, R.M. Hanemann, L.S. Kalksetin, J. Lenihan, C.K. Lunch, R.P. Neilson, S.C. Sheridan, and J.H. Verville. 2004. Emissions pathways, climate change, and impacts on California. PNAS 101 no. 34:12422-12427.

IPCC 2007a, Summary for Policymakers, in *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007)*.

IPCC. 2007b. Technical Summary in *CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY, CONTRIBUTIONS OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* at 62 (M. Parry et al., eds. Cambridge Univ. Press 2007).

IPCC, G. Meehl et al. 2007c, *Global Climate Projections in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* (Susan Solomon et al., eds., Cambridge Univ. Press 2007).

IUCN 2008, Red List, Species Susceptibility to Climate Change Impacts

Mayhew 2007, A long-term association between global temperature and biodiversity, origination and extinction in the fossil record. *Proceedings of the Royal Society B*, (doi:10.1098/rspb.2007.1302)

Parmeson, C. and H. Galbraith. 2004. Observed impacts of global climate change in the U.S. *Pew Center on Global Climate Change*. 56 pp.

Running, S. 2006. Is Global Warming Causing More, Larger Wildfires? *Science* 313: 927.

Schindler, D.W. 1994. Widespread Effects of Climatic Warming on Freshwater Ecosystems in North America, *Hydrological Processes*, Vol. 11, No. 8, pp.1043-1067 (2004); Mulholland et al., Effects of Climate Change on Freshwater Ecosystems of the South-eastern United States and the Gulf Coast of Mexico, *Hydrological Processes*, Vol. 11, pp.949-970 (1994).

Tepper, Brue. 2008. "Delta Blues," *Los Angeles Lawyer*. Thomas 2004, Extinction risk from climate change, *Nature* 427, 145-148 (8 January 2004) | doi:10.1038/nature02121

Union of Concerned Scientists 2007. How to Avoid Dangerous Climate Change: A Target for U.S. Emissions Reductions, available at [www.ucsusa.org/assets/documents/global\\_warming/emissions-target-report.pdf](http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf)

- USGCRP 2009, U.S. Global Change Research Program, Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.
- Westerling, et al. 2006. "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity." *Scienceexpress*, p.1, 10.1126, *Science*, 1128824 (July 6, 2006).
- Dettinger, Michael D. and Dan R. Cayan 1994. Large-scale Atmospheric Forcing of Recent Trends Toward Early Snowmelt Runoff in California, *Journal of Climate*, 8:606-23.
- Hansen, J et al. 2008, *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCI. J. 217, 226 (2008). 450 CO<sub>2</sub>eq is approximately equivalent to 400 ppm CO<sub>2</sub> stabilization, and 400 CO<sub>2</sub>eq is approximately equivalent to 350–375 ppm CO<sub>2</sub> stabilization.
- Warren 2006, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases in AVOIDING DANGEROUS CLIMATE CHANGE* (Cambridge Univ. Press) (2006) [not attached].
- California Office of Planning and Research, Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions, Jan. 8, 2009.
- California Office of Planning and Research, CEQA Guidelines Sections Proposed to be Added or Amended, Apr. 13, 2009.
- Walther, G. R., S. Beissner, and C. A. Burga. 2005. Trends in the upward shift of alpine plants. *Journal of Vegetation Science* 16:541-548.
- 71 Fed. Reg. 26852 (May 9, 2006) Endangered and Threatened Species: Final Listing Determinations for Elkhorn Coral and Staghorn Coral;
- 73 Fed. Reg. 28212 (May 15, 2008) Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range;
- 74 Fed. Reg. 1937 (January 14, 2009) Endangered and Threatened Wildlife and Plants: Endangered Status for Black Abalone.
- IUCN 2009, Vié, J.-C., Hilton-Taylor, C. and Stuart, S.N. (eds.) (2009). *Wildlife in a Changing World – An Analysis of the 2008 IUCN Red List of Threatened Species*. Gland, Switzerland: IUCN. 180 pp.
- Krajick, K. 2004. All Downhill From here? *Science* 303: 1600-1602.
- Barnett et al., "Human-Induced Changes in the Hydrology of the Western United States," *Science*, Jan. 31, 2008.

COSEWIC 2006, COMMITTEE ON THE STATUS OF ENDANGERED  
WILDLIFE IN CANADA, Assessment and Update Status Report on the  
Ord's kangaroo rat (*Dipodomys ordii*) in Canada

## Project Analysis

The potential for project specific and cumulative impacts associated with climate change and greenhouse gas emission is addressed in the project air quality study (Appendix B), Chapter 3.2 (Air Quality) and Chapter 4 (Cumulative Impacts) of the DEIR. Although there is no adopted threshold under the CEQA Guidelines for Climate Change at this time, the potential for greenhouse gas emissions associated with the proposed Alessandro Business Center project was analyzed. Prominent greenhouse gases contributing to this process include water vapor, CO<sub>2</sub>, N<sub>2</sub>O, methane, ozone, and certain hydro- and fluorocarbons. The total California statewide average daily emissions of carbon dioxide equivalent (CO<sub>2</sub>e) (Year 2004) was 2,972,314,499 pounds per day. The maximum project construction period emissions of CO<sub>2</sub>e would be 11,909 pounds per day and the total operations period emissions of CO<sub>2</sub>e would be 1,016,365 pounds per day. This amount represents approximately 0.03% of the statewide total daily GHG emissions, which were found to be negligible in comparison to statewide and worldwide daily emissions (DEIR, Page 3.2-34). The proposed project's amount of emissions, without considering other cumulative global emissions, would be insufficient to cause substantial climate change directly. Therefore, project emissions, in isolation, are considered less than significant. Nevertheless, mitigation measures AQ-1 through AQ-8 are proposed to reduce project-related GHG emissions by the greatest extent feasible (DEIR, Page 3.2-32). With implementation of prescribed mitigation measures, the proposed project would be consistent with the state's goals of reducing GHG emissions to 1990 levels by 2020. As such, the proposed project's contribution to climate change/worldwide GHG emissions would not be cumulatively considerable.

## Stephan's Kangaroo Rat

Center for Natural Lands Management (CNLM), webpage of March SKR Preserve

Center for Natural Lands Management (CNLM), March SKR Preserve Brochure

Center for Natural Lands Management (CNLM), March SKR Preserve, Sensitive Bird Locations Spring 2008, Map produced Dec. 12, 2008.

McClenaghan, Jr., L.R. and H.D. Truesdale 2002. Genetic Structure of Endangered Stephens' Kangaroo Rat Populations in Southern California. *The Southwestern Naturalist*, 47(4):539-549

SKR HCP EIS/EIR, Riverside County Habitat Conservation Agency, Final Environmental Impact Statement Report for the Long Term Stephens' Kangaroo Rat Habitat Conservation Plan.

SKR HCP, Riverside County Habitat Conservation Agency, Habitat Conservation Plan for the Stephens' Kangaroo Rat, 1996.

SKR HCP Figure 26, Riverside County Habitat Conservation Agency, Habitat Conservation Plan for the Stephens' Kangaroo Rat, 1996

United States Fish and Wildlife Service, Memorandum to Henri Bisson, District Manager, from Gail Kobetich re: March AFB Lands – Conditions for Removing from Consideration in Long-Term SKR HCP, (1994).

United States Fish and Wildlife Service, Formal Section 7 Consultation on the Disposal and Reuse of March Air Force Base, Riverside County, California (1-6-99-F-13), 1999.

United States Fish and Wildlife Service, Biological Opinion Regarding Proposed Improvements to State Route 215 between Van Buren Boulevard and State Route 60, Riverside County, California (1-6-90-F-29), 1990.

County of Riverside 2009, Environmental Impact Report for the Alessandro Commerce Centre, State Clearinghouse #2008061136, Prepared by Michael Brandman Associates, January 15, 2009, excerpt.

## **Project Analysis**

The potential for impacts to Stephan's kangaroo rat and consistency with the adopted Stephan's Kangaroo Rat Habitat Conservation Plan is addressed in Chapter 3.3 (Biological Resources) of the DEIR. All of the project area is within the plan area for the SKR HCP. The SKR HCP established seven core reserves for SKR within western Riverside County and provides for the ongoing management of the occupied SKR habitat within those reserves. All other properties within the SKR HCP plan area are within the plan "fee area," where development is permitted and project compliance is achieved with payment of a mitigation fee.

The Sycamore Canyon Core Reserve borders the project area on west and includes an isolated parcel adjacent to the project area on the east (DEIR, Figure 3.3-1). At the time the SKR HCP was approved in 1996, the maps of the core reserve also identified the project area as "land under negotiation for conservation easements". The property owner at that time was considering dedication of an easement in connection with a potential development. However, the transaction never occurred, and the ownership and proposed use of the lands subsequently changed. As confirmed in letters from the RCHCA dated May 3, 2006 and February 25, 2009, the project area was not and is not part of the core

reserve. The map published by the RCHCA in June 2007 (DEIR, Figure 3.3-6) shows the current correct boundaries of Sycamore Canyon Core Reserve.

In accordance with the requirements of the SKR HCP, the SKR mitigation fee (mitigation measure BIO-2) will be paid. Payment of the fee contributes to the ongoing management of occupied SKR habitat in the SKR Core Reserve system, which in turns provides for the continued existence of SKR within western Riverside County. Although not required to offset significant impacts, the project includes dedication of 36.23 acres of land to the City of Riverside Parks, Recreation, and Community Services Department for inclusion in the wilderness park. The 36.23 acres will also be included in the SKR HCP Sycamore Canyon Core Reserve, managed by the RCHCA (Refer to Response to Comment B-2). This dedication is expected to benefit SKR by providing a permanent connection between the two components of the Sycamore Canyon Wilderness Park, which are currently bisected by privately owned property and which is part of the SKR Core Reserve (DEIR, Page 3.3-39).

## Water Supply

NRDC 2008, “Hotter and Drier: The West’s Changed Water Supply.” S. Saunders et al.

Rocky Mountain Climate Organization, NRDC 2008, “Hotter and Drier: The West’s Changed Water Supply.” S. Saunders et al.

Roos, Maurice, 2005, *Accounting for Climate Change* in California Water Plan Update, Vol. 4, Reference Guide, Public Review Draft, California Department of Water Resources, at 5.

Miller, Kathleen and David Yates. 2005. *Climate Change and Water Resources: A Primer for Municipal Water Providers*, AWWA Research Foundation and the University Corporation for Atmospheric Research (2005).

NRDC 2007, “In Hot Water: Water Management Strategies to Weather the Effects of Global Warming” Nelson et. al. available at <http://www.nrdc.org/globalWarming/hotwater/contents.asp>

Sierra Nevada Alliance. 2003. “Troubled Water of the Sierra.”

## Project Analysis

Water supply is addressed in Chapter 3.12 (Utilities) and the project Water Supply Assessment is provided in Appendix I of the DEIR. The proposed project is located within the service area of the Western Municipal Water District (WMWD). At the request of the City and the project applicant, WMWD prepared a Water Supply Assessment (WSA) for the subject project in accordance with the requirements of Water Code §10910 et seq., commonly

referred to as California Senate Bill 610 (Costa). The WSA was approved by the WMWD Board on September 17, 2008, under Resolution 2560. WMWD has determined that it is able to provide adequate water supply to meet the potable water demand for the proposed project, in addition to existing and future users beyond the next 20 years in all reasonably predictable hydrological scenarios.

## Wildlife Movement

Servheen, Christopher, Rebecca Shoemaker, and Pat Basting. "Measuring the Success of Wildlife Linkage Efforts". In *Proceedings of the 2007 International Conference on Ecology and Transportation*, edited by C. Leroy Irwin, Debra Nelson, and K.P. McDermott. Raleigh, NC: Center for Transportation and the Environment, North Carolina State University, 2007. pp. 409-421.

## Project Analysis

The potential for impacts to wildlife movement is addressed in Chapter 3.3 (Biological Resources) of the DEIR. There are numerous developments east and southwest of the site, and much of the area in the project vicinity is planned for development. Alessandro Boulevard forms the southern boundary of the site and San Gorgonio Drive forms approximately the south half of the east boundary. Wildlife on site has to either move north into the Sycamore Canyon Wilderness Park or cross Alessandro Boulevard and go south to another area designated for open space. Given the site's proximity to busy roads and urban development and its domination by nonnative grasslands, it is not expected to provide the suitable refuge that larger species require.

Prior to the realignment of the March Air Reserve Base in 2003–2004, public lands south of Alessandro Boulevard, provided a potential linkage between the natural lands to the north and south, especially for SKR. However, maintaining movement across/under Alessandro Boulevard and was further complicated by the clogged CMPs for the creek.

Implementation of the project does not represent a significant change to existing wildlife movement within the project area and would not preclude wildlife movement along the riparian corridors and existing open space areas. Overall, access from the project site to surrounding open space would not be impeded by the project and the creek to the west and unnamed drainage to the north of the project site would not be disturbed. The dedicated lands also would provide a permanent link from the wilderness park to open space to the east and south.

## Western Riverside County Multiple Species Habitat Conservation Plan

USFWS BO, United States Fish and Wildlife Service, Intra-Service Formal Section 7 Consultation for Issuance of an Endangered Species Act Section 10(a)(1)(B) Permit (TE-088609-0) for the Western Riverside County Multiple Species Habitat Conservation Plan, Riverside County, California, June 22, 2004.

### Project Analysis

Project consistency with the Western Riverside MSHCP is discussed in Chapter 3.3 (Biological Resources) of the DEIR. The project area is within the MSHCP burrowing owl survey area and has resources that trigger survey requirements for riparian bird species (least Bell's vireo and southwestern willow flycatcher). No other MSHCP survey requirements apply to the project.

All focused surveys required under Section 6.1.2 of the Western Riverside MSHCP were conducted. Least Bell's vireo was found to occur in Unnamed Drainage 2, north of the development footprint within the 36.23-acres of property proposed for permanent conservation through dedication of the land to the City of Riverside Parks, Recreation, and Community Services Department for inclusion in the Sycamore Canyon Wilderness Park.

As required under Section 6.1.2 of the MSHCP, a Determination of Biologically Equivalent or Superior Preservation (DBESP) was prepared for the project. The DBESP was submitted to the Wildlife Agencies (California Department of Fish and Game and U.S. Fish and Wildlife Service) on November 16, 2006 for a 60-day review, as required under the MSHCP. No comments from the Wildlife Agencies were received during the review period. Additionally, the Wildlife Agencies were contacted by the City of Riverside on July 23, 2008 to solicit any additional comments on the DBESP. No comments were received. Therefore, notification requirements to the wildlife agencies set forth under Section 6.1.2 of the MSHCP have been fulfilled and no additions or changes to the DBESP is required prior to review and consideration for adoption of the document by the City of Riverside.

Additionally, the proposed project is consistent with the Urban/Wildlands Interface Guidelines set forth in Section 6.1.4 of the MSHCP, which are intended to address indirect impacts associated with development located in proximity to MSHCP Conservation Areas. Refer to Response to Comment M3-2.

## City of Riverside Good Neighbor Guidelines

City of Riverside 2008, Planning Department, City of Riverside Good Neighbor Guidelines for Siting New And/Or Modified Warehouse Distribution Facilities, Resolution No. 21734, Adopted October 14, 2008.

### Project Analysis

The DEIR was prepared and circulated for public comment prior to adoption of the City of Riverside Good Neighbor Guidelines on October 14, 2008. However, the proposed project is located within the adopted Sycamore Canyon Business Park Specific Plan and meets the intent of the Good Neighbor Guidelines in ensuring that land uses adjacent to sensitive receptors (ie. residential uses and schools) are compatible.

**DEPARTMENT OF FISH AND GAME**<http://www.dfg.ca.gov>

Eastern Sierra-Inland Deserts Region

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August 19, 2009

Ms. Patricia Brenes, Senior Planner  
City of Riverside Planning Department  
3900 Main Street, Riverside, CA 92522  
Phone: (951) 826-5933

Re: Alessandro Business Center, SCH No. 2007021005

Dear Ms. Brene:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Alessandro Business Center concerning impacts to biological resources. The Department is responding as a Trustee Agency for fish and wildlife resources [Fish and Game Code sections 711.7 and 1802 and the California Environmental Quality Act Guidelines (CEQA) section 15386] and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines section 15381), such as a Streambed Alteration Agreement or a California Endangered Species Incidental Take Permit (Fish and Game Code Sections 2081 and 2080.1).

The proposed project is located at the northwest corner of Alessandro Boulevard and San Gorgonio Drive in the City of Riverside. There is industrial/commercial development to the east, Alessandro Boulevard on the south and open space on the north and west. The project is adjacent to the Sycamore Canyon Creek Wilderness. The project is not within Criteria Cells of the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP).

The DEIR was originally prepared in 2007, however, the City of Riverside required additional review. The proposed project consists of the construction of four buildings of light industrial, warehouse distribution and office uses on 36.91 acres. The size of the parcel is 80.07 acres, of which 36.91 acres is for development, 36.23 acres for conservation, and 6.15 acres reserved for future development. The size of the buildings range from 36,243 square feet to 440,374 square feet.

**Issues of Concern**

The Department is concerned about the loss of streambed jurisdictional waters. Although the project will result in the further conservation of unnamed drainage 2 and drainages tributary to Sycamore Canyon Creek in the southwest, the drainage that splits the project site will be removed. The Department believes that the mitigation provided for the loss of this resource is not sufficient.

I-1

I-2

Alessandro Business Center Draft Environmental Impact Report, SCH No. 2007021005  
Page 2 of 5

### **Biological Resources on Site**

Vegetation communities on the site include disturbed grasslands, Riversidian sage scrub (RSS) along the southwest edge of the property and southern willow scrub and southern willow-cottonwood forest along the two major drainage features, and juniper woodland along the northwest portion of the property. No sensitive plants were found on-site.

In 2006, four reptiles, 50 birds, 12 mammals, one crustacean (crayfish), and one fish (mosquito fish) were observed in the project area. The common reptiles were western fence lizard (*Sceloporus occidentalis*), granite spiny lizard (*Sceloporus orcutti*), and the common side-blotched lizard (*Uta stansburiana*). The dominant birds species were blue grosbeak (*Passerina caerulea*), yellow warbler (*Dendroica petechia*), lesser goldfinch (*Carduelis psaltria*), American goldfinch (*Carduelis tristis*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), Nuttall's woodpecker (*Picoides nuttalli*), spotted towhee (*Pipilo maculatus*), Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), red-tailed hawk (*Buteo jamaicensis*), song sparrow (*Melospiza melodia*), bushtit (*Psaltriparus minimus*), and western kingbird (*Tyrannus verticalis*). The common mammals detected were coyote (*Canis latrans*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), and desert cottontail (*Sylvilagus audononii*)

Sensitive species present or with a high probability of occurrence include the San Diego desert woodrat (*Neotoma lepida intermedia*), Belding's orange-throated whiptail (*Cnemidophorus hyperthrus beldingi*), Cooper's hawk (*Accipiter cooperi*), least Bell's vireo (*Vireo bellii pusillus*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), and Stephen's kangaroo rat (*Dipodomys stephensi*).

Although the site contains numerous ground squirrel burrows, focused surveys in 2006 and 2007 found no burrowing owl on site. Pre-construction surveys will take place according to MSHCP burrowing owl survey guidelines.

Riparian species observed or expected to occur in the project area include western spadefoot, California legless lizard (*Anniella pulchra*), Cooper's hawk, downy woodpecker (*Picoides pubescens*), MacGillivray's warbler (*Oporornis tolmiei*) and Nashville warbler (*Vermivora ruficapilla*) (both only during migration), white-tailed kite (*Elanus leucurus*), Wilson's warbler (*Wilsonia pusilla*) (again only during migration), yellow-breasted chat (*Icteria virens*), and western yellow warbler (*Dendroica petechia*). A total of 6.78 acres of riparian/riverine habitat is available to these species within the project area. An estimated 0.146 acre would be temporarily impacted and 0.488 acre would be permanently impacted.

### **MSHCP/Stephens' Kangaroo Rat (SKR) Plans**

The site is within the MSHCP and in the fee area of the SKR plan. As mitigation for impacts to the MSHCP and SKR, the applicants will pay the required fee. The site is not located within the Criteria Cells of the MSHCP.

Alessandro Business Center Draft Environmental Impact Report, SCH No. 2007021005  
Page 3 of 5

The document states that the project is outside of the Public/Quasi-Public MSHCP lands and Criteria Cells. Criteria Cells are located to the northwest of the site at the northern boundary of Sycamore Canyon Wilderness Park/SKR Core Reserve.

The Sycamore Canyon Core Reserve borders the project area on west and includes an isolated parcel adjacent to the project area on the east. When the SKR Plan was approved (1996), the maps of the core reserve also identified the project area as "land under negotiation for conservation easements". Since the approval of the SKR Plan, public lands south of Alessandro were traded in connection with the conversion of March Air Base (MAB) from active to reserve duty. The acquisition of SKR habitat in Potrero Valley satisfied a trade-out provision in a 1999 Biological Opinion to release the SKR Management Area. The tradeout of SKR habitat on MAB and a series of acquisitions in Potrero Valley occurred in late 2003. As cited in the 2004 Biological Opinion for the MSHCP (FWS-WRIV-870.19), the SKR Plan goal of conserving 15,000 acres of occupied SKR habitat was attained with the Potrero Valley acquisitions.

### Project Impacts and Mitigation

A total of 6.78 acres of riparian/riverine area is present within the 80.07-acre property, which includes Sycamore Canyon Creek, including a tributary, and two unnamed drainages. Implementation of the proposed project would result in temporary impacts on 0.146 acres of riverine/riparian resources within the tributary of Sycamore Canyon Creek and permanent impacts on 0.488 acres of riverine/riparian resources on Drainage 1. However, no impacts will occur to Sycamore Canyon Creek and Drainage 2, which are both blue line streams. Because the project area contains riparian/riverine resources, which would be affected by the proposed project, a DBESP was prepared in accordance with Section 6.1.2 of the MSHCP.

The project is designed to conserve drainages in the south, west and northern parts of the site. Approval of the project will result in the addition of 36.23 acres to the Sycamore Canyon Wilderness Park. In addition to the 36.23 acres the project has 26 biological mitigation measures. Included in these measures are the payment of development fees to the MSHCP and SKR plans, removal of exotics on one acre of conserved land, opening blocked storm drains to improve drainage, replacement of impacted waters on a 2:1 ratio through the preservation and enhancement of the lower tributary of Sycamore Canyon Creek on the site. There are also measures providing for pre-construction surveys for burrowing owl and bird nests, and protection of jurisdictional waters during construction.

### Department Requirements

The project area contains two waterways that would be impacted by implementation of the project. One waterway is a tributary of the Sycamore Canyon Creek. This tributary is approximately 850 linear feet long and has an average width of approximately 5 to 15 feet, with one area measuring 32 feet wide. The second impacted waterway is Unnamed Drainage 1, which extends across the development area from San Gorgonio Drive to Sycamore Creek. The drainage is approximately 1,120 feet long and has an average width of approximately 9 feet. Both waterways are under federal and state jurisdiction.

I-4

I-5

Alessandro Business Center Draft Environmental Impact Report, SCH No. 2007021005  
Page 4 of 5

In January 2006, a wetland delineation was conducted by Jones & Stokes on the project site (Jones & Stokes 2006d). The delineation determined that jurisdictional areas within project site total 0.71 acre of nonwetland waters of the United States and 2.5 acres of waters of the state. No wetlands are present within the project footprint. Implementation of the proposed project would result in permanent impacts to 0.49 acre of waters of the State. Approximately 0.01 acre of permanent impacts to state and federal jurisdictional waters would occur within the tributary of Sycamore Canyon Creek during construction of the parkway and stormdrain improvements along Alessandro Boulevard. Additionally, 0.01 acre of nonwetland waters of the United States (10 linear feet) and 0.01 acre of state streambed would be temporarily disturbed. These temporary and permanent impacts would occur where the tributary of Sycamore Canyon Creek discharges to the site from two existing 24-inch CMPs that extend under Alessandro Boulevard. As previously discussed, the condition of the clogged CMPs has restricted normal flows, and upstream flows are not reaching this segment of Sycamore Canyon Creek.

The applicant is proposing to mitigate the impacts to State jurisdictional waters by removing exotics on one acre of conserved land, opening storm drains to improve flows, and preserving or enhancing the lower tributary of Sycamore Canyon Creek on site.

The project applicant is required to notify the Department, pursuant to Section 1602 et seq. of the Fish and Game Code. The Department's issuance of a Streambed Alteration Agreement (Agreement) and a CESA Incidental Take Permit for a project that is subject to the California Environmental Quality Act (CEQA) will require CEQA compliance actions by the Department as a responsible agency. The Department, as a responsible agency under CEQA, may consider the local jurisdiction's (lead agency) DEIR for the project.

The Corps will have to consult with the Department regarding the previously issued Agreement and whether an amendment to the Agreement will be required. It is not clear from this document what the revisions to the original project are.

If the CEQA documents do not fully identify potential impacts to lakes, streams, and associated resources and provide adequate avoidance, mitigation, monitoring, funding sources, a habitat management plan and reporting commitments, additional CEQA documentation will be required prior to execution (signing) of the Streambed Alteration Agreement. In order to avoid delays or repetition of the CEQA process, potential impacts to a stream, as well as avoidance and mitigation measures need to be discussed within this CEQA document.

The following information will be required for the processing of a Streambed Alteration Agreement and the Department recommends incorporating the following in the DEIR to avoid subsequent CEQA documentation and project delays:

- 1) Delineation of lakes, streams, and associated habitat that will be temporarily and/or permanently impacted by the proposed project (include an estimate of impact to each habitat type);

**Alessandro Business Center Draft Environmental Impact Report, SCH No. 2007021005**  
**Page 5 of 5**

- 2) Discussion of avoidance measures to reduce project impacts; and,
- 3) Discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance.

I-11

Section 151370 of the CEQA guidelines includes a definition of mitigation. It states that mitigation includes:

I-12

- 1) Avoiding the impact altogether by not taking a certain action or parts of an action,
- 2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation,
- 3) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment,
- 4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action,
- 5) Compensating for the impact by replacing or providing substitute resources or environments.

Permit negotiations conducted after and outside of the CEQA process deprive the public of its rights to know what project impacts are and how they are being mitigated in violation of CEQA Section 15002.

I-13

The Department opposes the elimination of drainages and their associated habitats. The Department recommends avoiding the stream and riparian habitat to the greatest extent possible. Any unavoidable impacts need to be compensated with the creation and/or restoration of in-kind habitat either on-site or off-site at a minimum 3:1 replacement-to-impact ratio, depending on the impacts and proposed mitigation. Additional mitigation requirements through the Department's Streambed Alteration Agreement process may be required depending on the quality of habitat impacted, proposed mitigation, project design, and other factors. We recommend submitting a notification early on, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Streambed Alteration Agreement notification package, please call (562) 590-5880.

I-14

Thank you for this opportunity to comment. Please contact Robin Maloney-Rames at (909) 980-3818, if you have any questions regarding this letter. Further coordination on 1600 Agreements will be handled by Michael Flores, Environmental Scientist (909) 484-0497.

Sincerely,

  
Jeff Brand  
Staff Environmental Scientist

cc: Magdalena Rodriguez, CDFG  
Michael Flores, CDFG

## Comment Letter I. Jeff Brandt, California Department of Fish and Game

### Response to Comment I-1

Comment noted. The City of Riverside appreciates CDFG's acknowledgement of the receipt and review of the Draft EIR. The project description and setting information provided by CDFG is correct.

As clarification to the description of the City's CEQA review process for the Alessandro Business Center Project, an initial study was prepared in 2007 and sent to the California State Clearinghouse (SCH#2007021005) for 30-day public review. Based on public comments received prior to the March 22, 2007, City of Riverside Planning Commission hearing, the City of Riverside determined that additional project review through the preparation of an EIR would be required (DEIR, Page 2-1).

### Response to Comment I-2

Comment noted. The proposed project includes avoidance and permanent conservation of Unnamed Drainage 2 and Sycamore Canyon Creek. (See Draft EIR Figure 3.1-1.) Both Sycamore Canyon Creek and Unnamed Drainage 2 support moderate to high quality biological resources, including riparian vegetation and mature trees. Unnamed Drainage 2 is occupied by the state and federal listed least Bell's vireo.

The project will result in permanent impacts to the waterway (identified as Unnamed Drainage 1), which extends across the project footprint from San Gorgonio Drive to Sycamore Canyon Creek. (See Draft EIR Figure 3.1-1.) The hydrologic regime of Unnamed Drainage 1 has been disrupted by construction of the adjacent commercial/industrial development east of San Gorgonio Drive. Vegetation is limited to upland ruderal species with several sparse patches of riparian vegetation, which is exhibiting signs of stress due to a lack of water in the channel. Overall biological functions and values in Unnamed Drainage 1 are considered low (DEIR, Page 3.3-46). The total impact to onsite jurisdictional waters associated with the proposed project is approximately 0.488 acres of permanent and 0.146 acres of temporary impacts.

Proposed compensatory mitigation for impacts to state jurisdictional waters include enhancement of 1 acre of land through nonnative invasive species removal (Mitigation Measure BIO-4) and preservation and enhancement of Sycamore Canyon Creek at a ratio of 2:1 (Mitigation Measure BIO-5). The combination of the two mitigation measures provides a 4:1 mitigation ratio for permanent impacts, which exceeds CDFG's recommended 3:1 mitigation ratio.

In accordance with Section 6.1.2 of the Western Riverside MSHCP, a DBESP was prepared. The DBESP includes the mitigation proposed for impacts to riverine/riparian resources within the project site, including Unnamed Drainage 1. The DBESP was prepared in November 2006 and circulated to the resource agencies for a 60-day review. Additionally, the CDFG and the USFWS were contacted by the City of Riverside on July 23, 2008 to solicit any additional comments on the DBESP. No comments were received.

Additionally, the project proponent submitted a notification to CDFG under Section 1602 of the California Fish and Game Code on December 21, 2006 (Notification No. 1600-2006-0276-R6). In accordance with the State of California Permit Streamlining Act, CDFG has 90 calendar days to notify the applicant whether the project application is complete and issue a draft streambed alteration agreement. If CDFG is unable to meet that deadline and no communication is received, an Operation by Law letter is issued allowing the project to move forward as described in the 1602 notification. CDFG issued a draft Streambed Alteration Agreement within 90 days of receipt of the 1602 notification, therefore, CDFG issued an Operation by Law letter for the project on March 29, 2007.

Fish and Game Code Section 1602(a)(4)(D) states that the project implemented must be the same one and conducted in the same manner as described in the 1602 notification. This includes completion of the project within the proposed term and seasonal work period specified in the notification. The project has not been implemented due to preparation of the DEIR and so was not completed within the timeframe provided in the 1602 notification. Therefore, the project proponent will be responsible for submitting a second notification to CDFG prior to initiation project activities within state jurisdictional streambeds.

## **Response to Comment I-3**

Comment noted. CDFG's summary of biological resources present within the project site, as set forth in Section 3-3 of the DEIR, is correct.

The City of Riverside concurs with CDFG's summary of the SKR HCP MAB/Potrero Valley tradeout and acknowledgement that the SKR Plan goal was attained with the Potrero Valley acquisitions as cited in the 2004 Biological Opinion for the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP).

## **Response to Comment I-4**

Comment noted. CDFG's summary of biological impacts associated with the project and proposed mitigation measures, as set forth in Section 3-3 of the DEIR, is correct.

As clarification, the City of Riverside prepared a DBESP and circulated it to CDFG and USFWS for comment, as required under Section 6.1.2 of the Western Riverside MSHCP. Please see response to comment I-2.

## **Response to Comment I-5**

Comment noted. CDFG's summary of impacts to onsite streambeds (Unnamed Drainage 1 and tributary to Sycamore Canyon Creek) associated with the project, as set forth in Section 3-3 of the DEIR, is correct.

## **Response to Comment I-6**

Comment noted. CDFG's summary of proposed compensatory mitigation for impacts to onsite streambeds (Mitigation Measures BIO-4 and BIO-5), as set forth in Section 3-3 of the DEIR, is correct.

## **Response to Comment I-7**

Comment noted. The City of Riverside acknowledges CDFG's status as a responsible agency under CEQA and appreciates CDFG's review of the DEIR.

The project proponent submitted a notification to CDFG under Section 1602 of the California Fish and Game Code on December 21, 2006 (Notification No. 1600-2006-0276-R6). CDFG issued an Operation by Law letter for the project on March 29, 2007. Refer to Response I-2, above.

## **Response to Comment I-8**

Refer to Response I-2.

## **Response to Comment I-9**

Refer to Response I-2.

## **Response to Comment I-10**

Refer to Responses I-2, I-4, and I-5.

## Response to Comment I-11

Refer to Response I-2.

## Response to Comment I-12

Comment noted. Section 15088 of the State CEQA Guidelines states that, “The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response.” (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].) This comment quotes text from Section 15370 of the State CEQA Guidelines and does not make a comment on the project’s environmental issues; therefore, no detailed response to this comment is required.

## Response to Comment I-13

Refer to Comment I-7. The City of Riverside is meeting the public disclosure requirements of CEQA through preparation and circulation of the DEIR, public meetings and hearings, and consideration and response to public comments. The project impacts and mitigation have been disclosed to the public in the DEIR.

## Response to Comment I-14

Refer to Responses I-2 and I-7.

**From:** [Brenes, Patricia](#)  
**To:** [Miramontes, Clara](#); [Smith, Kristi](#); [Ouellette, Michelle](#); [Riggs, Shelah](#);  
**Subject:** FW: Note on Alessandro Business Park, East Riverside, SCH#2007021005  
**Date:** Wednesday, August 19, 2009 4:24:50 PM  
**Attachments:** [Glenn Robertson.vcf](#)

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Please see comments below.

Thanks,

Patricia Brenes, Senior Planner  
City of Riverside  
Community Development Department  
Planning Division  
3900 Main Street, Riverside, CA 92522  
951.826.5933  
pbrenes@riversideca.gov  
www.riversideca.gov

-----Original Message-----

From: Glenn Robertson [<mailto:grobertson@waterboards.ca.gov>]  
Sent: Wednesday, August 19, 2009 4:20 PM  
To: Brenes, Patricia  
Cc: Adam Fischer  
Subject: Note on Alessandro Business Park, East Riverside,  
SCH#2007021005

To Patricia Brenes:

This is the final comment day for the Draft EIR (DEIR) on the above Project, located north of Alessandro Blvd and west of San Gorgonio Dr. (Farmer Boys restaurant). We appreciate that you have incorporated into the DEIR the Regional Board staff's December 17, 2007 comment letter on the Notice of Preparation, and the DEIR addresses those comments.

J-1

I have extensively reviewed the DEIR, including the disk's appendices (Jurisdictional Delineation, Hydrology Report, etc.), and I have no actual comments to submit on the Project as proposed. We do wonder whether the 6.15 acres in the southwest corner of the site, reserved for future development while apparently avoiding the natural channels (referred to in Executive Summary ES-2, and shown on Figure 3 in Cultural Appendix, Archeological Site Locations) will undergo separate CEQA review when a future proposal is ready?

J-2

We have received the Project's application for the Clean Water Act Section 401 Water Quality Certification, and we are only waiting on the City's adoption of the Final EIR before proceeding with the Certification. I believe that some minor questions will be asked during that separate process, which is normal.

J-3

Thank you and Regards, Glenn Robertson, Regional Water Quality Control Board

Glenn Robertson, Engineering Geologist  
CEQA Coordinator  
California Regional Water Quality Control Board, Santa Ana Region (8)  
3737 Main Street, Suite 500  
Riverside, CA 92501-3348  
(951) 782-3259  
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Website: [www.waterboards.ca.gov/santaana](http://www.waterboards.ca.gov/santaana)

## **Comment Letter J. Glen Robertson, Regional Water Quality Control Board**

### **Response to Comment J-1**

Comment noted. The City of Riverside incorporated a comment letter (dated December 17, 2007) provided by the Regional Water Quality Control Board (RWQCB) on the Notice of Preparation into the DEIR. The comments provided in the letter were addressed in the analysis provided in the DEIR.

### **Response to Comment J-2**

The City of Riverside appreciates the RWQCB's acknowledgement of the receipt of the Draft EIR. The RWQCB expressed that they do not have any comments in regards to the Proposed Project.

As noted in the Project Description (DEIR, Page 2-4), any future development of the 6.15 acre parcel, if any, would be subject to additional CEQA review by the City of Riverside. This is appropriate because the future development – if any – and uses of that 6.15-acre parcel are completely unknown, and there is not yet enough information available to allow the City to complete a meaningful environmental review. (State CEQA Guidelines, § 15004.) Accordingly, any analysis of those future uses would be entirely speculative and thus not required under CEQA. (State CEQA Guidelines, §§ 15145 and 15004.) Since environmental review under CEQA would be required by any future development, the impacts of development of this parcel would be addressed at that time.

### **Response to Comment J-3**

Comment noted. The Section 401 Water Quality Certification application was submitted to the RWQCB by the project applicant. Should the City of Riverside choose to approve the project through adoption of the Final EIR, additional coordination with the RWQCB for issuance of the final Water Quality Certification would be conducted by the project applicant.



DEPARTMENT OF THE AIR FORCE  
AIR FORCE RESERVE COMMAND



MEMORANDUM FOR CITY OF RIVERSIDE  
ATTN: PATRICIA BRENES, SENIOR PLANNER  
COMMUNITY DEVLMT DEPT PLNG DIV  
3900 MAIN STREET  
RIVERSIDE CA 92522

FROM: 452 Mission Support Group/Civil Engineers  
Base Operating Support  
610 Meyer Drive, Bldg 2403  
March ARB, CA 92518-2166

SUBJECT: Planning Case Numbers P06-0416, P06-0418, P06-0419, P06-0421, P07-0102 &  
P07-1028

1. March Air Reserve Base (MARB) has reviewed your proposal for a 36.91 acre business center for light industrial, warehouse distribution, and office use located at the Northeast corner of Alessandro Boulevard and San Gorgonio Drive. K-1
2. This proposed development is in the 60 to 65 decibel (dB) range of the Community Noise Equivalent Level contours related to mission flights. Employees and regularly received public may require hearing protection which can be accomplished by incorporating noise abatement (noise level reduction) features into the design and construction of this facility. Additional hearing protection for employees may be required by OSHA or other agencies as it relates to safety and health in a high noise level work environment. K-2
3. Thank you for the opportunity to review and comment on this proposed development. If you have any further questions, please contact Mr. Jack Porter Jr. at (951) 655-2115.

*Richard E. Eunice*  
RICHARD E. EUNICE, P.E.  
Base Civil Engineer

## Comment Letter K. Richard E. Eunice, P.E., Department of the Air Force

This comment letter was received after the close of the official CEQA public comment period on the Draft EIR. Accordingly, no written response is required. Nonetheless, the City is providing the following response in order to provide public disclosure of the comment and the ways in which the City has addressed those comments. (See also Master Response #1.)

### Response to Comment K-1

Comment noted. The City of Riverside appreciates the Department of the Air Force acknowledgement of the receipt of the Draft EIR.

### Response to Comment K-2

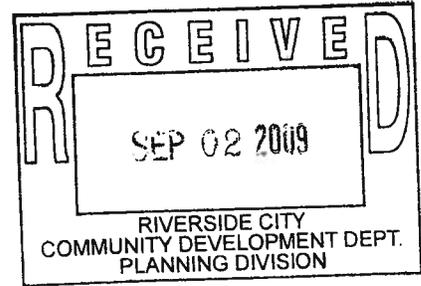
Comment noted. As discussed in the Noise analysis (DEIR page 3.8-9), the City's Municipal Code noise standards limit exterior noise for commercial and industrial land uses to noise levels of 65 dBA  $L_{50}$  and 70 dBA  $L_{50}$ . As a result, the location of the project site within the 60 to 65 dB range of the Community Noise Equivalent Level contours related to mission flights would not result in a significant impact requiring noise abatement mitigation. The following text will be added to Impact NOISE -5 (DEIR Page 3.8-23).

The nearest airport is the Riverside Municipal Airport and the March Air Reserve Base, which are located approximately 8 miles northwest, and 1.75-miles southeast of the project site, respectively. According to Figure N-8 (Riverside and Flabob Airport Noise Contours) of the General Plan 2025, the project site occurs outside of the projected noise contours for Riverside Municipal Airport and Flabob Airport (City of Riverside 2007). Similarly, Figure 4-1 of the AICUZ Program prepared by the March Air Reserve Base in 2005 indicates that the project site is located outside of the noise contours established for the March Air Reserve Base (MARB 2005). The proposed project site is located within the 60 to 65 dB range of the Community Noise Equivalent Level contours related to mission flights at the MARB (MARB 2009). However, the projected noise levels associated with MARB mission flights do not exceed the City of Riverside exterior noise standards for commercial and industrial land uses of 65 dBA  $L_{50}$  and 70 dBA  $L_{50}$ . Therefore, construction of the proposed project would not expose people to aircraft noise at excessive levels. Impacts would be less than significant.



**GREATER RIVERSIDE  
CHAMBERS OF COMMERCE**  
*The Chamber...building a stronger local economy.*

August 31, 2009



Mr. Ken Gutierrez &  
Members of Planning Commission  
3900 Main Street, 3<sup>rd</sup> Floor  
Riverside, CA 92522

RE: Corac Alessandro Business Center

Dear Mr. Gutierrez & Planning Commissioners:

The EastHills Chamber supports the Corac Alessandro Business Center. The proposed project is a 34 acre business park for light industrial and warehouse uses. The business park would consist of four buildings totaling approximately 674,000 sq. feet, ranging from 36,000 to 440,000 sq. feet in size. The project located at the northwest corner of Alessandro Blvd. and San Gorgonio Dr. would have driveways off of Alessandro Blvd. and San Gorgonio Dr. and parking is well provided with 1,343 parking spaces. Most important to the current economy the development would bring approximately 400 new jobs to the region.

The developer has worked diligently to be sensitive to the neighboring Sycamore Canyon Park. They will be installing down-lighting, special fencing and landscaping to blend into the surrounding landscape. Western Relco is even dedicating 36 acres of their 80 acre site to the city to be incorporated into the Sycamore Canyon Wilderness Park

Based on these considerations, the EastHills Chamber supports the Corac Alessandro Business Center.

Thank you for your consideration regarding this matter.

Sincerely,

Cindy Roth  
President/CEO

CR/jh

L-1

## **Comment Letter L. Cindy Roth, Greater Riverside Chambers of Commerce**

### **Response to Comment L-1**

Comment noted. The City of Riverside acknowledges support of the project by Greater Riverside Chambers of Commerce. (See also Master Response #1.)

Sept 2nd, 2009

To: City of Riverside Planning Commission

From: Friends of Riverside's Hills

Re: **P06-0416 (RZ), P06-0418 (SPA), P06-0419(PM), P06-0421 (DR), P07-0102 (GPA) and P07-1028 (EIR)**

We strongly oppose the approval of this DEIR (P07-1028) and the associated planning actions. We are seriously concerned over the absence of any meaningful analysis regarding impacts to the future survival of the endangered species Stephens' kangaroo rat (SKR) and to the species covered under the Western Riverside Multiple Species Conservation Plan (MSHCP). Friends of Riverside's Hills is particularly concerned over the repeated loss of critical habitat and wildlife linkages, and this project poses precisely this kind of threat, a threat that the DEIR fails to adequately analyze. We recommend that additional analysis of the impacts to SKR be required, since at present the project is in our view in clear violation of the federal habitat conservation plan (HCP) for this species. In addition, we find that the DEIR fails to adequately analyze a number of other important issues, including the important issue of fire.

M-1

Friends of Riverside's Hills is a group dedicated to maximizing the preservation of Riverside's scenic hills, ridgelines, arroyos, and wildlife areas by ensuring that Federal, State and local regulations are upheld, and that the principles of the voter approved Prop R and Measure C are followed within the City and its Sphere of Influence area. Comments in this letter are based in part on my own expertise: I am a professor of Biology at the University of California Riverside, was a member of the MSHCP Scientific Advisory Committee, have expertise in the conservation of small populations, have worked with SKR in the past (see Metcalf et al, 2001, Evolution 55: 1233-1244), and currently supervise two PhD students working on aspects of SKR conservation.

M-2

**Most of the subject property is still part of the SKR Habitat Conservation Plan (HCP).**

Almost all of the area of this project is within a core reserve of the SKR HCP (see maps appended with our letter of 21 March 2007 submitted to the City Planning Commission regarding this case). There have been various attempts to claim that this is not correct, including two letters from the local agency responsible for the management of the SKR HCP, the RCHCA. However the two kinds of argument that they have presented are both incorrect.

M-3

Prior to the DEIR, it was claimed that the inclusion of the land was a "mapping error" (RCHCA letter of 3 May 2006). Our rebuttals are provided in our appended letters of 17 October 2007 which we submitted to help guide the preparation of the Draft Environmental Impact Report, and of 23 April 2007 submitted to the City Council (without the Appendices – if they are not on record we will submit them to the City Council later).

In the current staff report, a letter from the RCHCA (Exhibit 12) dated 25 February 2009 is included that adopts a new approach – it states that the maps of the SKR reserves were updated as of 25 June 2007 (a short period after the mapping error argument was debunked) and that these maps exclude the relevant parcel from the SKR HCP. It bases the legality of this action on two arguments. First, that the privately owned land was supposed to be purchased by CalTrans but was not. RCHCA claims not to know what happened to this mitigation money, and seems unconcerned that this required SKR mitigation was never finalized. Note that the SKR HCP states in the section on "Establishment of the Core Reserve System" (sec 5.C.1.a of the SKR HCP): "4% of occupied habitat is located on private properties that will be conserved by the RCHCA either through direct acquisition of fee Interests or under conservation agreements negotiated with the land owners subject to the concurrence of USFWS and CDFG." Note the use of the term "will be conserved". Based on this argument, we find that the land is still subject to an unresolved mitigation mandate. However, the RCHCA's second argument attempts to suggest that the mitigation is moot because they have excluded the area from the plan by action under section 5.F.5.c of the HCP. The section in full is:



## Changes to HCP Boundaries

Since this HCP includes a commitment by the RCHCA to **expand the core reserves** designated in this document, the boundaries of those areas certainly will be modified over time. Such changes will not require formal amendments to this HCP; instead, they will be documented through written notice to USFWS, CDFG, and other interested parties. The RCHCA's GIS maps and data base also will be updated as land is added to the core reserve system.

Over time it is likely that the area covered by this HCP will be modified. This could occur through: 1) the addition of new unincorporated lands; 2) expansion of the RCHCA to include additional cities, or; 3) participation by individual land owners in areas not previously covered by this HCP. It is also possible that lands will be removed from the plan area due to annexations by non-member cities and/or incorporation of new cities do not join the RCHCA.

**With the exception of changes to core reserve boundaries resulting from land acquisitions or dedications approved by USPWS and CDFG, all proposed changes to the plan area will be submitted in writing and subject to USFWS and CDFG concurrence. Such requested changes will be supported by environmental documentation as required under NEPA and CEQA.**

(emphasis added).

Note that the section does not permit decisions regarding removal of land from core reserves without, at the very least, full environmental documentation. It is very clear from the wording that this section relates to the ADDITION of land to the core reserves, and that a simple “written notice” applies only to such additions. The RCHCA is misguided in its belief that it can arbitrarily remove land from the HCP without a full environmental review. Since there has been no environmental review regarding the removal of the project lands from the Sycamore Canyon part of the MAFB-Sycamore Canyon core reserve, a large portion of the project area is still contained within an SKR HCP core reserve (see appended maps associated with our letter of 21 March 2007). For this reason alone, the approval of the DEIR must be put on hold until this issue is resolved since approving the project appears to be in conflict with the endangered species act.

### Project alternatives.

We previously suggested two project alternatives that needed to be considered (see appended letter of 17 October 2007). (#1) a project limited to the region outside of the SKR SC-MAFB reserve, with the RCHCA purchasing the remaining area – as was clearly intended under the approved plan. The RCHCA has received substantial funds for such a purchase. (#2) No project, in which case the RCHCA would purchase the SKR SC-MAFB reserve lands as outlined in #1 and the remainder used in a fashion appropriate to its sensitive location, e.g. a neighborhood park. As is all too common in DEIR analyses, no alternatives similar to these were given serious attention – thus the DEIR alternative 1 (essentially #2 above) was dismissed out of hand since it “would not attain any of the project objectives” (ES-28). DEIR alternative 3 provided for a smaller project but failed to incorporate the logic of allowing only development on the land outside of the SKR HCP and acquisition of the SKR HCP lands by the RCHCA as required under the HCP (#1 above). As such, the outcome was inevitable and this alternative was also dismissed. It is essential that alternatives take serious note of HCP concerns in the vicinity of the project, rather than just saying that since land in private ownership is unprotected then there is an inevitable environmental impact (see 7-19) – a comment that ignores all subsequent environmental review that would of necessity occur and that always unfairly favors the proposed larger scale development.

**Lighting/Run-off.**

The DEIR states that the MSHCP guidelines “requires use of energy efficient LPS or HPS lamps to damper glare and recommends that night lighting be directed away from natural open space.” This is not adequate. The MSHCP guidelines in sec 6.1.4 are much simpler stating that the project must “ensure ambient lighting in the MSHCP Conservation Area is not increased”. This is especially critical in this SKR HCP area (SKR are nocturnal and vulnerable to predators given any increase in ambient light) and is an essential mitigation criterion that appears not to be satisfied, despite vague statements that light spillage (undefined) would be limited to 2-3 feet (see Sec 3.1).

M-5

The storm water system is designed to prevent the release of untreated toxins or other pollutants under a 100-year scenario. It is not stated why the 100-year criterion was chosen - this criterion is not stated in the MSHCP sec. 6.1.4, which states only that the release of harmful substances must be prevented – nor is it stated if this criterion is likely to be altered under current models of climate change. As such further analysis is essential to determine if the mitigation proposed is adequate.

M-6

**Fire.**

The DEIR fails to consider important aspects of the fire risks in the wildland-urban interface. The new development is not only potentially at risk from such a fire (a point noted in the DEIR) but the DEIR fails entirely to consider the increased fire risk to the wildland area (the Sycamore Canyon wilderness area) originating in the new development and how this might be mitigated. Additionally there was no consideration of fire clearance zones that should be included on the project site to minimize this two way risk.

M-7

**Noise.**

The DEIR failed to consider the increased noise levels that the completed project would impose on the area. This increase in noise would negatively impact both the public experience of the park and the wildlife. The effect on the public is primarily a daytime issue, while the most significant impacts to wildlife are likely to be during the night when much of the predator-prey interactions occur. A full analysis of this issue is needed so that appropriate mitigation can be proposed.

M-8

**Summary.**

The area of the proposed project is one of the most environmentally sensitive areas in the City. It impacts two HCPs, the SKR HCP (Federally mandated under the ESA) and the MSHCP. These two HCPs drive our analysis of the DEIR. Clearly the biggest and probably insurmountable problem faced by the developers of this project is that the majority of the project land is still part of the SKR HCP. We find that no adequate evidence has been presented to support the argument that the project land has been legally removed from the SKR HCP. But beyond this, the DEIR fails in a number of important ways to consider the any impacts that will inevitably result from such a large development in such an environmentally sensitive area.

M-9

Thank you for your attention.

Communicated for Friends of Riverside’s Hills by:

Leonard Nunney, Secretary  
4477 Picacho Drive, Riverside, CA 92507  
phone: (951) 781-7346

Attachments: 3 previous FRH letters concerning this project, including 2 maps of the project site in relation to the SKR core reserve.

March 21st, 2007

To: City of Riverside Planning Commission

From: Friends of Riverside's Hills

Re: Planning Commission March 22nd Hearing, Item 15, Planning Case P06-0416, P06-0418, P06-0419, P06-0421, & P07-0102.

We oppose approval of case P06-0416, P06-0418, P06-0419, P06-0421, & P07-0102, and we oppose the approval of a Negative Declaration of Environmental Impact for these cases. Our most serious objections to this proposal concern the development of land dedicated as natural open space, and the significant or potentially significant environmental impacts that result.

M1-1

In 1995 or thereabouts, the Stephen's kangaroo rat habitat conservation plan (HCP) was endorsed by the City of Riverside and other municipalities, all of which are members of the RCHCA, and all of which are responsible for implementing the HCP, which is a plan that remains independent of the Western Riverside County MSHCP. I have shown the project area on the boundaries and ownership map of the Sycamore Canyon / March Air Base Core (SC/MAFB) Reserve from the Draft Plan (see attached Figure C-9). I have also attached the final plan map, which shows identical boundaries for the Reserve (Figure 26). Stephen's kangaroo rat (SKR) is a federally endangered species.

M1-2

The plan should be subject to a full environmental review for a whole slate of reasons including:

1a. Conflict with the general plan designation or zoning....

The current general plan designates 40.22 acres as PKP (Public Parks). The proposal reduces the park area by 9.2% to 36.52 acres. This is a potentially significant impact. Furthermore, there appears to be no statement of this reduced requirement for dedicated parkland in the Conditions of Approval. Item 69 states that "undisturbed natural lands MAY be dedicated to the City for incorporation into the Sycamore Canyon Wilderness Park site" (emphasis added).

M1-3

1b. Conflict with applicable environmental plans....

The project involves developing within the approved boundaries of the SC/MAFB reserve. The City appears to have decided without appropriate environmental review that this part of the reserve is no longer needed. To our knowledge, there is no scientific basis for this decision. This is a potentially significant impact.

3i. Unique geologic or physical features.

The project site is in a unique location, towering over Sycamore Canyon. The current plan fails to consider the integration of the project's physical features into the wilderness environment of Sycamore Canyon Wilderness Park. This is a potentially significant impact.

M1-4

7. Biological Resources.

The development will require the take of the Stephen's kangaroo rat population that currently occupies the area. However, much of the development is within the boundaries of the SC/MAFB reserve, as approved under the HCP. Take of this species within the reserve is not approved, and represents a potentially significant impact.

M1-5

13. Aesthetics.

The current plan fails to analyze the enormous impact that the development of this site on the aesthetic experience of the users of Sycamore Canyon Wilderness Park. The site towers over the main part of Sycamore Canyon, and the development will have a potentially significant and permanent impact on the wilderness experience of the users of the park.

M1-6

Other potentially significant impacts include the failure to impose in perpetuity noise and lighting restrictions along the boundaries of the Park. Light leaking from the project site will adversely affect many nocturnal animals. It will almost certainly reduce the foraging of the SKR and increase their loss due to predation. Noise will adversely affect the behavior of some animals and will adversely affect the wilderness experience of people using the park.

M1-7

Further issues are likely to be problematic, but the relevant details of the project plan were not included in the staff report that was provided to the public.

Finally, I should add for the record that I have expertise in the area of conservation biology, ecology, and genetics. I am a Professor of Biology at the University of California Riverside (UCR), a member of the steering committee of UCR's Center for Conservation Biology, and I was a member of the MSHCP Scientific Advisory Committee established during the development of the MSHCP. Part of my research program is focused on conservation genetics and the effects of habitat fragmentation, including work on the conservation genetics of SKR (having published scientifically on the subject, a work cited in the species description of SKR in the MSHCP document).

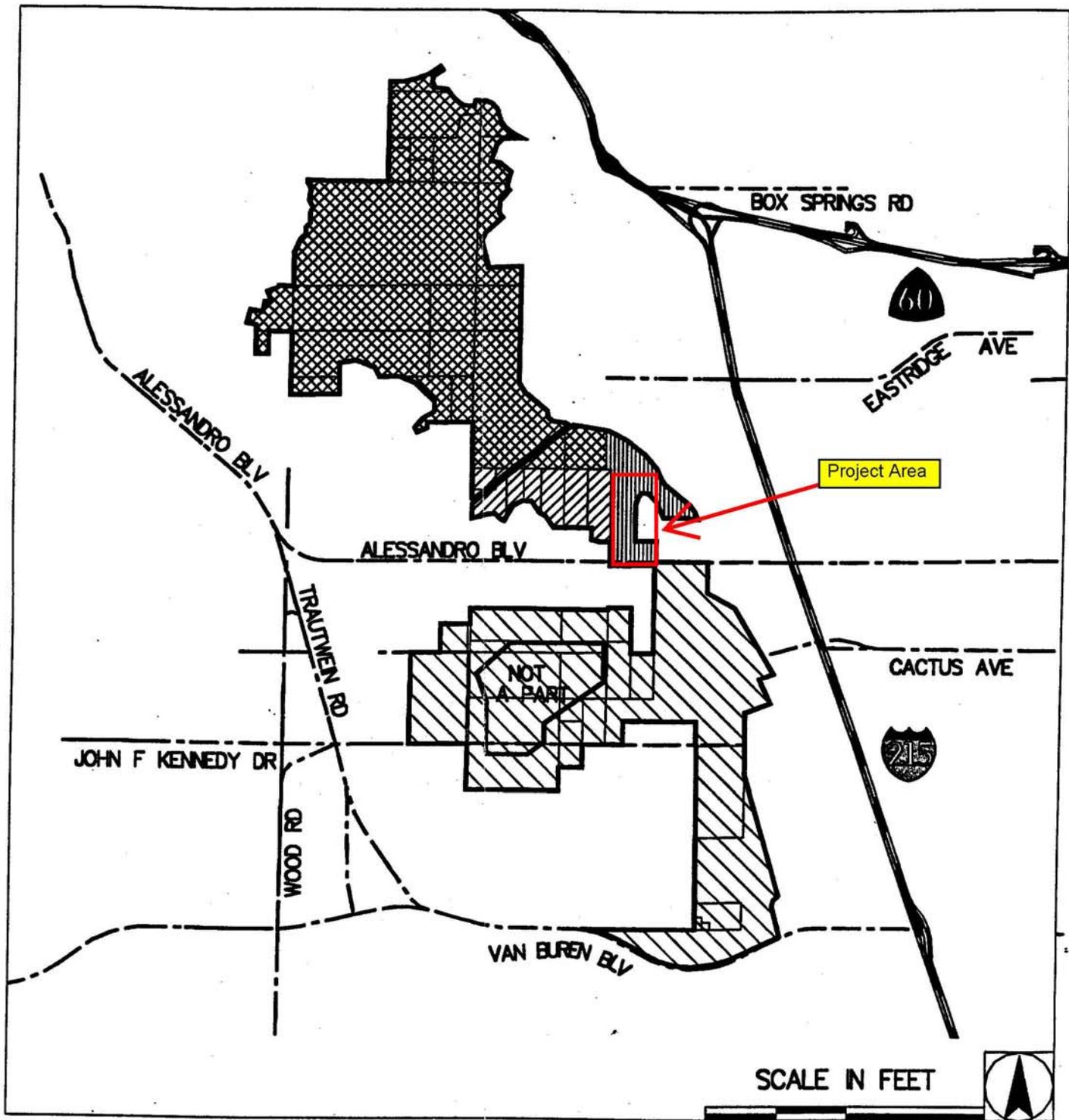
M1-8

Thank you for your attention to these serious matters.

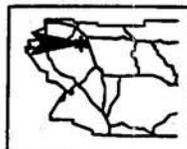
Communicated for Friends of Riverside's Hills by

Len Nunney  
4477 Picacho Dr., Riverside, CA 92507  
phone: (951)781-7346

Attachments (2 maps).



- |   |  |
|---|--|
|  RIVERSIDE CITY                                    |  HIGHWAYS             |
|  MARCH AIR FORCE BASE                              |  ARTERIAL/MAJOR ROADS |
|  LAND UNDER NEGOTIATION FOR CONSERVATION EASEMENTS |  |
|  MWD   |  |
|  STATE   |  |
|  CORE RESERVE BOUNDARY                             |  |



SYCAMORE CANYON-MARCH AIR BASE CORE RESERVE: OWNERSHIP

Figure C-9



April 23rd, 2007

To: Honorable Mayor and Members of the City Council of Riverside

From: Friends of Riverside's Hills

Re: City Council April 24<sup>th</sup> 2007, Item 10, Planning Case P06-0416, P06-0418, P06-0419, P06-0421, & P07-0102.

We oppose approval of case P06-0416, P06-0418, P06-0419, P06-0421, & P07-0102, and we oppose the approval of a Negative Declaration of Environmental Impact for these cases. Our most serious objections to this proposal concern the development of land dedicated as natural open space, and the significant or potentially significant environmental impacts that result. The project site is of extreme environmental sensitivity since part of the site is within a core reserve established to protect the federally endangered Stephen's kangaroo rat (SKR). In addition, the site adjoins Sycamore Canyon Wilderness Park, which is a core reserve under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

As we noted in our letter of March 21<sup>st</sup> 2007 submitted to the Planning Commission, the City of Riverside became a party agreeing to abide by the Stephen's kangaroo rat habitat conservation plan (HCP) in 1995 or thereabouts. We have attached the text of this HCP as Appendix 1, and all page numbers refer to that Appendix. [And since our letter has not been included in the material presented to the Council for their deliberation, we have included it here as Appendix 2.]

The Riverside County Habitat Conservation Agency (RCHCA) was charged with managing the HCP. The HCP defined seven core preserves "permanently dedicated to conservation of SKR" (from Introduction, RCHCA website). One of these preserves is the Sycamore Canyon - March Air Base Core (SC-MAFB) Reserve, and the HCP defined the boundaries of this reserve. Our previous letter included maps from the draft and final Plan, both of which show identical boundaries for the Reserve, boundaries that include most of the project site.

The maps of the HCP as present in the approved Plan would preclude development of the proposed project. In response to this issue, staff produced a letter at the Planning Commission hearing from the executive director of the RCHCA, Carolyn Sims Luna, dated May 3, 2006. Since this letter has not been included in the Staff Report to the Council, we have appended it here (Appendix 3). Regarding the project site, it states that "RCHCA staff discussed this matter internally and concluded that the inclusion of this property within a core SKR reserve appears to be a mapping error". No evidence in support of this "mapping error" is presented, except the statement that "the SKR HCP did not contemplate retaining private property within the core reserve system". This statement is incorrect. Under the HCP section on "Establishment of the Core Reserve System" (p46), it is stated that "4% of occupied habitat is located on private properties that will be conserved by the RCHCA either through direct acquisition of fee interests or under conservation agreements negotiated with the land owners subject to the concurrence of USFWS and CDFG."

The advice from the RCHCA to the City is erroneous. It represents a modification of the SKR HCP that lacks appropriate (or indeed any) environmental review. It is clear from both the draft and final SKR HCP maps (Appendix 2) that the area was very explicitly included. These maps show clearly that most of the project area (that we have outlined on Fig C-9 for clarity) lies within the boundaries of the Sycamore Canyon-March Air Base Core Reserve, as defined in the final HCP. The inclusion of this area in the plan is further supported by the wording within the plan itself. In chapter 5, it is stated that initially "Caltrans was required to construct culverts under Alessandro Boulevard in order to maintain a biological connection between the northern and southern portions of the reserve. Preliminary design plans for the culverts were completed, but the USFWS is no longer requiring their construction due to the cost

M2-1

involved. Although a reasonable decision in economic terms, the abandonment of this project is certainly problematical to the reserve due to the elimination of a direct connection between the Sycamore Canyon and MAFB SKR populations.” (p51) This possibility of a “direct connection” clearly requires the corner-to-corner connection across Alessandro Boulevard shown in the maps and that arrangement requires the inclusion of the project area. The requirement for the construction of the undercrossing was subsequently relaxed, and as part of mitigation for relaxing this requirement “Two privately held parcels of land south of Alessandro would be acquired and conserved as SKR habitat” (p66). These two parcels are directly across Alessandro Boulevard from the project area. Despite being a requirement under the HCP agreement, these parcels have not yet been purchased; however, the requirement for their purchase provides another illustration of how the SC-MAFB core reserve was designed with the assumption that the Sycamore Canyon section of the reserve north of Alessandro Boulevard would abut Alessandro Boulevard as shown in the plan maps. For the RCHCA executive director to suggest that the inclusion of the project site was a "mapping error" is counter to all of the evidence provided by the HCP itself. Furthermore, the City Council very recently approved (3 April 2007, item 28, City Council Agenda) the submission of a grant request for funding in support of the SKR management plan. The grant document included three maps of the Sycamore Canyon reserve, all of which clearly show the project site to be within the reserve. We have appended these figures (Appendix 4).

M2-1

A letter from Jones and Stokes (Attachment B of the Staff report) has been added since the Planning Commission meeting. It argues that "the project site is not part of the Sycamore Canyon core reserve", however this is based primarily on the advice of the RCHCA letter discussed above. They expand somewhat on the “private land” issue stating that "In 1996, the potential acquisition of the private land showed on the maps was under consideration. However, the acquisition of the project site did not occur, and the lands were not made part of the reserve." This statement is clearly at odds with the HCP. The final document does not show areas that were under consideration for inclusion in the HCP. In reality, it shows only areas that were definitely included in the final and approved version of the Plan. To repeat the quote given above from the section on “Establishment of the Core Reserve System” (p46): “4% of occupied habitat is located on private properties that will be conserved by the RCHCA either through direct acquisition of fee Interests or under conservation agreements negotiated with the land owners subject to the concurrence of USFWS and CDFG.” Note the use of the term "will be conserved". It does not say that these areas were under consideration as Jones and Stokes want us to believe.

M2-2

In the Jones and Stokes letter it is also argued that there is no core reserve for SKR south of the Sycamore Canyon Wilderness Park. This is false. In addition to the southerly location of the project site, the MAFB component of the reserve south of Alessandro Blvd is still actively managed for SKR as part of the HCP by Center for Natural Lands Management. It is true that there has been some interest in a transfer of all or part of the MAFB land out of the plan, a possibility that was recognized in the HCP itself (see p51-52); however this possibility has never been subject to the necessary environmental review required under the HCP. Moreover, in discussing the MAFB lands, it is stated that “In the event that the SKR Management Area is made available for development or otherwise cease to be dedicated to this species, the RCHCA will amend this HCP to incorporate mitigation provisions defined in the USFWS Biological Opinion” (p52). This has never been done, and, as such the whole reserve, as defined by the original plan and agreed to by the City of Riverside, still exists. Their reference to the MSHCP Biological Opinion is irrelevant since the HCP and the MSHCP are completely independent plans, managed by different agencies; however, the referenced document does discuss the proposal to trade the MAFB lands for land in Potrero Valley but it provides no indication that the HCP has ever been modified as required under the terms of the HCP.

Even if some or all of the MAFB portion of the core reserve has been removed from the Plan, this would not preclude the requirement of a thorough environmental review of whether or not that part of the project site within the HCP could be removed from the HCP. This area consists of excellent SKR habitat with

M2-3

many areas similar to the typical preferred open habitat of this species shown in the final picture of Appendix 4 (see Appendix 5- first three photos are from March 20, 2007, showing habitat and an active burrow on the project site). This may well have been one of the more occupied areas of the Sycamore Canyon reserve north of Alessandro Boulevard. However, nobody knows the current distribution of SKR within the Sycamore Canyon reserve because although the City of Riverside is required to monitor (and receives funds to do so) there appears to have been absolutely no monitoring data within the reserve north of Alessandro since the plan was finalized more than 10 years ago. This is in contrast to the requirement of the HCP: within the Sycamore Canyon-March Air Force Base reserve “the Plan calls for regular monitoring of SKR populations” (p66).

A serious problem relating to the SKR distribution on the project site has arisen since the Planning Commission hearing of March 22<sup>nd</sup> 2007. The project site area has been disked (see Appendix 5: fourth and fifth photos). This activity was carried out contrary to rule 403 (Fugitive Dust) of the AQMD, since mowing could have been used to clear vegetation and the soil surface has not been stabilized. In any event, as can be seen from the first 3 photos in Appendix 5, there was no new growth of vegetation that needed to be cleared for fire/weed issues, due to the lack of rainfall this year.

Much more seriously, this disking has resulted in the illegal destruction of protected habitat of a federally endangered species, SKR, within the Sycamore Canyon – MAFB Core Reserve of the HCP. It is also inevitable that the disking will have killed multiple animals since on March 20th 2007 I noted an abundance of active burrows in much of the now-disked area. Since the disking was not legally undertaken, killing (i.e. take) of this species outside of the reserve is unlawful even outside the reserve, since incidental take is only permitted when carrying out lawful activities (as defined under the Findings of the Section 10a permit for this species). Since the project has not yet been approved, the SKR mitigation fee has not been paid, and yet the developer has already been illegally destroying SKR habitat and burrows (and inevitably SKR individuals) by disking.

Another issue raised in the Jones and Stokes letter is the CEQA evaluation of the project with regard to impacts on SKR. Jones and Stokes argue that lighting and noise issues that may seriously impact SKR on the adjoining core reserve need not be considered. They state that once the HCP was enacted. “No further mitigation need be identified”. This is an absurd argument. If the activities impact the reserve, then under CEQA they need to be mitigated. It is true that adoption of the Plan meant that activities that may impact SKR but have no impact on the SKR within the HCP lands do not need to be mitigated; however, if the activity has the potential to negatively impact SKR within the HCP then this must be mitigated. For example, as noted in our original letter, light pollution can be a particular problem for SKR. It has the potential to inhibit foraging and to increase predation of SKR. Yet Jones and Stokes are suggesting that under the HCP, there need be no analysis under CEQA to mitigate such detrimental effects. In fact, there are multiple references in the Plan noting that CEQA analysis is still required.

The Jones and Stokes argument is also put to rest by taking into account the constraints on development adjoining a core reserve of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Sycamore Canyon Wilderness Park is one of the core reserves. Guidelines are provided that pertain to such development (section 6.1.4 of the MSHCP- see appendix 6). This section includes clear environmental guidelines relating to both lighting and noise, and yet to these guidelines have not been considered in relation to this project, and the project fails to satisfy the guidelines.

The MSHCP section 6.1.4 also includes other guidelines that should be incorporated in the environmental review. One such issue is drainage. It is stated that “Stormwater systems shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area.” This is not satisfied under the current project plan. As stated in the Jones and Stokes letter, the water

M2-3

M2-4

M2-5

quality management plan for the project is only able to deal with the first 0.75 inches of runoff associated with the storm. This is inadequate in such a sensitive area, since all additional runoff beyond this “first flush” will flow untreated directly into the Sycamore Canyon Wilderness Park.

M2-5

Staff and the Planning Commission have recommended that this project be granted a mitigated negative declaration. We strongly oppose this decision. The project has multiple and extensive environmental consequences that have potentially significant impact.

1a. Conflict with general plan and zoning. The areas designated PKP under the current general plan include important open space areas. For example, a major blue-line stream (see Appendix 5, final photo) runs in the Tequesquite Arroyo across the NE of the project. The original General Plan designation recognized the importance of this landform and protected it. A change in designation is requested to permit major destructive grading of this arroyo at the NE corner of Building A. This has a potentially significant impact. In particular, it is contrary to the intent of measures R and C, which are voter approved initiatives designed (among other things) to protect the City’s arroyos.

1b. Conflict with applicable environmental plans. As outlined above, this project is in direct conflict with the HCP as approved by the City of Riverside. None of the changes to the plan that have been claimed in order to support this project are supported by any evidence of the necessary environmental review and mitigation. This is clearly a potentially significant impact.

In addition the project is in conflict with the requirements of the MSHCP with regard to constraints imposed on development adjacent to MSHCP conservation areas. This is another environmental plan to which the City of Riverside is a signatory, and this project has a potentially significant impact by not following the requirements of a plan.

M2-6

1c. Incompatible with existing land use. Due to the multiple environmental impacts of this project, it is an inappropriate development adjoining an environmentally sensitive natural open-space. As such the project has potentially significant impact.

3e. Grading all natural slopes over 10%. As noted above, the project plan includes grading into a steep-sided arroyo in the NE part of the project (part of the Tequesquite Arroyo). This will have a destructive effect on an important landform that is part of one of the City’s major arroyos. In addition, the proposed grading is in conflict with the city Hillside/Arroyo Grading ordinance, since it will result in an extensive manufactured slope that involves grading into the arroyo and fails to comply with the ordinance. No grading exception has been requested for this arroyo grading. Furthermore this named arroyo is subject to a 50 foot setback requirement in its less sensitive lower reaches. The City did not map the arroyo once it entered Sycamore Canyon Park; however, given the exceptional environmental importance of this arroyo in this area, the ordinance permits the imposition of a setback. The grading of the steep slopes of the Tequesquite Arroyo and the failure to impose a setback – at least to provide an adequate firebreak – is a potentially significant impact that should be analyzed.

4a. Changes in drainage patterns etc. The proposed detention basin is inadequate to prevent the discharge of untreated storm water from the project being released into Sycamore Canyon Wilderness Park, contrary to the requirements of the MSHCP. This is a potentially significant impact.

4c. Alteration of surface water quality. As noted in the report, there is an extensive list of pollutants expected to accumulate as a result of this project. As noted earlier, the requirements of the MSHCP (Appendix 6) go far beyond the “first flush” approach adopted for this project. The failure of this project to adequately prevent pollutants entering the Sycamore Canyon Wilderness Park (a core conservation area under the MSHCP) has potentially significant impacts.

5a. Air quality. Given the environmental sensitivity of this area, it is of concern that the nitrogen oxide (NOx) emissions will be (statistically speaking) at the SCAQMD threshold (53 vs. 55), that the sulfur

oxide (SOx) level will be close to the threshold (43 vs. 55), and that the level of reactive organic compounds (ROC) will also be high relative to the threshold (313 vs. 550). These levels would be considered excessive in the center of a city, but here we are considering one of the most environmentally sensitive areas in the region. This is a potentially significant impact.

5b. Expose sensitive receptors. People exercising in a wilderness Park do not expect to be exposed to high levels of airborne pollutants such as diesel particulates. In addition some of the plants and animals in the area may be particularly sensitive to some of these pollutants. This is a potentially significant impact.

6h. Rail or air traffic impacts. It is stated that the project site is not located within the vicinity of an existing railroad. This is incorrect. The railroad is within a few hundred yards. The construction of this project and others like it in the vicinity are likely to increase rail traffic bringing containers to the area which within be shipped by truck to the facility. Given the extensive pollution currently generated by freight trains, this is a potentially significant impact.

7a. Impacts to federally endangered species etc. As discussed extensively earlier in the impacts of this project to SKR are extensive. In the short term, there has already been extensive habitat damage within the HCP SC-MAFB core reserve as a result of illegal disking of the project site. If the project is allowed to proceed further significant impacts will occur as a result of building on HCP core reserve land.

Furthermore failure to provide any analysis of compliance with the MSHCP urban interface guidelines lead to further a potentially significant impacts to the rare and threatened species covered by the MSHCP.

The borrowing owl report concluded that suitable habitat exists on the project site. A preconstruction survey was supposed to be a mitigation measure. However as a result of illegal disking, most of that suitable habitat has now been destroyed. This is a potentially significant impact. Note that the disking was done before project approval. In the Initial Study (staff report page 10-122), it states "The MSHCP requires that "all project sites containing burrows or suitable habitat whether owls were found or not, require pre-construction surveys that shall be conducted within 30 days prior to ground disturbance to avoid direct take of burrowing owls." The site has been disked within the last 30 days. This is ground disturbance, significant site disturbance, before the City has even given final approval, and therefore violates the MSHCP (in particular the condition stated in the Initial Study), and makes a mockery of the required mitigation measure. An EIR needs to be done to consider appropriate new mitigation measures to compensate for this outrageous conduct.

The grading into a section of the Tequesquite Arroyo at the NE of the project may have detrimental effects on the riparian species present in the area. This includes least Bell's vireo. This is a potentially significant impact.

7d. Wetland habitat. The mitigation measures required following the destruction of a tributary flowing across the site is stated to include "preservation and enhancement of the reaches of Sycamore Canyon Creek within the 79.89 acre property." This mitigation measure makes no sense. As noted earlier, the project is already having a potentially significant negative impact on the Creek (within the Tequesquite Arroyo), and the remainder is being preserved because it is zoned for open space, not because of mitigation. What are the precise requirements of this important mitigation measure? Absence of enforceable mitigation criteria is a potentially significant impact.

7e. Wildlife dispersal or migration corridors. This area provides a crucial link between the Sycamore Canyon Wilderness Park and the MAFB reserve lands to the south of Alessandro Blvd. The HCP repeatedly emphasizes the importance of the linkage between the two parts of the SC-MAFB core SKR reserve. These two parts are also included in the MSHCP. Absolutely no consideration has been given to the critical issue of dispersal between these two areas. This is a potentially significant impact.

9e. Fire hazard. No consideration has been given to defensible space and fuel modification zones. This is particularly problematic when the development is close to steep slopes (such is in the NE) or dense

M2-6

riparian vegetation (such as in the SW). Since fuel modification zones are likely to be imposed within the open space, then this is a potentially significant impact. In addition, the proposed barrier of evergreen trees significantly increases the fire risk, and as such is a potentially significant impact.

10a. Increased noise. The MSHCP criteria for development adjoining a conservation areas such as Sycamore Canyon Wilderness Park have not been considered. Given the considerable increase in truck noise (among other things) adjacent to the park this is a potentially significant impact.

12e. Storm water drainage. As noted earlier, the plan for most of the Project stormwater to flow into Sycamore Canyon Creek/Tequesquite Arroyo does not conform to the requirements of the MSHCP urban/wildlands interface. This is a potentially significant impact.

13a. Negative aesthetic effect. The project will be highly visible from Sycamore Canyon Wilderness Park. It is suggested that evergreen trees will hide part of some of the buildings. However it is clear from similar development nearby that the creation of monolithic industrial buildings at the edge of a wilderness area will have a potentially significant negative aesthetic effect. Furthermore, the extensive use of non-native trees in this area is aesthetically inappropriate.

13b. Create light or glare. The MSHCP criteria for light pollution from development adjoining a conservation areas such as Sycamore Canyon Wilderness Park have not been considered. Given the height of the buildings (which will probably have lights on them like the nearby buildings) and with light poles up to 25ft in the parking areas next to the open space areas, it is inevitable that the level of light will increase. This is contrary to the MSHCP guidelines and is a potentially significant impact.

13c. Affect a scenic vista or roadway. The project will be highly visible from Sycamore Canyon Wilderness Park (see Appendix 5 photo). The argument given in the staff report appears to suggest that huge monolithic buildings reaching to more than 36ft in height somehow have less affect than minor dumping a few inches high near to Alessandro Blvd. It is clear that these huge buildings have a potentially significant impact.

15b. Affect existing recreational opportunities. There are a number of extensively used trails on the project site that are used to access Sycamore Canyon Wilderness Park. Parts of these trails can be seen in the fourth and fifth photographs shown in appendix 5. These access points for the park will be eliminated by the proposed development. This is a potentially significant impact.

16a. Various threats. As noted earlier, this project has potentially significant impacts on the federally endangered SKR. This area was included in the original HCP because of the importance of linking the Sycamore Canyon Wilderness Park with the MAFB portion of the reserve. This linkage was anticipated to significantly reduce the likelihood of SKR extinction in the reserve. There has been no adequate environmental analysis of the consequences of removing this portion of the SC-MAFB reserve.

16b. Short-term versus long-term environmental goals. Population extinctions in areas the size of SC-MAFB occur on a time scale of the order of many tens of years. The role played in the HCP by the project site (as additional acreage, and as a linkage between the two areas) is a long-term one. Thus shuffling and reducing the open space land through rezoning to satisfy the needs of this specific project is negatively affecting the long-term environmental goal of maintaining the SKR population "in perpetuity". This is a potentially significant impact.

16c. Cumulative impacts. The extensive and continuing development of industrial warehouses and associated infrastructure in the area (for example, as illustrated in the response to initial study question 4e) together with this similar project is causing cumulative effects on the drainage patterns in the area. These drainages are an integral part of the effective functioning of the Sycamore Canyon Wilderness Park and such alterations pose potentially significant impacts. In addition, the cumulative effect of increasing truck traffic drives a number of associated cumulative environmental impacts, such as air quality and noise, which can have significant impacts.

M2-6

There are some other issues of concern.

1. This project is being done with a parcel map, rather than a tentative and final tract map. This appears to violate the City’s subdivision code and the state Subdivision Map Act. In particular, Riverside Municipal Code Sections 18.04.010 and 18.04.020, as quoted below, require more than just a parcel map for subdivisions creating five or more parcels. This case may be relying on exception C in Section 18.04.020 for land that is part of a tract of land zoned for industrial or commercial development. However, this case, which apparently involves 7 parcels, is on land that is only partly zoned for industrial or commercial development in both the existing and proposed zoning (staff report pp. 10-61 and 10-64), with nearly half the site, some 36 acres, including parcels 5 and 7, proposed for the O zone and to be open space. Hence the exception C of Section 18.04.010 cannot be used.

Section 18.04.010 Tentative and final maps.

A tentative map and final map shall be required for all subdivisions creating five or more parcels, five or more condominiums as defined in Section 783 of the California Civil Code, or a community apartment project containing five or more parcels, except where:

- A. The land before division contains less than five acres, each parcel created by the division abuts upon a maintained public street or highway, and no dedications or improvements are required by the City Council; or
- B. Each parcel created by the division has a gross area of twenty acres or more and has an approved access to a maintained public street or highway; or
- C. The land consists of a parcel or parcels of land having approved access to a public street or highway which comprises part of a tract of land zoned for industrial or commercial development, and which has the approval of the City Council as to street alignments and widths; or
- D. Each parcel created by the division has a gross area of not less than forty acres or is not less than a quarter of a quarter section. (Ord. 4262 § 1 (part), 1976)

M2-7

Section 18.04.020 Parcel map.

A parcel map shall be required for those subdivisions described in subsections A, B, C and D of Section 18.04.010 ...

2. The applicant is requesting a variance to allow a setback of only 20 feet for Building C from San Gorgonio drive, whereas without a variance, a minimum 40-foot and average 50-foot setback is required (staff report page 10-34). We note the extreme nature of this variance: This is not a 10% or 20% reduction, but rather a reduction of 50% of the required minimum setback distance (from 40 to 20 feet), and of (up to) 60% of the required average setback distance (from 50 to as little as 20 feet). We do not see this variance listed among the approval conditions, so that it appears that the project is being approved without approval of a required variance. The staff report does contain applicant and staff findings and justifications for the variance, but these justifications are legally inadequate. In particular, regarding the first finding, for “practical difficulties or unnecessary hardships”, by case law, difficulties or hardships that are self-induced cannot be used to justify the required finding, nor can economic considerations. In this case, it was the applicant who designed the map, who chose the building location and height, so any resultant difficulty or hardship in conforming to the setback requirement is self-induced. If a high-pile warehouse use requires such a building of over 30-foot height, it was the developer, for economic considerations, who chose such a use and such a location so close to the street. With such a large site, the developer could have located the building so as not to need a variance. If this resulted in a smaller building, a reducing the size of an adjacent building in order to shift the site of building C, this might have resulted in less profit for the applicant, but that is an economic circumstance and thus cannot be used to justify the finding. Regarding the second finding, for “exceptional circumstances”, we note that the applicant’s justification by attempting to denigrate the quality of the

M2-8

street concerned is inappropriate: it is a collector street. Neither the applicant's justification nor the staff's justification provides the legally necessary comparative data to show exceptional circumstances. Rather they focus on the features of this particular property. This is legally inadequate as justification for the exceptional circumstances finding.

M2-8

3. The project results in a net loss of 3.7 acres of PKP land. What is the justification for this gift to the developer? This gift represents a potentially significant environmental impact, especially if fuel modification zones are imposed in the open space.

M2-9

4. It is not stated that the plant palette for the project was designed by taking account of the MSHCP guidelines (see Appendix 6). If this is not done, then it is a potentially significant impact.

M2-10

5. Condition 69. This condition states "prior to recordation: All undisturbed natural lands deemed unsuitable for development may be dedicated to the city for incorporation into the Sycamore Canyon Wilderness Park site...". Note the use of "may be dedicated". This means that the developed is under no obligation to dedicate any land to Sycamore Canyon Wilderness Park. This outcome is a potentially significant impact that has not been considered. It could become a massive weed patch or inappropriate recreational area next to the environmentally sensitive Sycamore Canyon Wilderness Park.

M2-11

6. No grading exception has been requested for grading into the Tequesquite Arroyo.

M2-12

7. Finally, the City Council has not received all the information considered by the Planning Commission. This will affect its ability to deliberate on this project. For example, the letter that Friends of Riverside's Hills submitted to the Planning Commission was not included in the Staff Report to the City Council. Note that a statement of my expertise is included in that previous letter.

M2-13

In summary, we find that this project has raises such a large number of environmental problems that may be potentially significant that an Environmental Impact Report should be prepared. Furthermore, if the City wishes to exclude the project area from the HCP, then an environmental evaluation of the whole plan is in order. At the very least we need several years of SKR monitoring data from the various parts of the SC-MAFB reserve and from other reserves.

Thank you for your attention.

Communicated for Friends of Riverside's Hills by

Len Nunney, Secretary

4477 Picacho Drive, Riverside, CA 92507

phone: (951) 781-7346

Attachments: Appendix 1-6.

October 17th, 2007

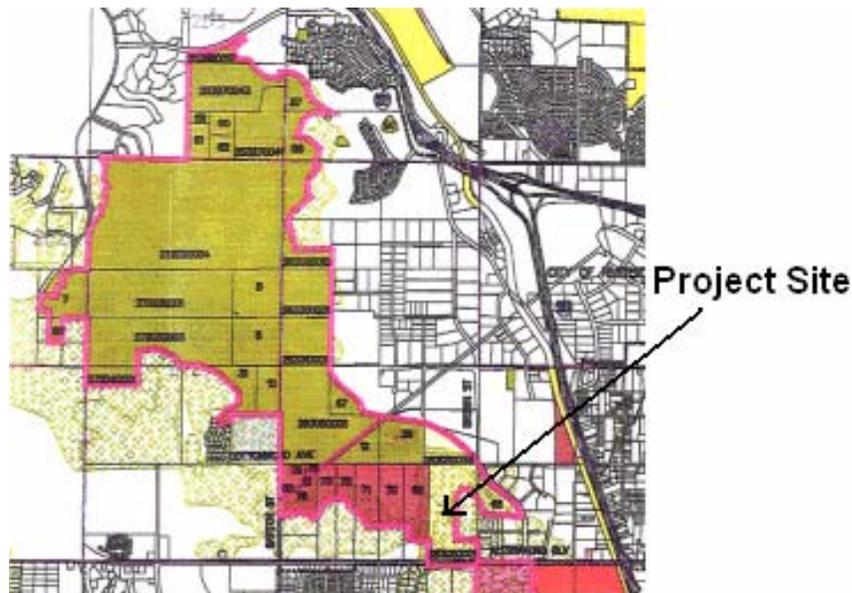
To: Patricia Brenes, Planning Division, Community Development Department, City of Riverside

From: Friends of Riverside's Hills

Re: Preparation of a Draft Environmental Impact Report (DEIR) for the Alessandro Business Center (also P07-1028, Planning Commission Hearing 18<sup>th</sup> Oct 2007).

We are writing this letter to alert you to the absolute necessity of considering all of the environmental impacts that arise because of the unique environmental sensitivity of the project site.

In the description of "Project Setting/Issues of Concern" that is provided in the Notice of Preparation, it is stated that the project is within the Stephen's kangaroo rat habitat conservation plan (SKR) boundaries. This is true, but the crucial omission is that a major part of the project is located within the Sycamore Canyon - March Air Base Core (SC-MAFB) Reserve that is part of this plan. The area within the reserve boundary cannot be developed. This conflict can be seen from the map of the SC-MAFB north of Alessandro taken from the approved SKR plan shown below. The arrow points to the center of the parcel proposed for development, and all but a small portion is clearly within the legal boundary of the SKR reserve (pink outline).



M3-1

Any attempt to remove this area from the plan requires (1) a scientific analysis of the effect of this removal on the viability of the SKR population within the SC-MAFB Reserve; and (2) a scientific analysis of the effect of this removal on the whole SKR plan. This would necessitate a current description and evaluation of the occupied SKR habitat within both the SC-MAFB reserve and the SKR plan as a whole (since this is an integrated plan involving all reserves taken together). From this basis, the next required step would be a scientific evaluation of the viability of the whole plan given the removal of this area from the SC-MAFB. We should add that a memo from the RCHCA (the Agency established to manage the SKR plan) that was submitted to the City stating that the inclusion of the project site in the SKR reserve was a "mapping error" is clearly erroneous, as can be seen from the most cursory reading of the approved SKR plan and more simply by looking at the map above. As stated above, the removal of the project site from the approved SKR plan would require a complete environmental review of the Plan under current conditions.

Additional factors that should be considered in any draft EIR include, but are not limited to:

The impacts resulting from building next to a core reserve of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The approved MSHCP defines these constraints.

M3-2

The impacts imposed by developing and grading into a named City arroyo (the Tequesquite Arroyo), that contains a blue-line stream. The City ordinances protect such arroyos based on topography, and not just the occurrence of riparian vegetation. Other drainage issues are also important at this site, since it includes two other tributaries of the Tequesquite Arroyo and a wetland area. Impacts to these areas need to be carefully evaluated.

M3-3

The impacts due to fire hazards – including the possibility of fire spreading from the project to the MSHCP core.

M3-4

The visual impacts of a development bordering a wilderness area in a semi-arid region that supports Riversidean sage scrub.

M3-5

Air quality issues, particularly given the proximity of truck traffic to a wilderness park. Other impacts to users and the biodiversity of the park include noise and light.

M3-6

Cumulative impacts to this sensitive wilderness area need to be evaluated due to the pre-existing industrial development, and the consequent effects on the users of Sycamore Canyon Park and on its biodiversity. In addition, the cumulative effect on the headwaters of the Tequesquite Arroyo needs to be examined.

M3-7

There is a tendency to sacrifice the long-term (indeed “in perpetuity”) environmental goals to short-term mitigation efforts that destroy the integrity of the original conservation plans. These acts create serious impacts. For example, the effect of further compromising the linkage between the preserved MAFB natural open space and Sycamore Canyon Wilderness Park on biodiversity needs to be investigated.

M3-8

The project will reduce public access to Sycamore Canyon Wilderness Park, since a widely used access point will be cut off, thus reducing recreational opportunity in the area.

M3-9

It should be emphasized that the nature of the vegetation should be considered in its pre-disking state; the developer illegally disked this area earlier this year. Before and after photographs are available. The original habitat could be restored relatively easily.

M3-10

In closing, it should be noted that two of the alternative projects that should be considered under the DEIR are: (1) a project limited to the region outside of the SKR SC-MAFB reserve, with the RCHCA purchasing the remaining area – as was clearly intended under the approved plan. The RCHCA has received substantial funds for such a purchase. (2) No project, in which case the RCHCA would purchase the SKR SC-MAFB reserve lands and the remainder used in a fashion appropriate to its sensitive location, e.g. a neighborhood park.

M3-11

Thank you for your attention.

Communicated for Friends of Riverside’s Hills by

Len Nunney, Secretary

4477 Picacho Drive, Riverside, CA 92507

phone: (951) 781-7346

## Comment Letter M. Len Nunney, Friends of Riverside's Hills

The 45-day public comment period for the Alessandro Business Center EIR extended from July 3, 2009 to August 19, 2009. This letter was received after the close of the public comment period. Accordingly, the City has no obligation to respond to this late comment later pursuant to State CEQA Guidelines Section 15088(a). However, in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to this late comment letter. (See also Master Response #1.)

### Response to Comment M-1

Comments noted. Refer to Response H-3 and M-7.

### Response to Comment M-2

Section 15088 of the State CEQA Guidelines states that, “The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response.” (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].) (See Master Response # 2.)

Moreover, and even assuming for the sake of argument that the commenter is an “expert” as they claim, the commenter appears to have experience only in the limited area of population genetics, and not in all of the areas that are the subject of the comment letter (e.g., fire, noise, lighting). Accordingly, it would be inappropriate under CEQA to treat the commenter’s statements on those subjects as expert testimony. (See State CEQA Guidelines, § 15384.) It would similarly be inappropriate for the City to treat the commenter’s statements – even those within the field of the commenter’s experience – as “expert testimony” where those statements are not supported by specific factual evidence. (*Ibid.* [Substantial evidence includes “facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.”].)

### Response to Comment M-3

Comment noted. Refer to Response I-3 and H-3. The RCHCA is the management authority for the HCP. The City has no authority over the environmental review process for projects related to HCP management.

The proposed project site was not acquired for incorporation into the SKR HCP core areas by the RCHCA. No private lands were acquired by the RCHCA by eminent domain and so acquisition and inclusion of private property into the SKR HCP Core Areas was only completed with willing sellers. Privately owned properties are not found within the reserves unless they have a conservation easement over all or part of the parcel(s). No conservation easement has been placed over the project site and the site has remained in private ownership. The project does not propose development in an SKR Core Reserve and, therefore, the project is not in violation of the Endangered Species Act, as this comment suggests.

Modifications to the initial SKR HCP Study Areas were made through three rounds of boundary modifications as described in the Timeline of the Completion of the Acquisition Requirements under the SKR HCP, prepared by the RCHCA (See FEIR, Appendix G). Those parcels whose owners successfully appealed through the boundary modification process were released from the Study Areas. During the acquisition process of the SKR HCP March 1996 (Long-Term Plan), parcels were acquired to meet the requirement for the completion of the Core Reserves (1998 letters) and then to meet the expansion requirement (2003 letter). In order to meet these requirements, lands had to be owned in fee title or have an acceptable conservation easement. Lands that did not meet this requirement, including the proposed project site, were not a part of the reserve system.

## Response to Comment M-4

The City of Riverside is in receipt of the October 17, 2007 comment letter submitted by the Friends of the Hills in response to the Notice of Preparation of the Alessandro Business Center EIR. In the October 17, 2007 letter, the commenter recommended two project alternatives for consideration in the EIR. Alternative 1 was “a project limited to the region outside of the SKR SC-MAFB reserve, with the RCHCA purchasing the remaining area.” Alternative 2 was “No project, in which case the RCHCA would purchase the SKR SC-MAFB reserve lands as outlined in #1 and the remainder used in a fashion appropriate to its sensitive location, e.g. a neighborhood park.”

The City of Riverside is in full compliance with the requirements of the CEQA Guidelines in the selection and evaluation of project alternatives. In accordance with CEQA Guidelines Section 15126[f][2], the City of Riverside is permitted to make initial assessments as to the feasibility of alternatives to a project. Alternatives that are remote or speculative, or the effects of which cannot be reasonably predicted, need not be considered in any detail. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, do not avoid or substantially reduce any significant environmental effects, or are infeasible for other reasons (CEQA Guidelines, Section 15126.6[c]). Factors that may be considered for determining feasibility include: “site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries... and whether the proponent can reasonably acquire, control or

otherwise have access to the alternative site”; in addition, “no one of these factors establishes a fixed limit on the scope of reasonable alternatives” (State CEQA Guidelines, Section 15126.6[f][1]). See also Response H-15 (addressing reasonableness and legal adequacy of the City’s alternative analysis).

The City of Riverside Planning Department reviewed all properties that could accommodate the project (1) within the City boundaries or (2) on County of Riverside lands within a 1-mile radius of the City limits. The criteria used in this review included the following:

- 37 acres in size or greater (i.e., comparable to the proposed development).
- Property vacant and untitled.

The results of this reviewed showed that no untitled parcels of appropriate size elsewhere in the City to accommodate the proposed project. The only parcels available are zoned Residential Conservation (RC), RA (Residential Agriculture), or Public Facilities (PF). In addition to conflicting with the current zoning, those parcels cannot physically accommodate the proposed project because they are located in hilly areas. The use of such parcels would also result in greater environmental impacts than would occur with the use of the proposed site. Finally, the project proponent does not have ready access to or control over those parcels. Due to the combination of the above factors the City determined that placement of the proposed project on an alternative site within the City is not a feasible alternative. Accordingly, the City eliminated offsite alternatives within the City from further analysis as is permitted by State CEQA Guidelines Section 15126.6 (DEIR, Page 7-5).

Additionally, the City identified over 100 County of Riverside parcels of appropriate size within 1 mile of the City limits. In accordance with State CEQA Guidelines Section 15126.6[f][2], consideration of offsite alternatives should focus on whether the use of another site would “avoid or substantially lessen any of the significant effects of the project”. Air quality and noise are the only unmitigable significant effects of the proposed project. The use of an alternative site on County lands would result in the same types and quantities of air emissions in the same air basin and similar noise level impacts. The use of an offsite alternative on County lands would simply move these impacts from an area within the City's boundaries to an area on County lands. Therefore, the use of an offsite alternative on County lands would not likely avoid or substantially lessen any potentially significant environmental impacts.

Additionally, the City lacks legal authority over County lands, and thus could not ensure that mitigation measures are enforced or that conditions of approval are complied with during project construction and operation. (See State CEQA Guidelines, § 15126.6(f) [“jurisdictional boundaries” and “whether the project proponent can reasonably acquire, control or otherwise have access to the alternative site” are relevant factors when rejecting alternatives as infeasible].) Finally, the project proponent does not have ready access to or control over the parcels on County lands. For these reasons, the City determined that having the applicant pursue an offsite alternative on County lands is infeasible and would

not result in the avoidance or substantial lessening of the project's potentially significant air quality or noise impacts. Accordingly, the City eliminated an offsite alternative on County lands from further analysis as is permitted by State CEQA Guidelines Section 15126.6.

The DEIR analyzed three onsite alternatives, which include Alternative 1 - No Project Alternative, Alternative 2 - No Project/Other Permitted Development Alternative, and Alternative 3 – Reduced Development.

Under the Alternative 1 - No Project Alternative, the proposed business center project would not be constructed by the project proponent. The existing stormdrain pipes that extend under Alessandro Boulevard and discharge to Sycamore Canyon Creek would not be repaired. Additionally, the 36.23 acres of land proposed for dedication to the City of Riverside Parks, Recreation, and Community Services Department as part of the project would remain in private ownership. This alternative was not selected since it would not attain any of the project objectives and had none of the environmental benefits of the project.

The Alternative 2 - No Project/Other Permitted Development Alternative involves construction of a business/office park on approximately 39.83 acres of the 80.07-acre property that is designated for B/OP (Business/Office Park) in the General Plan 2025, Industrial in the Sycamore Canyon Business Park Specific Plan, and zoned for Business and Manufacturing Park (See Figure 7-1). Uses may include administrative or executive offices; manufacture, assembly, warehousing, and distribution uses; publishing and printing offices; and research offices and laboratories. This alternative was not selected since it would not attain any of the project objectives. Additionally, the environmental impacts of this project in the foreseeable future would be similar to those of the proposed project.

Alternative 3 – Reduced Development, involves construction of Buildings A, B, and C. Buildings A and B would be reduced in size (DEIR, Figure 7-2,) Building D and parking areas associated with this building would not be constructed. Implementation of this alternative would result in a total reduction in development size of approximately 171,626 square feet. The smaller development footprint would be consistent with existing General Plan 2025 and Sycamore Canyon Business Park Specific Plan designations and zoning. This alternative was not selected since it would not attain all of the project objectives and did not include the beneficial components of the proposed project, including dedication of the 36.23 acres of open space to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the Sycamore Canyon Wilderness Park and repair of the clogged storm drains that extend under Alessandro Boulevard.

In accordance with a letter received from the RCHCA, dated February 25, 2009, the RCHCA has concluded that with the completion of the Potrero acquisition, the acquisition requirements under the SKR HCP were met. Additionally, other property has been acquired for Reserve Assembly. As a result, the project property is not needed for inclusion in the SKR HCP Core Reserve. The RCHCA is a joint powers authority, which is a separate legal entity from the

County of Riverside, and is not under the control of the City of Riverside. Therefore, alternatives involving RCHCA purchase of additional private property were not considered a potentially feasible alternative by the City.

However, the proposed project meets the description of the commenter's recommended Alternative 1, which was described in the October 17, 2007 letter as "a project limited to the region outside of the SKR SC-MAFB reserve, with the RCHCA purchasing the remaining area." The RCHCA has determined that the project site is located outside of the SKR SC-MAFB reserve and the remaining 36.23 acres of private property outside of the development footprint will be dedicated to the City of Riverside Parks, Recreation, and Community Services Department and RCHCA (See Response B-2) for incorporation into the adjacent Sycamore Canyon Wilderness Park and SKR HCP Sycamore Canyon Core Reserve.

## Response to Comment M-5

Section 6.1.4 of the Western Riverside MSHCP sets forth the Urban Interface Guidelines which are intended to address indirect effects associated with development in proximity to MSHCP Conservation Areas. The issues addressed under Section 6.1.4 include drainage, toxics, lighting, noise, invasives, barriers, and grading/land development.

The commenter does not provide a complete citation of the Western Riverside MSHCP Urban Interface Guidelines for Lighting (Section 6.1.4 of the MSHCP). The MSHCP Lighting Guidelines state "Night lighting shall be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in the MSHCP Conservation Area is not increased."

Mitigation Measure BIO-15, which states "Any night lighting will be directed away from natural open space areas and directed downward and towards the center of the development. Energy-efficient LPS or HPS lamps will be used exclusively to damper glare." (DEIR, Page 3.3-37) was recommended in the project DBESP report to address the potential for light spillage from the proposed project onto the adjacent MSHCP conservation area which would be created through the proposed dedication of 36.23 acres of property to the City of Riverside Parks, Recreation, and Community Services Department and RCHCA for incorporation into the adjacent Sycamore Canyon Wilderness Park and SKR HCP Sycamore Canyon Core Reserve. As required under Section 6.1.4 of the MSHCP, the night lighting is required to be directed away from the natural open space areas adjacent to the project site which comprise the MSHCP Conservation Area (DEIR, Pages 2.6, 3.1-15, 3.1-16, 3.3-49, and 3.3-50). Although shielding does not completely block all lighting or views of lighted development from adjacent properties, it reduces the amount of light spillage onto an adjacent MSHCP Conservation area which contributes to overall ambient lighting.

The project proponent has opted to use low wattage, low pressure sodium lighting along the boundary of the proposed project and the adjacent open space areas, which is typically more successful in restricting light spillage than shielding. Figure 2-8 depicts a visual simulation of the project during nighttime hours, the luminosity footprint for each new light source proposed by the project and provides the limits of any light spillage onto adjacent property. Light spillage is measured by foot-candles, which are a unit of measurement equal to the amount of illumination needed to light a 1-foot radius sphere. The limits of light spillage outside of the development footprint and into the adjacent park to the west and north is less than 1-foot candle and negligible to zero (DEIR, Pages 3.1-15, 3.1-16). As well, a 10 to 12-foot high solid wall shall be provided at the top of slope along the westerly side of Building A. The wall shall wrap around to the northerly side for approximately 40-feet past the northwest corner of the building. Additionally, trees shall be planted inside the wall to further buffer an light spillage to the park. Therefore, there would be no light spillage onto adjacent properties, including MSHCP conservation areas, which could increase ambient lighting. Therefore, the project is in compliance with the Lighting Guidelines provided in Section 6.1.4 of the MSHCP

The DBESP was circulated to the resource agencies (USFWS and CDFG) for a 60-day review in accordance with Section 6.1.2 of the Western Riverside MSHCP. Additionally, the CDFG and the USFWS were contacted by the City of Riverside on July 23, 2008 to solicit any additional comments on the DBESP. No comments were received on the DBESP, including the mitigation. Therefore, pursuant to the Western Riverside County MSHCP, the DBESP has adequately addressed the project's environmental impacts.

## Response to Comment M-6

The commenter again provides only a selective quote from the Western Riverside County MSHCP. The Drainage Guidelines provided in Section 6.1.4 of the MSHCP actually states that, "Proposed Developments in proximity to the MSHCP Conservation Area shall incorporate measures, including measures required through the National Pollutant Discharge Elimination System (NPDES) requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Conservation Area is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area. Stormwater systems shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems." The proposed project meets the requirements of the drainage guidelines through construction and operation of the proposed basin, which meets the requirements of the NPDES program as set forth in the Riverside County NPDES permit.

The commenter is incorrect; the basin is designed to meet the requirements for volume based Best Management Practices (BMPs) set forth in the Riverside County NPDES permit, and as required by Section 6.1.4 of the Western Riverside MSHCP Drainage Guidelines. Permanent volume based BMPs described in the Riverside County NPDES permit and MSHCP include water quality basins, such as the basin proposed by the project. Water quality basins are designed to treat the first 0.75-inches of precipitation of a storm event, also referred to as the “low flow” (DEIR, Page 3.11-16). The water quality basin is sized to retain the “low flow” to allow settling out of sediment and debris and the biological uptake by vegetation of urban pollutants in stormwater runoff.

Additionally, the project hydrology analysis is not limited to the 100-year storm. Analysis was conducted to design the basin to retain the stormwater runoff generated by a 2-, 5-, 10-, and 100-year storm, such that the runoff generated in the built condition does not significantly exceed existing conditions, thus reducing the potential for erosion and sedimentation in Sycamore Canyon Creek as required by the City of Riverside (DEIR, Pages 3.11-13 and 3.11-14).

## Response to Comment M-7

The potential for fire hazards was addressed in the IS/NOP checklist prepared by the City of Riverside (DEIR, Appendix A, Page 14). Lands associated with the Sycamore Canyon Wilderness Park would be separated from the proposed development by a landscaping buffer. (See Draft EIR Figure 2-7a [depicting buffer].) The buffer area is of varying widths, but it surrounds the entire development footprint except for the project’s immediate frontage on Alessandro Boulevard. (*Ibid.*) The buffer will be landscaped with a plant palette that conforms to the Urban/Wildlands Interface requirements of Section 6.1.4 of the Western Riverside County MSHCP. The plant palette for the buffer’s landscaping does not include any plant species forbidden by Table 6-2 of the MSHCP, nor does the palette include invasive plant species listed on the California Invasive Plant Council’s Inventory. (Draft EIR pp. 2-5, 2-6, 2-7, 3.3-51.) Therefore, the potential for wildland fire hazards was found to be less than significant and was not discussed in the project DEIR.

## Response to Comment M-8

A noise analysis was prepared for construction and operations of the proposed project and the results of the analysis were discussed in the DEIR. (See Draft EIR §3.8 and Appendix F.) During construction, noise levels within the area of the adjacent Sycamore Canyon Wilderness Park would be elevated above existing conditions. However, this increase is temporary and will be conducted in accordance with the City of Riverside Noise Ordinance (DEIR, Page 3.8-14). Additionally, construction noise would only occur during daytime hours, as enforced through Mitigation Measure NOISE-2. (Draft EIR p. 3.8-19 [mitigation measure NOISE-2 provides that construction shall not occur between 7 p.m. and 7 a.m. on weekdays, 5 p.m. to 8 a.m. on Saturday, or at any time on Sunday or on

federal holidays].) Long-term operation of the project similarly would not result in a significant increase in noise within the park, nor would it exceed City of Riverside's noise thresholds (Draft EIR pp. 3.8-17 through 3.8-18).

Operations in all buildings in the project (including the warehouse distribution facility) would be conducted during normal business hours (from approximately 8 a.m. until approximately 6 p.m.). The City of Riverside has determined that the following mitigation measure to address business hours is feasible and the recommended mitigation measure shall be added to the FEIR as Mitigation Measure NOISE-5:

**Mitigation Measure NOISE-5:**

Operations in all buildings in the project that involve use of noise producing equipment, including trucks and other vehicles, would be limited to normal business hours (8 a.m. to approximately 6 p.m.).

Therefore, nighttime impacts to wildlife associated with operational noise, would not occur (DEIR. Page 3.8-16).

## **Response to Comment M-9**

Comment noted. Refer to Response H-3, and Responses M-3 and M-5 through M-8, above.

## **Comment Letter M1. Len Nunney, Friends of Riverside's Hills**

The 45-day public comment period for the Alessandro Business Center EIR extended from July 3, 2009 to August 19, 2009. This letter was received after the close of the public comment period. Accordingly, the City has no obligation to respond to this late comment later pursuant to State CEQA Guidelines Section 15088(a). However, in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to this late comment letter. (See also Master Response #1.)

### **Response to Comment M1-1**

Comment noted. The commenter states that the Friends of Riverside's Hills opposed the approval of the proposed project via a Mitigated Negative Declaration. Accordingly, the developer and the City jointly agreed to re-start the environmental review process, invest significant further time and resources, and prepare a comprehensive environmental impact report. That EIR is the document upon which Friends of Riverside's Hills is now, again commenting. The proposed project was subject to review under CEQA through preparation of an initial study in 2007. The initial study was sent to the California State Clearinghouse (SCH#2007021005) for 30-day public review from February 1, 2007 to March 2, 2007. Project review by the City of Riverside Planning Commission was conducted on March 22, 2007, and April 24, 2007. Based on public comments received prior to the March 22, 2007, Planning Commission hearing, the City of Riverside determined that additional project review through the preparation of an EIR would be required (DEIR, Page 2-1). Therefore, a Mitigated Negative Declaration was not adopted for the Alessandro Business Center Project, which includes cases P06-0416, P06-0418, P06-0419, P06-0421, and P07-0102.

The project site is located on privately owned property within the Sycamore Canyon Business Park Specific Plan and has not been dedicated as natural open space. However, as part of the proposed project, 36.23-acres of property within the project site will be dedicated to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park (DEIR page 2-4). Refer to Response B-2.

### **Response to Comment M1-2**

The SKR HCP was approved by CDFG and the USFWS in 1996. The Riverside County Habitat Conservation Agency (RCHCA) was formed in 1990 as a Joint Powers Agreement agency comprised of the Cities of Corona, Hemet, Lake Elsinore, Menifee, Moreno Valley, Murrieta, Perris, Riverside, Temecula, Wildomar and the County of Riverside to acquire and manage lands for

conservation of the SKR. Although the City of Riverside is a participant in the HCP, the RCHCA remains the management authority for the SKR HCP.

The maps provided by the commenter (Figures C-9 and 26) are outdated and incorrect. In June 2007 (after the conservation goals of the SKR HCP were met), the RCHCA issued new maps of the SKR Core Reserves (Refer to FEIR Appendix G, Attachment 15). The map of the Sycamore Canyon Core Reserve shows that the project area is outside of the existing core reserve (DEIR, Page 3.3-10).

## Response to Comment M1-3

Based upon public comment received during the for 30-day public review of the project initial study, the City of Riverside determined that additional environmental review through the preparation of an EIR would be required (DEIR, Page 2-1) as requested by the commenter.

The change in land use designations proposed by the project would result in a net increase of 13.52 acres of land zoned for Public Facilities, which would be designated as park land on the property. The changes would also result in a net decrease in 2.22 acres of private land designated by the General Plan 2025 for Public Parks (DEIR, Page 3.9-10). However, the project description includes dedication of 36.23 acres of privately owned open space to the City, which represents a significant increase in City-owned parkland and provides a connection between City parkland located northwest and northeast of the subject property (DEIR, Page 3.9-10). Refer to Response M1-1 and B-2.

The commenter is incorrect that the project involves development within the SKR HCP Sycamore Canyon/March Air Force Base core reserve. Refer to Response M1-2

## Response to Comment M1-4

Refer to Response H-5. The DEIR includes an aesthetics chapter that provides a description of the existing visual characteristics of the project site, and identifies sensitive viewers and key viewpoints (DEIR, Chapter 3.1). Additionally, conceptual renderings were prepared to depict the changes in the project site from the five identified key viewpoints.

The proposed development is compatible with the nature of the area of Sycamore Canyon Wilderness Park, which is located within the existing Sycamore Canyon Business Park Specific Plan. Within the vicinity of the project site, the park is currently surrounded to the north by Sycamore Canyon Boulevard and by existing industrial development and existing commercial development to the east. Additionally, views of the development would be buffered from adjacent recreation uses with trees, shrubs, and other vegetation used in the landscaping buffer proposed around the project boundary. Implementation of the proposed

project is consistent with the visual nature of the surrounding area and does not represent a significant change in the existing viewshed (DEIR, Page 3.1-14). Refer to Response H-5.

## **Response to Comment M1-5**

Refer to Response H-3 and Response M1-2.

## **Response to Comment M1-6**

The project site consists of privately owned property located within the approved Sycamore Canyon Business Park Specific Plan. As part of the proposed project, 36.23-acres of property within the project site will be dedicated to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park (DEIR page 2-4). Implementation of the proposed project will not result in significant impacts to recreation or aesthetics (Refer to Response M1-3, Response M1-4, and Response M1-7).

## **Response to Comment M1-7**

The commenter is incorrect. Project noise and lighting is restricted by the City of Riverside Municipal Code and General Plan and guidelines provided in the Western Riverside MSHCP.

Noise standards are addressed in Section N (Noise Element) of the City of Riverside General Plan 2025. The Noise Element identifies noise compatibility for various land uses (DEIR, Page 3.8-9). Title 7 of the City of Riverside's Municipal Code also contains noise standards that are used to limit noises from sources within its control (traffic noise, for example, is regulated by federal and state law and is thus preempted from regulation by the local noise code) (DEIR, Page 3.8-9).

Noise associated with the proposed project could result from increased traffic and onsite operational activities. The Noise standards set forth in Section N (Noise Element) of the City's General Plan 2025 allows for daytime noise levels of 55 dBA at single-family residential uses. The City General Plan noise standard for recreation outdoor uses is 65 dBA. Based upon the project noise analysis, the modeled noise level at the boundary of the project with Sycamore Canyon Wilderness Park will be 52 dBA (DEIR, Page 3.8-18). Therefore, the project would not cause an exceedance of City of Riverside noise standards nor would it materially worsen an existing exceedance (DEIR, Page 3.8-16).

The Western Riverside MSHCP states that noise in adjacent wildlands (including the Sycamore Canyon Wilderness Park) should not exceed residential noise

standards. The Noise standards set forth in Section N (Noise Element) of the City's General Plan 2025 allows for daytime noise levels of 55 dBA at single-family residential uses. As noted above, the modeled noise level at the boundary of the project with Sycamore Canyon Wilderness Park is 52 dBA (DEIR, Page 3.8-18). Therefore, noise levels associated with operation of the project will not exceed daytime residential noise standards and thus would not result in a significant impact on adjacent wildlands. Furthermore, a 10 to 12-foot high solid wall shall be provided at the top of slope along the westerly side of Building A for screening of the loading docks and noise attenuation. The wall shall wrap around to the northerly side for approximately 40-feet past the northwest corner of the building. While this is not required as mitigation for this project, this project feature would further reduce project-related noise levels received off site. The proposed business park will be operated during normal business hours (8 am to 6 pm), therefore, no nighttime operational noise is projected to occur.

Lighting requirements are set forth by the City of Riverside Planning Department and Section 6.1.4 of the Western Riverside MSHCP. The type of low-intensity lighting proposed for nonpublic and perimeter areas of the site complies with Section 6.1.4 of the MSHCP by restricting light spillage onto the adjacent property to approximately 2 to 3 feet. The area of light spillage is limited to the width of the proposed landscape buffer and will not actually spill onto adjacent wildlands. Refer to Response M-5.

## Response to Comment M1-8

Comment noted. Section 15088 of the State CEQA Guidelines states that, "The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response." (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348, 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].) See also Master Response # 2.)

Moreover, and even assuming for the sake of argument that the commenter is an "expert" as they claim, the commenter appears to have experience only in the limited area of population genetics, and not in all of the areas that are the subject of the comment letter (e.g., fire, noise, lighting). Accordingly, it would be inappropriate under CEQA to treat the commenter's statements on those subjects as expert testimony. (See State CEQA Guidelines, § 15384.) It would similarly be inappropriate for the City to treat the commenter's statements – even those within the field of the commenter's experience – as "expert testimony" where those statements are not supported by specific factual evidence. (*Ibid.* [Substantial evidence includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."].)

## **Comment Letter M2. Len Nunney, Friends of Riverside's Hills**

The 45-day public comment period for the Alessandro Business Center EIR extended from July 3, 2009 to August 19, 2009. This letter was received after the close of the public comment period. Accordingly, the City has no obligation to respond to this late comment later pursuant to State CEQA Guidelines Section 15088(a). However, in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to this late comment letter. (See also Master Response #1.)

### **Response to Comment M2-1**

Refer to Response M1-1, Response M1-2 and Response H-3. The commenter states that the Friends of Riverside's Hills opposed the approval of the proposed project via a Mitigated Negative Declaration. Accordingly, the developer and the City jointly agreed to re-start the environmental review process, invest significant further time and resources, and prepare a comprehensive environmental impact report. That EIR is the document upon which Friends of Riverside's Hills is now, again commenting.

### **Response to Comment M2-2**

Refer to Response M1-1 and Response M1-2. Although the entire project area is within the SKR HCP plan area, it is located entirely outside of the SKR HCP Core Reserve (DEIR, Figure 3.3-6). In 1996, the project area was under different ownership and was identified in the SKR HCP as an area where "negotiation of conservation easements" were under consideration. The transaction did not occur after the SKR HCP was approved. In June 2007 (after the conservation goals of the SKR HCP were met), the RCHCA issued new maps of the SKR Core Reserves (DEIR, Page 3.3-10) (Refer to FEIR, Appendix G, Page 4 and Attachment 15). See also Response M-4.

The federal decision to convert March Air Force Base from active duty to reserve status led to the release of approximately 4,400 acres of the base for civilian use and the acquisition of SKR habitat in Potrero Valley to replace the SKR Management Area on the base. As disclosed in the SKR HCP (RCHCA 1996, pp. 133-134), the RCHCA anticipated that the realignment potentially would result in the elimination of the air base component of the SKR reserve system. The trade-out of MARB and credit for Portero Valley was approved by the California Department of Fish and Game and U.S. Fish and Wildlife Service in late 2003 and is cited in the 2004 Biological Opinion (FWS-WRIV-870.19) for the Western Riverside MSHCP. There is no Core Reserve for SKR south of Sycamore Canyon Wilderness Park. In addition, none of the lands on the

existing or former air base are targeted for conservation under the MSHCP (Refer to FEIR, Appendix G). Refer to Response H-3.

## Response to Comment M2-3

The removal of the MARB from the HCP is not considered part of the environmental review for the proposed project. Since the RCHCA is the management authority for the HCP, the maps provided by the RCHCA are accurate and the official current boundaries of the HCP. It is outside of the scope of this EIR to analyze the changes to map boundaries by RCHCA. Furthermore, this project does not propose changes to the HCP maps.

The City is unable to comment on the Appendices or photographs referenced in the letter, since these were not attached. However, it should be noted that there are several common wildlife species that exist in burrows. Night time trapping and identification by species is required to determine whether the active burrow described in the letter supports Stephan's kangaroo rat.

The commenter is incorrect in his statement that the discing was not legally undertaken. The project applicant conducted discing activities within the approximately 39 acre development footprint in March 2007 under order by the City of Riverside Public Works Department for fire abatement purposes. Although the entire project area is within the SKR HCP plan area, it is located entirely outside of the SKR HCP Core Reserve, and therefore, the activity was not in conflict with the SKR HCP (DEIR, Figure 3.3-6). Payment of the SKR HCP fee for projects outside the Core Reserve is required prior to issuance of a grading permit by the City of Riverside. Issuance of a grading permit or other City approval is not required for fire abatement activities, therefore, payment of the SKR HCP fee was not required.

The commenter is incorrect that the discing activities were not in compliance with SCAQMD Rule 403. The purpose of the rule is to prevent, reduce, or mitigate fugitive dust emissions from earthmoving activities or aggregate operations. Rule 403 does not preclude discing activities and only requires soil stabilization when the soil is exposed in clearing, grading, or cut and fill activities. Implementation of fugitive dust reduction methods, such as watering, when required, is the responsibility of the contractor.

## Response to Comment M2-4

The potential for impacts related to lighting and noise were considered in the project initial study prepared in 2007. These impacts were considered less than significant based upon the lighting design measures proposed, including shielded lighting and reduced light pole height to prevent spillage of light outside the project boundaries.

Based on public comments received prior to the March 22, 2007, Planning Commission hearing, the City of Riverside determined that additional project review through the preparation of an EIR would be required (DEIR, Page 2-1).

Refer to response to Comment M1-7 and M-5 regarding analysis provided in the DEIR for lighting and noise.

## Response to Comment M2-5

Refer to response to Comment M-6.

## Response to Comment M2-6

As recommended by the commenter, the City of Riverside determined that additional project review through the preparation of an EIR would be required based on public comments received prior to the March 22, 2007, Planning Commission hearing (DEIR, Page 2-1). Additionally, as recommended by the commenter, the DEIR addresses the potential for impacts to biological resources, land use, water quality, air quality, aesthetics, recreation, hydrology, and cumulative impacts. Specific topics raised by the commenter and addressed in the EIR, as requested, include consistency with the SKR HCP and Western Riverside MSHCP, city-designated arroyos, burrowing owl and least Bell's vireo, and streambeds and wetland mitigation. As for this comment's suggestion that the project conflicts with Proposition R and Measure C, please note that the project site is zoned BMP (Business and Manufacturing Park) and PF (Public Facilities). Proposition R only pertains to land zoned RA (Residential Agricultural) or RC (Residential Conservation); therefore, Proposition R does not apply to the project site. Measure C amended and augmented Proposition R, but those amendments and additions have no bearing on the project site or the project.

## Response to Comment M2-7

Comment noted. Section 15088 of the State CEQA Guidelines states that, "The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response." (Emphasis added.) Where a commenter submits comments that do not raise environmental issues, there is no requirement under CEQA that the City respond. (*Ibid.*; see also *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348 360 [holding that a Final EIR was adequate under CEQA where it did not respond to comments raising non-environmental issues].) See Response to Comment M2-8 and Master Response #2.

## Response to Comment M2-9

The commenter is incorrect in the statement regarding loss of land designated as PKP—Public Park. A change in land use designation and zoning is required for several areas within the 80.07-acre property to create contiguous parcels of land for businesspark and open space use. The change in land use designations proposed would result in a net increase of 13.52 acres of land zoned for Public Facilities, which would be designated as park land on the property. The changes would also result in a net decrease in 2.22 acres of private land designated by the General Plan 2025 for Public Parks (DEIR, Page 3.9-10). However, the dedication of 36.23 acres of privately owned open space to the City represents a significant increase in City-owned parkland and provides a connection between City parkland located northwest and northeast of the subject property. The City would also be entitled to plan and construct designated bike and hiking trails within this area of the park, following formal dedication of the lands (DEIR, Page 3.9-10).

## Response to Comment M2-10

The plant palette for the project is consistent with the MSHCP guidelines. As described in the DEIR, the project landscaping plan and plant palette does not include any species identified in Table 6.2 of the MSHCP, which lists plant species to be avoided at the urban/wildlands interface (DEIR, Page 2-5). In addition to compliance with the MSHCP table, the planting plan does not include species listed as invasive by the California Invasive Plant Council in the 2006 California Invasive Plant Inventory (DEIR, Page 2-5). The planting plan and plant palette are provided in the DEIR as Figures 2.7a and 2.7b, respectively. See also Response M-7 (further addressing MSHCP consistency).

## Response to Comment M2-11

Refer to Response B-2.

## Response to Comment M2-12

The proposed project is not located within the vicinity of the Tequesquite Arroyo or other City designated arroyo (DEIR, Page 3.3-25, Figure 3.1-2). The project does not include grading within the limits of the Tequesquite Arroyo, therefore, approval of a grading exception is not required.

## Response to Comment M2-13

Based on public comments received prior to the March 22, 2007, Planning Commission hearing, the City of Riverside determined that additional project review through the preparation of an EIR would be required (DEIR, Page 2-1).

Since the RCHCA is the management authority for the HCP, the maps provided by the RCHCA are accurate and the official current boundaries of the HCP. It is outside of the scope of this EIR to analyze the changes to map boundaries by RCHCA. Furthermore, this project does not propose changes to the HCP maps. The removal of the MARB from the HCP is not considered part of the environmental review for the proposed project.

## **Comment Letter M3. Len Nunney, Friends of Riverside's Hills**

The 45-day public comment period for the Alessandro Business Center EIR extended from July 3, 2009 to August 19, 2009. This letter was received after the close of the public comment period. Accordingly, the City has no obligation to respond to this late comment later pursuant to State CEQA Guidelines Section 15088(a). However, in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to this late comment letter. (See also Master Response #1.)

### **Response to Comment M3-1**

The commenter states that the Friends of Riverside's Hills opposed the approval of the proposed project via a Mitigated Negative Declaration and that an EIR was required. Accordingly, the developer and the City jointly agreed to re-start the environmental review process, invest significant further time and resources, and prepare a comprehensive EIR for this project. That EIR is the document upon which Friends of Riverside's Hills is now, again commenting. Based on public comments received prior to the March 22, 2007, Planning Commission hearing, the City of Riverside determined that additional project review through the preparation of an EIR would be required (DEIR, Page 2-1).

Refer to Response H-3. Since the RCHCA is the management authority for the HCP, the maps provided by the RCHCA are accurate and the official current boundaries of the HCP. It is outside of the scope of this EIR to analyze the changes to map boundaries by RCHCA. Furthermore, this project does not propose changes to the HCP maps. The removal of the MARB from the HCP is not considered part of the environmental review for the proposed project.

### **Response to Comment M3-2**

Section 6.1.4 of the Western Riverside MSHCP sets forth the Urban/Wildlands Interface Guidelines, which are intended to address indirect impacts associated with development located in proximity to MSHCP Conservation Areas. The proposed development footprint currently abuts existing lands to the northeast that are part of the Sycamore Canyon Wilderness Park and SKR Core Reserve and designated as Public/Quasi Public Conserved Lands under the MSHCP that comprise MSHCP Core Area D. Additionally, implementation of the proposed project would include dedication of 36.23 acres of land within the subject property to the City of Riverside Parks, Recreation, and Community Services as part of the Sycamore Canyon Wilderness Park. This property is adjacent to the development footprint to the north and east. The MSHCP Urban/Wildlands Interface Guidelines and project compliance with the guidelines is provided below.

## Drainage

**Guidelines:** Proposed Developments in proximity to the MSHCP Conservation Area shall incorporate measures, including measures required through the NPDES requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Conservation Area is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area. Stormwater systems shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area. This can be accomplished using a variety of methods including natural detention basins, grass swales, or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems.

**Project Compliance:** The proposed project includes construction of an underground stormdrain system, including curb inlets and catch basins, to collect all stormwater runoff generated within the project site and direct it into the proposed 1.8-acre detention basin at the northwest corner of the development footprint. The detention basin would discharge flows to the north and west into Sycamore Canyon Creek and Unnamed Drainage 2. The basin has been designed in accordance with the volume-based BMPs criteria set forth in the Riverside County NPDES Permit and would retain the “low flow” to allow settling out of sediment and debris and the biological uptake of urban pollutants in runoff, prior to the discharge of stormwater.

A preliminary WQMP was prepared and approved by the City of Riverside on June 22, 2006. Mitigation Measure WTR-2 requires preparation and approval of a final Water Quality Management Plan (WQMP) prior to construction or ground disturbing activities. The WQMP would include construction, inspection, and maintenance requirements for the water quality basin. Long-term maintenance of the basin would be incorporated into the CC&Rs for the development and conducted by the future occupants of the business park

## Toxics

**Guidelines:** Land uses proposed in proximity to the MSHCP Conservation Area that use chemicals or generate bioproducts such as manure that are potentially toxic or may adversely affect wildlife species, habitat, or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Conservation Area. Measures such as those employed to address drainage issues shall be implemented.

**Project Compliance:** The proposed business park project is not expected to involve the use or generation of chemicals or bioproducts that could adversely affect wildlife, habitat, or water quality in adjacent conservation areas. However, the project does include a warehouse component that supports the transport of goods with large trucks. These trucks would be stored in onsite yards and loaded with equipment such as forklifts. Use of this equipment on the site could result in contact between stormwater and petroleum products, such as oil, diesel, and lubricants. All stormwater generated within the project site would be directed

into the proposed basin at the northeast corner of the site. As described above, the basin has been designed in accordance with the Riverside County NPDES permit to function at a volume-based BMPs by retaining and treating stormwater. The basin would be planted with native grasses and other vegetation to remove urban pollutants, such as petroleum products, through biological uptake.

### **Lighting**

**Guidelines:** Night lighting shall be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct night lighting. Shielding shall be incorporate in project designs to ensure ambient lighting in the MSHCP Conservation Area is not increased.

**Project Compliance:** The proposed project includes low-intensity lighting that is directed away from the adjacent Conservation Areas (Sycamore Canyon Wilderness Park). Figure 2-8 depicts the luminosity footprint for each new light source and provides the limits of any light spillage onto adjacent property, which is limited to approximately 2 to 3 feet. As a result, any project light spillage would be restricted to the business park development and associated slopes. Light would not spill into the adjacent Conservation Areas.

### **Noise**

**Guidelines:** Proposed noise generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms, or walls to minimize the effect of noise on MSCHP Conservation Area resources pursuant to applicable rules, regulations, and guidelines related to land use standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.

**Project Compliance:** Construction of the proposed project would involve the temporary use of heavy equipment for ground clearing, grading, construction of foundations and buildings, and paving. Construction noise at the interface between the project boundary and Sycamore Canyon Wilderness Park (approximately 600 feet from the project's noise center) is projected to be 67 dBA, which exceeds the City of Riverside Municipal Code Residential Noise Standard of 55 dBA. Additionally, blasting for a period of approximately 2 weeks is proposed during initial grading activities. The blasting is required to remove granitic rock that underlies the project site. Although the blasting noise would be heard for seconds at a time, at the near edge of the Sycamore Canyon Wilderness park perimeter approximately 600 feet away from the center of construction, the probable peak noise level would be between 123 dB and 119 dB. However, construction would be temporary in nature and is in compliance with the City's noise ordinance, which exempts construction activities from the noise standard (providing that such activities take place between the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and 8 a.m. to 5 p.m. on Saturdays). Mitigation Measure NOISE-1 would be implemented to reduce construction noise to the extent feasible. Mitigation Measure BIO-10 restricts blasting and grading activities from occurring within the breeding season to avoid indirect impacts on least Bell's vireo in the drainage and other wildlife species within the adjacent Sycamore Canyon Wilderness Park.

Operation of the proposed project would involve use of trucks, passenger vehicles, and ancillary equipment such as forklifts and heating, ventilation, and air conditioning (HVAC) machinery which would create noise. However, noise levels within Sycamore Canyon Wilderness Park (approximately 600 feet from the project's noise center) are projected to be 52 dBA, which is substantially lower than the City of Riverside Municipal Code Residential Noise Standard of 55 dBA. Therefore, operation of the project is in compliance with the MSHCP Urban/Wildlands Interface noise guidelines.

### **Invasives**

**Guidelines:** When approving landscape plans for Development that is proposed adjacent to the MSHCP Conservation Area, Permittees shall consider the invasive, non-native plant species listed in Table 6-2 of the MSHCP and shall require revisions to the landscape plans (subject to the limitations of their jurisdiction) to avoid the use of invasive species for the portions of Development that are adjacent to the MSHCP Conservation Area. Considerations in reviewing the applicability of this list shall include proximity of planting areas to the MSHCP Conservation Areas, species considered in the planting plans, resources being protected within the MSHCP Conservation Area and their relative sensitivity to invasion, and barriers to plant and seed dispersal, such as walls, topography and other features.

**Project Compliance:** The project landscaping plan and plant palette does not include any species identified in Table 6.2 of the MSHCP, which lists plant species that should be avoided in landscaping at the urban/wildlands interface. Additionally, the planting plan does not include species listed as invasive by the California Invasive Plant Council in the 2006 California Invasive Plant Inventory (Cal-IPC 2006).

### **Barriers**

**Guidelines:** Proposed land uses adjacent to the MSHCP Conservation Area shall incorporate barriers, where appropriate in individual project designs to minimize unauthorized public access, domestic animal predation, illegal trespass, or dumping in the MSHCP Conservation Area. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.

**Project Compliance:** The project fencing plan includes 6-foot-high painted wrought iron fencing around the perimeter of the business park and adjacent open space to minimize unauthorized public access, domestic animal predation, or dumping, in accordance with Section 6.1.4 of the MSHCP (Urban/Wildlands Interface) and City of Riverside Park and Recreation Department specifications.

A 6-foot-high commercial fence in accordance with City standards would be provided along the western boundary of the 6.15-acre parcel (Parcel 6) identified for future development. At the time of development, the interface between Parcel 6 and open space to the east and north would be secured with 6-foot-high painted wrought iron fencing.

### **Grading/Land Development**

**Guidelines:** Manufactured slopes associated with proposed site development shall not extend into the MSHCP Conservation Area.

**Project Compliance:** All grading and construction, including manufactured slopes, is restricted to the project development footprint. As described above, the project is in compliance with the requirements of the MSHCP Urban/Wildlands Interface Guidelines. No or less-than-significant impacts on existing Conservation Areas or areas proposed for conservation would occur.

## **Response to Comment M3-3**

Refer to Response to comments M3-12, I-2 and M-5.

## **Response to Comment M3-4**

Refer to Response to comment M-7.

## **Response to Comment M3-5**

Refer to Response to comment H-5 and M2-4.

## **Response to Comment M3-6**

Refer to Response to comments H-6 through H-11, and M-8.

## **Response to Comment M3-7**

The cumulative impacts discussion provided in the DEIR analyzed the potential for cumulatively considerable impacts of the proposed project within the context of combined impacts caused by other past, present, or future projects (DEIR, Pages 4.2 to 4.3).

The proposed project includes the dedication of 36.23 acres of privately owned open space to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. Additionally, the proposed project and each of the cumulative projects would be required to pay local and regional park development fees prior to construction. Therefore, the project's contribution to cumulative impacts to recreation would be less than significant (DEIR, Page 4-7).

The cumulative projects analyzed by the DEIR are located in areas of similar biological habitats. While the proposed project would not result in significant

biological impacts, the combination of the cumulative projects would result in significant loss of sensitive biological habitat and/or individual sensitive species, thereby resulting in significant cumulative impacts to biological resources (DEIR, Page 4-7). Each of the cumulative projects would be required to mitigate for impacts to or the loss of sensitive habitats and species in accordance with the provisions of the Western Riverside County MSHCP. Each of the project applicants would also be required to conduct preconstruction surveys to minimize potential impacts on sensitive bird species, and contribute mitigation fees identified in the SKR HCP and the MSHCP in Western Riverside County (DEIR, Page 4-7).

The proposed project is not located within the vicinity of the City designated Tequesquite Arroyo, however, the project will result in temporary and permanent impacts to riparian/riverine areas, which when combined with other cumulative projects, would result in significant cumulative impacts. The proposed project includes mitigation to reduce its contribution to biological impacts, including riverine/riparian resources. The project includes a development buffer of at least 50 feet from the two onsite blue-line streams—Sycamore Canyon Creek and Unnamed Drainage 2—which will reduce the potential for edge effects to less-than-significant levels (DEIR, Page 4-7). The loss of habitat and riparian resources from the proposed project is mitigated through habitat restoration and enhancement (mitigation measures BIO-1 through BIO-26). Additionally, the proposed project includes the dedication of 36.23 acres of privately owned land to the City of Riverside Parks, Recreation, and Community Services Department for conservation as part of the Sycamore Canyon Wilderness Park. With implementation of the mitigation measures, the project's contribution to cumulative impacts is reduced to less than cumulatively considerable levels (DEIR, Page 4-7).

## **Response to Comment M3-8**

Refer to response to comment H-1 and H-3.

## **Response to Comment M3-9**

The commenter is incorrect. The project site is privately owned and does not include any formally designated access points into parkland. The proposed project description includes dedication of 36.23 acres of privately owned open space to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. Dedication of these lands represents a significant increase in City-owned parkland and provides a connection between City parkland located northwest and northeast of the subject property. The City would also be entitled to plan and construct designated bike and hiking trails or access points within this area of the park, following formal dedication of the lands (DEIR, Page 3.9-10).

## **Response to Comment M3-10**

Refer to Response to comment M3-2.

## **Response to Comment M3-11**

Refer to Response to comment M-4.



# SAN GORGONIO CHAPTER

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*Regional Groups Serving Riverside and San Bernardino Counties:  
Big Bear, Los Serranos, Mojave, Moreno Valley, Mountains, Tahquitz.*

To: City of Riverside Planning Commission

September 3, 2009

Dear Commissioners:

Re: Draft EIR for Western Realco-Alessandro Business Center SCH#2007021005

The Center for Biological Diversity (CBD), San Bernardino Valley Audubon Society (SBVAS) and the Sierra Club sent comments (attached) to the Draft EIR on August 19, 2009. This 25-page letter and several others were sent only two weeks ago. We strongly believe that all of us, including yourselves, should have responses to these comments in order to make justifiable recommendations.

N-1

I hope you have read all of the letters because staff-selected summaries do not do some of them justice. For example, the projects lands were to be part of the SKR core reserve but were not purchased as expected under the terms of the Section 7 Biological Opinion. If the CBD and SBVAS lawsuit (attached), filed last week, concerning the trade-out of the March SKR Core Reserve for Potrero is won by the environmental community, then this project will sever this critical linkage between the Sycamore Canyon and March SKR Core Reserves.

N-2

The Alessandro Commerce Centre warehouse project on the north side of Alessandro is being appealed to the County. Without these two projects, these two core reserves, which are both being managed, will be viable in the long term. It is difficult to believe that there is not another site for this project that would not lead to the extinction of an animal we did not create and do not have the knowledge to re-create. Besides the SKR corridors, how is this project maintaining the bobcat corridors as envisioned in the WRCMSHCP? The California Department of Fish and Game's Sycamore Canyon Ecological Reserve is adjacent to the west side of this project. This should be clearly shown on all maps to allow for better comments and for a better project description.

N-3

Air quality is not something our non-attainment area can just pass on through overriding considerations. More mitigation on the buildings and trucks must be built into the conditions of approval.

N-4

Please continue to notify me of future documents and meetings related to this project at the address below.

Sincerely, *For the Public Record.*

N-5

George Hague  
Conservation Chair  
Moreno Valley Group of the Sierra Club  
26711 Ironwood Avenue  
Moreno Valley, California 92555-1906  
Phone: 951-924-0816  
Fax: 951-924-4185

*3<sup>rd</sup> attachment = Leonard Nunnay's Sept 2, 2009 letter to the City of Riverside Planning Commission from friends of Riverside's Hills*

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10 Attorneys for Plaintiffs

11 UNITED STATES DISTRICT COURT

12 FOR THE SOUTHERN DISTRICT OF CALIFORNIA

13 CENTER FOR BIOLOGICAL )  
14 DIVERSITY and SAN BERNARDINO )  
15 VALLEY AUDUBON SOCIETY, )

16 Plaintiffs, )

17 v. )

18 JIM BARTEL, Field Supervisor for the )  
19 Carlsbad Office of the United States Fish )  
20 and Wildlife Service, the UNITED )  
21 STATES FISH AND WILDLIFE )  
22 SERVICE, and KEN SALAZAR, Secretary )  
23 of the Interior, )

24 Defendants. )

Case No. '09 CV 1 864 JAH POR

COMPLAINT FOR DECLARATORY AND  
INJUNCTIVE RELIEF

BY FAX

25 INTRODUCTION

26 I. This action challenges the U.S. Fish and Wildlife Service's ("Service") failure to  
27 re-initiate self-consultation to prepare a new biological opinion under the Endangered Species  
28 Act, 16 USC §§ 1531 *et seq.* ("ESA"), and conduct environmental review under the National  
Environmental Policy Act, 42 U.S.C. §§ 4321 *et seq.* ("NEPA"), prior to authorizing the release

COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

1 of land dedicated in perpetuity for the conservation of the Stephens' kangaroo rat ("SKR") for  
2 commercial development.

3       2.       The SKR conservation land released for development (the "March SKR  
4 Preserve") is located in Western Riverside County, California, west of March Air Reserve Base  
5 (formerly March Air Force Base) near the City of Moreno Valley. Through formal consultation  
6 under the ESA the March SKR Preserve originated as mitigation for the widening of Highway  
7 215 and the 215-60 interchange. The March SKR Preserve was continually expanded, again  
8 through formal consultation with the Service, to serve as mitigation for incidental take associated  
9 with base mission realignment projects, base housing, a golf course, and expansion of the  
10 Riverside National Cemetery.

11       3.       Due in part to its existing dedicated status for conservation, the Service relied on  
12 the March SKR Preserve as a crucial habitat reserve during the development of the Stephens'  
13 kangaroo rat Habitat Conservation Plan ("SKR HCP"). The March SKR Preserve became  
14 roughly the southern half of the Sycamore Canyon-March Air Force Base Core Reserve  
15 ("Sycamore Canyon-March Core Reserve") that was established through the SKR HCP, and  
16 represents the majority of SKR habitat in the Sycamore Canyon-March Core Reserve.

17       4.       The March SKR Preserve was released for commercial development ostensibly in  
18 "exchange" for other SKR habitat in the Portrero Valley that is outside the boundaries of the  
19 SKR HCP. Conversion of the March SKR Preserve threatens the viability and the conservation  
20 value of the entire Sycamore Canyon-March Core Reserve—one of seven permanent core  
21 reserves in the SKR HCP Core Reserve System. Moreover, elimination of the March SKR  
22 Preserve threatens the viability of the SKR HCP because it lowers the persistence probability of  
23 SKR in the overall reserve system.



1 an actual controversy between the parties within the meaning of the Declaratory Judgment Act.  
2 28 U.S.C. § 2201.

3 9. Venue lies in this Court pursuant to 28 U.S.C. § 1391(e), ESA § 11(g)(3)(A), and  
4 16 U.S.C. § 1540(g)(3)(A). The Service maintains its Carlsbad office in this judicial district,  
5 Defendant Jim Bartel resides in this district in his official capacity as Field Supervisor for the  
6 Service's Carlsbad office, and a substantial part of the events or omissions giving rise to  
7 Plaintiffs' claims occurred within this district.  
8

9  
10 **PARTIES**

11 10. Plaintiff CENTER FOR BIOLOGICAL DIVERSITY ("the Center") is a non-  
12 profit corporation with over 43,000 members and offices in San Francisco, Los Angeles, and  
13 Joshua Tree, California; Tucson and Flagstaff, Arizona; Portland, Oregon; Silver City, New  
14 Mexico; and Washington, D.C. The Center is dedicated to the preservation, protection, and  
15 restoration of biodiversity, native species, ecosystems, and public lands.  
16

17 11. The SAN BERNARDINO VALLEY AUDUBON SOCIETY ("Audubon") is a  
18 California non-profit public benefit corporation with 2000 members who are residents and  
19 property owners within the Inland Empire of Southern California, including within the County of  
20 Riverside, and who will be directly affected by this action. The purpose of Audubon is to educate  
21 the public about the environment, planning and infrastructure issues, and to take action to protect  
22 the region's natural heritage areas when necessary. Many Audubon members receive personal,  
23 scientific, professional, and spiritual benefit from rare, sensitive, threatened and endangered  
24 species that will be affected by the action that is the subject of this litigation. Audubon members  
25 will be directly affected by the actions in this litigation, and its components, as described herein.  
26

27 12. Members and staff of the Center and Audubon regularly use and enjoy, and  
28 intend to continue to use and enjoy, lands within the Sycamore Canyon-March Core Reserve—

1 where the SKR is found—for recreation, observation, research, aesthetic enjoyment, and other  
2 scientific, conservation, spiritual, or educational activities. The Center and Audubon's members  
3 and staff also regularly research, study, and observe the federally listed SKR in and around the  
4 Sycamore Canyon-March Core Reserve. The Center and Audubon's members and staff derive  
5 spiritual, recreational, scientific, and aesthetic benefits from the continued existence of SKR  
6 populations and its associated habitat upon which it depends throughout its range in southern  
7 California, including within the Sycamore Canyon-March Core Reserve.  
8

9       13. The Center and Audubon's members' recreational, aesthetic, educational,  
10 scientific, spiritual, professional, and conservation interests are being adversely affected and  
11 irreparably injured by the Service's continued violations of the ESA. The Service's  
12 authorization to release the March SKR Preserve for commercial development and the  
13 subsequent destruction of native fauna and flora has thus harmed the members and staff of the  
14 Center and Audubon by threatening the interests in the March SKR Preserve, the SKR, and its  
15 associated fauna and flora. Members and staff of the Center and Audubon have also been  
16 harmed because they have not been provided an adequate opportunity to review and comment  
17 on the environmental consequences of the release of the March SKR Preserve for development.  
18 The recovery of the SKR in the wild would be promoted through protection of habitat on the  
19 March SKR Preserve, and the relief sought in this action would redress the injuries to the  
20 members and staff of the Center and Audubon.  
21

22       14. The Center and Audubon bring this suit on their own behalf and on behalf of their  
23 adversely affected members and staff who have been, and will continue to be, harmed by the  
24 Service's failure to consult and analyze the loss of habitat that impacts to threatened and  
25 endangered species on the March SKR Preserve.  
26  
27  
28

1 15. Defendant JIM BARTEL is the Field Supervisor for the Carlsbad Office of the  
2 United States Fish and Wildlife Service. The Field Supervisor is the federal official charged  
3 with implementation of the ESA in the region, including the March SKR Preserve. The Field  
4 Supervisor is the signatory on the authorizations that are the subject of this litigation. He is sued  
5 in his official capacity.  
6

7 16. Defendant U.S. FISH AND WILDLIFE SERVICE is an agency within the  
8 Department of the Interior which has been delegated responsibility for implementing the ESA  
9 including proposed and final listing and critical habitat decisions, the handling of petitions for  
10 such listings, and the decisions to consult on the impacts to endangered species.

11 17. Defendant KEN SALAZAR is the Secretary of the Interior ("Secretary"). The  
12 Secretary is the federal official charged with listing species as endangered or threatened and  
13 supervising the consultation requirements under the ESA. He is sued in his official capacity.  
14 The Secretary has delegated his obligation to oversee consultation requirements under the ESA  
15 to the U.S. Fish and Wildlife Service.  
16

17  
18 **STATUTORY BACKGROUND**

19  
20 **THE ENDANGERED SPECIES ACT**

21 18. The ESA is a federal statute designed to conserve endangered and threatened  
22 species and the ecosystems upon which those species depend. ESA § 2(b), 16 U.S.C. § 1531(b).  
23 To achieve these objectives, the Service is required to protect such imperiled species by listing  
24 them as either "threatened" or "endangered" if they are facing extinction due to numerous  
25 threats. ESA § 4(a)(1), 16 U.S.C. § 1533(a)(1).  
26  
27  
28

19. A species is “endangered” if it is “in danger of extinction throughout all or a significant portion of its range.” ESA § 3(6), 16 U.S.C. § 1532(6). A species is “threatened” if it is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” ESA § 3(20), 16 U.S.C. § 1532(20).

20. A species receives mandatory substantive protections under the Endangered Species Act if and only if it is listed as endangered or threatened. *See* 50 C.F.R. § 402.12(d). One of these protections, section 7(a)(2), provides that all federal agencies must avoid actions that (1) jeopardize listed species or (2) destroy or adversely modify designated critical habitat. 16 U.S.C. § 1536(a)(2).

21. Section 7 of the ESA requires a federal agency to initiate consultation with the Service whenever an action by that agency is likely to affect an endangered species or its critical habitat. 16 U.S.C. § 1536(a)(2). Federal agency actions include those projects “authorized, funded, or carried out by such agency.” 50 C.F.R. § 402.14(a). The Service is required to self-consult prior to issuing incidental take permits under Section 10(a)(1)(b) of the ESA.

22. Consultation requires the Service to prepare a “Biological Opinion” that examines whether the action in question is likely to jeopardize the continued existence of a listed species or destroy or modify critical habitat and, if so, suggest reasonable and prudent alternatives to avoid those negative impacts. 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.12. Although consultation terminates with the issuance of the biological opinion, when new circumstances arise, the Service is required to re-initiate consultation. 50 C.F.R. § 402.16; *Mount Graham Red Squirrel v. Madigan*, 954 F.2d 1441, 1451 (9th Cir. 1992).

23. The Service’s consultation regulations require re-initiation of consultation when discretionary federal involvement or control over the action has been retained and: (a) the

1 amount or extent of the take specified in the incidental take statement is exceeded; (b) new  
2 information reveals effects of the action that may affect listed species or critical habitat in a  
3 manner or to an extent not previously considered; or (c) the identified action is subsequently  
4 modified in a manner that causes an effect to the listed species that was not considered in the  
5 biological opinion. 50 C.F.R. § 402.16.

6  
7 24. Re-initiation of consultation requires the Service to issue a new biological  
8 opinion before a project can proceed. *Id.* In making these decisions the Service must “use the  
9 best scientific and commercial data available” during the consultation process. 16 U.S.C. §  
10 1536(a)(2); 50 C.F.R. § 402.14(d).

## 11 12 NATIONAL ENVIRONMENTAL POLICY ACT

13  
14 25. NEPA is intended to ensure that federal agencies fully consider environmental  
15 consequences before taking an action, and that the public is fully informed of these  
16 consequences. “The NEPA process is intended to help public officials make decisions that are  
17 based on understanding of environmental consequences, and take actions that protect, restore,  
18 and enhance the environment.” 40 C.F.R. § 1500.1(c). Federal agencies must “to the fullest  
19 extent possible . . . [e]ncourage and facilitate public involvement” in decision making. 40 C.F.R.  
20 § 1500.2(d).

21  
22 26. NEPA requires federal agencies to prepare a detailed environmental impact  
23 statement (“EIS”) for all “major federal actions significantly affecting the quality of the human  
24 environment.” 42 U.S.C. § 4332(2)(C). “Major federal action” includes actions with effects that  
25 may be major and are potentially subject to federal control and responsibility. The EIS must,  
26  
27  
28

1 among other things, disclose the environmental impact of the proposed action, describe any  
2 unavoidable environmental effects, and analyze alternatives to the proposed action. *Id.*

3       27. To determine whether an action's environmental impacts are significant and  
4 whether an EIS must be prepared, federal agencies may prepare an environmental assessment.  
5 40 C.F.R. § 1508.9. If the EA concludes that a project may have a significant impact on the  
6 environment, then an EIS must be prepared. If not, the federal agency must provide a detailed  
7 statement of reasons why the project's impacts are insignificant and issue a finding of no  
8 significant impact ("FONSI"). *Id.* § 1508.13.

9       28. In either an EIS or EA, federal agencies must consider the direct, indirect, and  
10 cumulative environmental impacts of their actions. Indirect effects are those "caused by the  
11 action and are later in time or farther removed in distance but are still reasonably foreseeable."  
12 40 C.F.R. § 1508.8. Cumulative impacts include impacts of "other past, present, and reasonably  
13 foreseeable future actions regardless of what agency (Federal or non-Federal) or person  
14 undertakes such other actions." 40 C.F.R. § 1508.7.

15       29. The NEPA regulations promulgated by the Council on Environmental Quality  
16 ("CEQ") and binding on all federal agencies provide that an agency must consider the degree to  
17 which the proposed action may adversely affect endangered and threatened species or their  
18 critical habitat in evaluating the significance of an impact. 40 C.F.R. § 1508.27(b)(9).

19       30. The CEQ regulations also provide that each federal agency shall identify in its  
20 NEPA procedures those classes of actions that normally do not require either an EIS or an  
21 environmental assessment. 40 C.F.R. § 1507.3(b)(2)(ii). These "categorical exclusions" are  
22 actions that do not individually or cumulatively have a significant effect on the human  
23 environment. If an agency action falls within one of the defined categorical exclusions  
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1 34. "The reviewing court shall

- 2 1. compel agency action unlawfully withheld or unreasonably delayed; and  
3 2. hold unlawful and set aside agency action, findings, and conclusions found to  
4 be—

- 5 a. arbitrary, capricious, an abuse of discretion, or otherwise not in  
6 accordance with law;  
7 b. contrary to constitutional right, power, privilege, or immunity;  
8 c. in excess of statutory jurisdiction, authority, or limitations, or short  
9 of statutory right;  
10 d. without observance of procedure required by law;  
11 e. unsupported by substantial evidence in a case subject to sections 556  
12 and 557 of this title or otherwise reviewed on the record of an  
13 agency hearing provided by statute; or  
14 f. unwarranted by the facts to the extent that the facts are subject to  
15 trial de novo by the reviewing court."

16 5 U.S.C. § 706.  
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21 **FACTUAL AND PROCEDURAL ALLEGATIONS**

22 35. The Stephens' Kangaroo Rat (*Dipodomys stephensi*), a rodent in the family  
23 Heromyidae, occupies grassland and sparse coastal sage scrub habitats in the dry inland valleys  
24 of the coastal side of the Peninsular Ranges of western Riverside and northern San Diego  
25 counties. The SKR was listed as an endangered species to be protected under the federal ESA  
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1 on September 30, 1988. (53 Fed. Reg. 38465) and listed as a threatened species under the  
2 California ESA.

3 36. Agriculture and accelerating urban development have led to the SKR's decline,  
4 as well as the degradation and fragmentation of its available habitat. Only 5% of its original  
5 habitat remains. Currently its remaining habitat occurs as small isolated patches embedded in  
6 rocky outcrops unsuitable for cultivation or as in patches in protected areas.  
7

### 8 9 **ESTABLISHMENT OF THE MARCH SKR PRESERVE**

10 37. In June of 1990, the March SKR Preserve was first established as preservation  
11 habitat for the SKR as mitigation for the widening of Highway 215 and the 215-60 interchange.  
12 Those original 108 acres of occupied SKR habitat were dedicated to the preservation of the SKR  
13 for a long term perpetual preserve between Van Buren and Allesandro boulevards in Riverside  
14 County, California.  
15

16 38. In October 1990, an interim Stephens' kangaroo rat Habitat Conservation Plan  
17 (the "Short-term HCP") was adopted. The Short-term HCP established 10 Study Areas to be  
18 evaluated as potential SKR reserves and defined limitations on the amount, location, and  
19 duration of SKR incidental take, as a long-term HCP was being developed. The Sycamore  
20 Canyon-March Core Reserve was identified as one of the Study Areas, which included a portion  
21 of March Air Force Base—the March SKR Preserve.  
22

23 39. In 1991, a larger 1,000-acre "SKR Management Area" at the March SKR  
24 Preserve was established as mitigation for incidental take associated with base mission  
25 realignment projects, base housing, a golf course, and various other projects on the Western  
26 portion of the March Air Force Base. The SKR Management Area incorporated the original  
27

1 108-acre area from the Highway 215 construction and interchange project. Again in 1993, an  
2 additional 83.5 acres (including 66.5 acres of occupied habitat) was included in the March SKR  
3 Preserve as mitigation for the expansion of the Riverside National Cemetery on the March Air  
4 Force Base.

5  
6 40. In 1994, the Service's Carlsbad Field Office Supervisor drafted a memorandum  
7 to the California Desert District Manager of the Bureau of Land Management outlining the  
8 importance of the March SKR Preserve for the Long-Term Stephens' Kangaroo Rat Habitat  
9 Conservation Plan ("SKR HCP" or hereinafter "HCP") "as critical to the establishment of a  
10 viable, long-term SKR reserve system in western Riverside County." The Service emphasized  
11 that if the March SKR Preserve is "removed from the currently proposed long term SKR-HCP,  
12 then the Service no longer has assurance of the survival and recovery of the species in the plan  
13 area." The 1994 memorandum also provided that, *inter alia*, the acquisition of properties in the  
14 "Portrero Basin and the Badlands" and an *additional* "core reserve" were required to provide  
15 adequate compensation for the release of the March SKR Preserve for development.  
16

17 41. Besides the federally endangered SKR, the March SKR Preserve is host to a wide  
18 range native fauna and flora many of which have been recognized as sensitive, rare, threatened  
19 or endangered under state and federal law. For example, another native species found on the  
20 March SKR Preserve is the least Bells' vireo, protected as endangered under the federal ESA.  
21

### 22 23 THE LONG TERM STEPHENS' KANGAROO RAT HCP

24 42. The Long-Term SKR HCP was adopted in 1996 and an incidental take permit  
25 was issued to the Riverside County Habitat Conservation Authority ("RCHCA")—the  
26 implementing agency for the SKR HCP—to allow the take of up to 30,000 individual animals  
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1 and up to 15,000 acres of occupied habitat within the SKR HCP plan area boundary in western  
2 Riverside County, California. At that time, approximately 30,000 acres of remaining occupied  
3 SKR habitat were thought to occur within the boundaries of the SKR HCP.

4  
5 43. To mitigate for the loss of 15,000 acres of occupied SKR habitat within the HCP  
6 boundary, the HCP established a conservation program that requires the RCHCA to ensure the  
7 preservation of at least 15,000 acres of occupied SKR habitat within the HCP planning area.

8 The Biological Opinion for the SKR HCP identifies seven permanent Core Reserves as part of  
9 the Core Reserve System "which shall contain when completed, at least 15,000 acres of  
10 occupied SKR habitat, in other words 50% of the SKR habitat within the plan area."

11 Furthermore, the Biological Opinion for the HCP states that "[t]his reserve system will be  
12 permanently set aside, maintained, managed and funded either by Federal, state or local  
13 governmental entities for the conservation, preservation, restoration and enhancement of the  
14 SKR and its habitat."  
15

16 44. When the Long-Term SKR HCP was approved in 1996, the March SKR Preserve  
17 along with the publicly owned lands in Sycamore Canyon were designated the Sycamore  
18 Canyon-March Core Reserve, to be managed for the conservation and recovery of the species.  
19 As referenced from previous correspondence including the 1994 letter to the Bureau of Land  
20 Management, *supra*, and the 1999 Biological Opinion on the Disposal and Reuse of the March  
21 Air Force Base, *infra*, the Service has long recognized that without the March portion of the  
22 reserve, the viability of the Sycamore Canyon-March Core Reserve is jeopardized. The March  
23 SKR Preserve contains the majority of occupied SKR habitat in the Sycamore Canyon-March  
24 Core Reserve, and the Core Reserve itself contains one of the four largest blocks of contiguous  
25 SKR habitat within the planning boundary and within the entire range of the species.  
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1 45. The Service and RCHCA prepared a joint Environmental Impact Statement /  
2 Environmental Impact Report ("EIS/EIR") under NEPA and the California Environmental  
3 Quality Act ("CEQA") for the Authorization for Incidental Take and Implementation of the  
4 Long Term SKR HCP. While the EIS/EIR mentioned the potential for releasing the March SKR  
5 Preserve for future development, its analysis of the HCP's effects on SKR conservation assumed  
6 that the March SKR Preserve would be maintained as an HCP Core Reserve.  
7

8 46. When first established in 1996, the overall SKR HCP Core Reserve System  
9 already contained approximately 12,460 acres of occupied SKR habitat. The HCP contemplated  
10 that the remaining 2,540 acres (for a total of 15,000 acres occupied by SKR) needed to complete  
11 the Core Reserve System would be preserved by the RCHCA through: (1) exchange of 8,156  
12 acres of Bureau of Land Management ("BLM") lands for the same acreage within the Lake  
13 Mathews Core Reserve, releasing the BLM parcels for sale; (2) acquisition, in fee or by  
14 conservation easement, of approximately 1,153 acres of occupied SKR habitat on private lands  
15 within each of the Core Reserves; and (3) preservation of an additional 2,540 acres of occupied  
16 SKR habitat within the HCP boundary. To date, these actions have not been completed. The  
17 BLM land exchange has not occurred, the RCHCA was unable to secure the preservation of the  
18 required amount of private land within each of the Core Reserves, and the RCHCA has failed to  
19 secure the preservation of an additional 2,540 acres of occupied SKR habitat within the HCP  
20 boundaries. In short, the acquisition of 15,000 acres of occupied habitat within the HCP  
21 boundaries has not been achieved.  
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24  
25 **RELEASE OF THE MARCH SKR PRESERVE FOR DEVELOPMENT**  
26 **IN EXCHANGE FOR THE PORTRERO PRESERVE**  
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1 47. Despite the importance of the March SKR Preserve, the SKR HCP referenced the  
2 potential conversion of the existing March SKR Preserve to commercial development in  
3 connection with the realignment of the March Air Force Base from military to civilian uses. The  
4 SKR HCP anticipated that the March SKR Preserve could be released for development only if a  
5 stringent set of conditions were met. These conditions included the exchange of the March SKR  
6 Preserve for other suitable SKR habitat in the HCP area, amendment of the SKR HCP to  
7 incorporate mitigation provisions defined in the Service's Biological Opinion on the release of  
8 the March SKR Preserve, and the completion of additional environmental review under NEPA  
9 and CEQA. To date, the Service has not completed a formal biological opinion on the release of  
10 the entire March SKR Preserve for development, completed environmental review under NEPA  
11 or CEQA in connection with the release, or completed an adequate amendment to the SKR HCP  
12 for the material change resulting from the development proposed on the March SKR Preserve.  
13  
14

15 48. In 1996 the Air Force issued an Environmental Impact Statement ("EIS") for the  
16 March Air Force Base Final Reuse Plan, and the March Joint Powers Authority Redevelopment  
17 Agency certified a final Environmental Impact Report on the Final Reuse Plan, which initiated  
18 the realignment process. The adequacy of the EIS and EIR was predicated upon formal ESA  
19 section 7 consultation with the Service and amendment to the HCP for the release of the March  
20 SKR Preserve, leaving responsibility for the mitigation of impacts to SKR with the federal  
21 government and not the RCHCA.  
22

23 49. In 1999, approximately three years after the completion of the SKR HCP, the  
24 Service issued a Biological Opinion for the Formal Section 7 Consultation on the Disposal and  
25 Reuse of the March Air Force Base, which states that the Sycamore Canyon-March Core  
26 Reserve is the "northernmost of the four largest reserves which make up the cornerstones of the  
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1 HCP [and] captures a different habitat assemblage than the other reserves in the HCP; mainly an  
2 all grassland reserve with relatively small topographic features enabling a larger contiguous area  
3 for occupation of SKR.” In the 1999 Biological Opinion, the Service outlined replacement  
4 criteria that must be met if, in the future, the March SKR Preserve was released for  
5 development. In detailing the nondiscretionary “Terms and Conditions” for the release of the  
6 March SKR Preserve, the Service stated that their decision was based upon the belief “that no  
7 more than 105 acres of SKR will be incidentally taken as a result of the proposed action.” The  
8 1999 Biological Opinion expressly provided that “reinitiation of consultation and review of the  
9 reasonable and prudent measures provided” would be required if this level of incidental take of  
10 SKR habitat was exceeded.  
11

12           50. In the 1999 Biological Opinion, the Service recognized that the viability of the  
13 Sycamore Canyon-March Core Reserve could be jeopardized if the March SKR was reduced or  
14 eliminated because the Sycamore Canyon population of SKR is dependent on the conservation  
15 of and connectivity to the larger SKR population in the March SKR Preserve. The 1999  
16 Biological Opinion projected that the removal of the March SKR Preserve and associated open  
17 space would lower the probability of persistence of SKR within the Sycamore Canyon portion to  
18 42% and would lower the long term viability of the overall reserve system below the 95%  
19 viability threshold established in the SKR HCP. The Service thus acknowledged that the loss of  
20 all occupied SKR habitat in the March SKR Preserve will not only directly take the SKR in that  
21 occupied habitat but will have direct, indirect, and cumulative impacts on the SKR within the  
22 entire Sycamore Canyon-March Core Reserve, and on the entire SKR Core Reserve System as a  
23 whole.  
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1 51. By letters dated December 29, 2003 and May 22, 2006, the Service approved a  
2 series of actions termed a "trade-out" that would allow the release of over 1,300 acres of  
3 occupied SKR habitat within the March SKR Preserve and permit the take of all SKR on those  
4 preserve lands. In "exchange" for this take authorization, the Service expected RCHCA to  
5 create a new SKR HCP Core Reserve at the Potrero Preserve including at least 2,488 acres of  
6 occupied SKR habitat outside the SKR HCP plan area. In these letters the Service further  
7 alleged that the land acquisition portion of the SKR HCP had been completed, yet no mapping  
8 or line-item accounting for the total SKR occupied habitat has been reported.

10 52. In December 2003, the Service, RCHCA, and California State Wildlife  
11 Conservation Board purchased property from Lockheed Martin in the Potrero Valley ("Potrero  
12 Preserve"). The Potrero Preserve contains 2,488 acres of known occupied SKR habitat.  
13 However, the Potrero Preserve is outside of the boundaries of the Long-term SKR HCP planning  
14 area.

16 53. In a February 5, 2009 letter to the City of Riverside, the RCHCA memorialized a  
17 June 25, 2007 reduction of the northerly Sycamore Canyon Core Reserve, which eliminated  
18 acreage available within that core reserve for SKR and SKR management. This reduction of  
19 area available for SKR within the Sycamore Canyon Core Reserve was due, in part, to the fact  
20 that "the SKR Management Area of the former March Air Force Base" was released for  
21 development. No ESA section 7 consultation, environmental review, or amendment to the HCP  
22 was performed to authorize the elimination of habitat in the Sycamore Canyon Core Reserve.

24 54. On January 20 and July 3, 2009, Environmental Impact Reports for two separate  
25 commercial development projects were submitted to the California State Clearinghouse. The  
26 Allessandro Commerce Centre and Allessandro Business Center, respectively, propose large scale,  
27

1 industrial warehouse projects for areas that have been mapped as occupied SKR habitat within  
2 or adjacent to the March SKR Preserve and Sycamore Canyon-March Core Reserve within the  
3 City and County of Riverside. The projects are pending approval at the local agencies. The  
4 development footprints for these projects will sever the last remaining biological linkage  
5 connecting SKR between the Sycamore Canyon Preserve and the March SKR Preserve. The  
6 Environmental Impact Reports for both projects conclude that the respective projects will not  
7 adversely affect SKR based on the release of the March SKR Preserve, and they do not address  
8 the existing biological resources present at the March SKR Preserve.  
9

10 55. To date, the Center for Natural Lands Management is actively managing the  
11 March SKR Preserve as habitat and open space for the conservation of native flora and fauna  
12 with a special emphasis on maintaining the habitat needs of the SKR.  
13  
14

15 **FIRST CLAIM FOR RELIEF**

16 **(Violation of the Requirements § 7 of the ESA and**

17 **Administrative Procedures Act)**

18 56. Each and every allegation set forth in this Complaint is incorporated herein by  
19 reference.

20 57. The Service's consultation regulations require re-initiation of consultation when  
21 discretionary federal involvement or control over the action has been retained and: (a) the  
22 amount or extent of the take specified in the incidental take statement is exceeded; (b) new  
23 information reveals effects of the action that may affect listed species or critical habitat in a  
24 manner or to an extent not previously considered; or (c) the identified action is subsequently  
25 modified in a manner that causes an effect to the listed species that was not considered in the  
26 biological opinion. 50 C.F.R. § 402.16. The Service's actions being challenged satisfy all three  
27 of the provisions of 50 C.F.R § 402.16.  
28

1 58. First, the development of all occupied SKR habitat at the March SKR Preserve  
2 will likely result in a net loss of SKR and SKR occupied habitat *within the HCP boundaries* that  
3 exceeds the amount of take authorized in the SKR HCP and its accompanying 1996 Biological  
4 Opinion. Furthermore, the release of the March SKR Preserve exceeds the amount of take of  
5 SKR habitat permitted by the 1990 Biological Opinion for the Highway 215 expansion, the 1991  
6 Biological Opinion for the March Land Use Strategy Plan, the 1993 Biological Opinion for the  
7 Riverside National Cemetery, 1996 Biological Opinion for the SKR HCP, and the 1999  
8 Biological Opinion for the Disposal and Reuse of March Air Force Base. To date, there has  
9 been no biological opinion that examines the loss of the total March SKR Preserve or the  
10 potential for the complete loss of all viable SKR habitat within the Sycamore Canyon-March  
11 Core Reserve on the species as a whole.

12 59. Moreover, in the 1999 Biological Opinion for the Disposal and Reuse of March  
13 Air Force Base, the Service found that the potential removal of the southerly March Air Force  
14 Base portion of the Sycamore Canyon-March Core Reserve would lower the probability of  
15 persistence of SKR within the Sycamore Canyon portion to 42% and reduce the overall viability  
16 of the reserve system below the 95% viability threshold established in the SKR HCP. The loss  
17 of the occupied SKR habitat within the March SKR Preserve will not only directly take the SKR  
18 in that occupied habitat but will have direct, indirect, and cumulative impacts on the SKR within  
19 the entire Sycamore Canyon-March Core Reserve and within the entire Core Reserve System as  
20 a whole. The loss of this habitat will likely have significant impacts on the survival and  
21 conservation of the species as a whole.

22  
23 60. Second, the potential loss of all viable SKR populations within the entire  
24 Sycamore Canyon-March Core Reserve constitutes new information that will affect the SKR in  
25 a manner and to an extent not previously considered in the Biological Opinions covering take of  
26 SKR. The RCHCA's reduction of the Sycamore Canyon Core Reserve, and pending approvals  
27

1 for commercial development in Core Reserve areas and crucial biological linkages also  
2 constitute new information not contemplated in previous consultations.

3         61. The impacts associated with the reduction in viability of the Sycamore Canyon-  
4 March Core Reserve population, the reduction of habitat in the Sycamore Canyon Core Reserve,  
5 development on previous Core Reserves, and the elimination of a biological linkage between the  
6 preserves on the species as a whole, and on remaining reserve areas, constitute new information  
7 that have not been identified and analyzed and require re-initiation of consultation. *See Sierra*  
8 *Club v. Marsh*, 816 F.2d 1376, 1388 (9th Cir. 1987).

9         62. Third, the modification of the requirements of the SKR HCP, SKR-HCP  
10 Biological Opinion, and other SKR biological opinions associated with the March SKR Preserve  
11 affects the SKR in ways not previously considered during consultation.

12         63. The Service has repeatedly modified the terms and substance of the SKR HCP,  
13 and its associated BO throughout the term of the SKR HCP. The potential loss of all viable  
14 SKR populations within the entire Sycamore Canyon-March Core Reserve, due to the release of  
15 the March SKR Preserve, will modify the terms of the HCP and affect the SKR in a manner not  
16 previously considered in any biological opinion. The full terms of the SKR HCP requiring  
17 monitoring of acquired lands and disturbance of SKR occupied lands, acquisition of private  
18 lands adjacent to the March SKR Preserve, completion of the 15,000 acre reserve within the  
19 HCP boundary, exchange of land held by the Bureau of Land Management, and environmental  
20 review and ESA consultation prior to release of the March SKR Preserve have never been  
21 fulfilled. The Service's failure to monitor the compliance of the SKR HCP's overall reasonable  
22 and prudent measures, and the failure to assure that the reasonable and prudent measures were  
23 achieved prior to authorizing the release of the HCP, runs contrary to the requirements of 50  
24 C.F.R. § 402.16. *Forest Guardians v. Johanns*, 450 F.3d 455, 463-464 (9th Cir. 2006).

25         64. Moreover, as discussed *infra*, the Service has failed to comply with this  
26 requirements regarding material changes to the SKR HCP, instead relying on "administrative  
27 amendments" that are only applicable to minor modifications of the HCP and ESA Section 10  
28

1 permit.

2 65. Terms of other biological opinions associated with the SKR on the March SKR  
3 Preserve have been similarly neglected. By releasing the entire March SKR Preserve from the  
4 terms and conditions of numerous biological opinions, including the 1990 Biological Opinion  
5 for the Highway 215 expansion, the 1991 Biological Opinion for the March Land Use Strategy  
6 Plan, the 1993 Biological Opinion for the Riverside National Cemetery, and the 1999 Biological  
7 Opinion for the release of the March SKR Preserve, which includes a 105-acre maximum  
8 release, the Service has modified its actions in a way that was not considered in previous  
9 biological opinions and has negatively impacted listed species..

10 66. In short the Service's actions to release the entire March SKR Preserve without  
11 re-initiating consultation and preparing a new biological opinion violated 50 C.F.R. § 402.16 by  
12 authorizing the release of all SKR habitat in the March SKR Preserve for development. The  
13 Service's action was and is arbitrary, capricious, an abuse of discretion and otherwise not in  
14 accordance with the ESA within the meaning of the APA. 5 U.S.C. § 706(2).

15  
16 **SECOND CLAIM FOR RELIEF**

17 (Violation of NEPA -- 42 U.S.C. § 4332(2)(C))

18 67. Each and every allegation set forth in this Complaint is incorporated herein by  
19 reference.

20 68. The Service's December 29, 2003 and May 22, 2006 authorizations to release the  
21 March SKR Preserve for development constitute a major federal action significantly affecting  
22 the quality of the human environment. As the Service repeatedly recognized during  
23 correspondence and formal consultation on establishing protected areas in the March SKR  
24 Preserve, the release of the March SKR Preserve may have a significant impact on SKR  
25 populations, SKR core reserves, and SKR individually.

26 69. Despite the Service's own acknowledgment in the SKR HCP that the release of  
27 the March SKR Preserve would need to be evaluated in a comprehensive NEPA and CEQA

1 document and formal amendment to the HCP prior to completion, the Service never prepared an  
2 EIS, an EA, or any NEPA documentation for the direct and indirect impacts of its authorization  
3 to release all of the March SKR Preserve lands for development.

4 70. The Service's authorization of the conversion of the March SKR Preserve to  
5 development does not fall within any of the categorical exclusions described in the Departmental  
6 Manual. In addition, one or more of the exceptions to Categorical Exclusions described in the  
7 Departmental Manual apply to the Service's authorization to allow development on endangered  
8 species habitat in the March SKR Preserve.

9 71. In particular, the authorization to release the March SKR Preserve for  
10 development would result in significant environmental effects that qualify as exceptions to  
11 categorical exclusions. The action affects ecologically significant and critical areas that have  
12 been protected for the SKR. The action will result in highly controversial effects by threatening  
13 the effectiveness of a longstanding HCP. Permitting the Service to authorize the release of HCP  
14 preserves for development without environmental review would establish a precedent for future  
15 action and represent a decision in principle about future actions with potentially significant  
16 impacts on the SKR HCP or other HCPs. Release of the March SKR Preserve is directly related  
17 to other actions with cumulatively significant environmental effects such as the limiting of  
18 environmental review of development projects on or adjacent to the March SKR Preserve.  
19 Finally, the action will have adverse effects on threatened and endangered species that inhabit  
20 the March SKR Preserve such as the SKR and least Bell's vireo.

21 72. Accordingly, the Service's December 29, 2003 and May 22, 2006 authorization  
22 to release the March SKR Preserve for development without any NEPA documentation despite  
23 the acknowledged potential for impacts to SKR and the SKR HCP is arbitrary and capricious, an  
24 abuse of discretion, otherwise not in accordance with law, and without observance of procedures  
25 required by law within the meaning of the APA. 5 U.S.C. § 706(2).



1 Opinion for the release of the entire March SKR Preserve beyond the contemplated release of  
2 105 acres analyzed in the 1999 Biological Opinion for the release of the March SKR Preserve.

3 77. The HCP limits the use of administrative amendments regarding changes to the  
4 configuration of Core Reserves for minor modifications of the HCP or section 10 permit  
5 “generally ... not requiring formal NEPA or CEQA processing.” As discussed, *supra*, the  
6 Service failed to conduct both NEPA and CEQA on the 2003 and 2006 release of the entire  
7 March SKR Preserve for development.

8 78. Because the SKR HCP only permits administrative amendments to the HCP for  
9 expansion of core reserves that do not require review under NEPA, CEQA or section 7 of the  
10 ESA the Service’s administrative amendment of the SKR HCP is arbitrary, capricious, an abuse  
11 of discretion or otherwise not in accordance with law in violation of the APA, 5 U.S.C. § 706.  
12

13 **PRAYER FOR RELIEF**

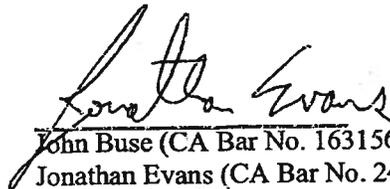
14 Plaintiffs request that this Court enter judgment providing the following relief:

- 15 1. Issue a Declaratory Judgment that Defendants are in violation of the law  
16 as alleged herein;
- 17 2. Declare unlawful and set aside the Service’s approval of the March SKR  
18 Preserve release;
- 19 3. Order Defendants, through a permanent injunction, to set aside and vacate  
20 all authorizations related to the release of the March SKR Preserve for  
21 development;
- 22 4. Order Defendants, through a permanent injunction, to halt all activities  
23 related to the release of the March SKR Preserve for development,  
24 including issuing any incidental take permit approval for any actions that  
25 may harm the SKR or cause adverse modification to SKR habitat  
26 throughout its range;

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5. Order Defendants, through a permanent injunction, to complete ESA § 7 consultation and complete a biological opinion prior to any release of the March SKR Preserve for development;
6. Order Defendants, through a permanent injunction, to complete NEPA analysis and a full Environmental Impact Statement prior to any release of the March SKR Preserve for development;
7. Award Plaintiffs their costs of litigation, including reasonable attorneys' fees as provided in the ESA, the Equal Access to Justice Act and/or any other applicable law; and
8. Any other such relief as the Court deems just and proper.

DATED: August 27, 2009

  
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Attorneys for Plaintiff

## **Comment Letter N. George Hague, Sierra Club, San Gorgonio Chapter**

### **Response to Comment N-1**

The 45-day public comment period for the Alessandro Business Center EIR extended from July 3, 2009 to August 19, 2009. This letter from Mr. George Hague, with the Sierra Club, San Gorgonio Chapter was received on September 3, 2009 after the close of the public comment period. Accordingly, the City has no obligation to respond to this late comment later pursuant to State CEQA Guidelines Section 15088(a). However, in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to this late comment letter. (See also Master Response #1.)

The letter provided by the Center for Biological Diversity, San Bernardino Audubon Society and the Sierra Club was received by the City of Riverside on August 19, 2009 (Refer to Comment Letter H).

Pursuant to CEQA Guidelines Section 15088(c), the City of Riverside is required to evaluate comments on environmental issues and to provide a written response to public agencies on comments made by that public agency at least 10 days prior to certifying the EIR. The EIR is not certified until the project is approved by the City Council following a public City Council hearing. In compliance with the CEQA Guidelines, the City of Riverside evaluated the comment letters received during the public comment period prior to the Planning Commission and City Council public hearings. A response to comments will be to commenting public agencies at least 10 days prior to the City Council hearing where the EIR may be certified, if the project is approved.

### **Response to Comment N-2**

Refer to Response H-3.

The City of Riverside recognizes that a lawsuit was filed by the Center for Biological Diversity and San Bernardino Valley Audubon Society in September 2009 regarding the realignment of MAB. This case is in review by a federal court and the City of Riverside is not a party to this lawsuit. Additionally, the California Department of Fish and Game has confirmed that the project will not adversely affect the Stephen's kangaroo rat Habitat Conservation Plan because "the SKR Plan goal of conserving 15,000 acres of occupied SKR habitat was attained with the Potrero Valley acquisitions." (See Comment Letter I.)

Prior to the realignment of MAB in 2003–2004, public lands south of Alessandro Boulevard, provided a potential linkage between the natural lands to the north and south, especially for SKR. However, maintaining movement across/under Alessandro proved to be difficult (DEIR, Page 3.3-53). Alessandro Boulevard is

an existing four to six lane arterial roadway (120 foot right-of way) that carries approximately 28,800 to 51,300 vehicles per day in the vicinity of the project site (DEIR, Appendix G, Page 12). Due to the width of the roadway and level of existing day and night traffic, successful movement across the top of the roadway by small mammals is not expected to occur.

Movement under the roadway may have occurred through two existing 24-inch corrugated metal pipes (CMPs) that extend under Alessandro Boulevard onto the project site. However, the CMPs are currently closed by accumulation of sediment and debris (DEIR, Page 3.3-45). The project proposes to repair the CMPs, thus reestablishing a connection with properties to the south and allowing the creek to again discharge into Sycamore Canyon Creek on the property.

Additionally, the project includes the preservation and dedication of 36.23-acres of property to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. The 36.23 acres will be also be included in the SKR HCP Sycamore Canyon Core Reserve, managed by the RCHCA (Refer to Response B-2). A deed restriction would be recorded for the dedicated 36.23-acre area to preserve the property as open space in perpetuity. The dedicated lands would provide a permanent link from the wilderness park to open space to the east and south (DEIR, Page 3.3-53).

## Response to Comment N-3

Comment noted. As clarification, the Alessandro Commerce Centre project located within County of Riverside lands south of Alessandro Boulevard.

The alternatives analysis conducted for the proposed project determined that the only parcels available for the project within the City are zoned RC, RA, or PF. In addition to conflicting with the current zoning, those parcels cannot physically accommodate the proposed project because they are located in hilly areas. As described above, the use of such parcels would also result in greater environmental impacts than would occur with the use of the proposed site. (DEIR, Page 7-4 and 7-6). Therefore, an alternative project site location does not currently exist within the project area.

The Western Riverside MSHCP and SKR HCP were established to conserve and manage covered wildlife and plant species. The MSHCP identifies wildlife linkages and sets forth measures to protect wildlife movement within criteria cells. The project site is located within the Riverside/Norco Plan Area of the MSHCP (DEIR, Page 3.3-8). The Riverside/Norco Plan Area planning species include in the bobcat and biological issues and considerations include maintaining core and linkage habitat for the bobcat. Linkage habitat is mapped by the MSHCP to retain movement corridors for species (MSHCP, Section 3.2). The project site is not located within the vicinity of a special linkage, nor is it located within a criteria cell (DEIR, Pages 3.3-8 and 3.3-9). Therefore, the project does not include core habitat, linkages or other corridors identified by the

MSHCP for the bobcat, nor will the project result in any impacts to MSHCP identified resources for bobcats. The proposed project is in compliance with the conditions of the Western Riverside MSHCP and the SKR HCP (DEIR, Page 3.3-48 to 3.3-52). The City of Riverside acknowledges that properties west of the project site are located within the Sycamore Canyon Wilderness Park, MSHCP core reserve, and SKR HCP Sycamore Canyon core reserve. Additionally, a small portion of the existing Sycamore Canyon Wilderness Park, east of Barton Street, north of Alessandro Boulevard, and west of the proposed project is also identified as a California Department of Fish and Game Sycamore Canyon Ecological Reserve. The proposed project site does not include these lands. Additionally, the proposed project meets the requirements of Section 6.1.4 of the Western Riverside MSHCP (Wildlands Interface Guidelines) which are intended to address indirect impacts associated with development located in proximity to MSHCP Conservation Areas (Refer to Response to Comment M3-2). Therefore, the project will not result in direct or indirect impacts to the reserve.

## Response to Comment N-4

The commenter is incorrect in his statement regarding adoption of overriding considerations. Section 15093 of the CEQA Guidelines allows the City of Riverside to adopt a statement of overriding considerations if the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental impacts. The City of Riverside is responsible for reviewing the project benefits and potential impacts, as supported by substantial evidence in the project record, to determine whether approval of the proposed project and adoption of a statement of overriding consideration is warranted.

The project construction emissions would not exceed any of the SCAQMD regional significance thresholds (DEIR, Page 3.2-26). Operational emissions resulting from the proposed project would not exceed regional SCAQMD thresholds for ROC, sulfur oxides (SO<sub>x</sub>), carbon monoxide (CO), or inhalable particulate matter (PM<sub>10</sub>); however, they would exceed the SCAQMD threshold for nitrogen dioxide (NO<sub>x</sub>).

The Draft EIR adequately discloses that impacts associated with operations NO<sub>x</sub> emissions would be significant under CEQA. Mitigation Measures AQ-1 through AQ-8 would reduce stationary-source NO<sub>x</sub> emissions during long-term project operations to the extent feasible (DEIR, Page 3.2-26), in compliance with Section 15091 of the CEQA Guidelines. The commenter does not recommend any additional mitigation measures for review and consideration by the City and therefore the City is not able to respond.

## Response to Comment N-5

Comment noted. Mr. George Hague, Conservation Chair, Moreno Valley Group of the Sierra Club is on the City's mailing list for the proposed project.

Three attachments to this letter were submitted to the City of Riverside. The attachments were reviewed and responses provided as follows:

Attachment 1 - The Center for Biological Diversity, San Bernardino Valley Audobon Society and the Sierra Club letter, dated August 19, 2009 (Refer to Comment Letter H)

Attachment 2: Center for Biological Diversity and San Bernardino Valley Audobon Society vs. USFWS, Complaint for Declaratory and Injunctive Relief, September 2009 (Refer to Response N-2)

Attachment 3: Len Nunney, Friends of Riverside's Hills Letter, dated September 2, 2009 (Refer to Comment Letter M)

## Meeting Comments O. City of Riverside Planning Commission (September 3, 2009)

The comments below were provided by organizations, members of the public, and members of the CPC at the Riverside City Planning Commission Meeting on September 3, 2009, and responses to these comments follow.

### Comments from Planning Commission

#### Comment O-1

George Hauge, 26711 Ironwood Avenue, Moreno Valley, stated that he is the Conservation Chair for the Moreno Valley group of the Sierra Club. He stated that the Center for Biological Diversity, San Bernardino Valley Audubon Society, and the Sierra Club sent comments to the Draft EIR on the 19<sup>th</sup>; this 25-page letter and several others were sent only two weeks ago. He stated that they strongly believe that everyone, including the Commission, should have responses to these comments in order to make justifiable recommendations. He stated that he hopes the Commission read all of the letters because he does feel some of staff's selected summaries do not in some cases do them justice. For example, the project site was part of the SKR Core Reserve, but was not purchased as expected under the terms of the Section 7 Biological Opinion. He stated the Center for Biological Diversity and the San Bernardino Valley Audubon Society recently filed a lawsuit regarding the trade-out at March. He also referred to Mr. Len Nunny's letter, noting that the letter states they have had to several times point out to the RCHCA that this was not a mis-mapped error; that for them to actually change the boundaries of a Core Reserve, it was written into the Core document that it could be done when you expand the Core Reserve; however, in order to reduce a Core Reserve, which this land was supposed to be a part of, you needed to have a full environmental review to reduce it, which is one of the main points among others in the letter. He stated the Alessandro Commerce Center which is on the north side of Alessandro is being appealed to the County. Without these two projects, these Core Reserves will be viable in the long term. It is difficult to believe that there is no other site for their project that would not lead to extinction of an animal. He asked besides the SKR corridor, how is the project maintaining the bobcat corridors, as envisioned in the Multi-Species Habitat Conservation Plan. He noted that a lot of them were expecting responses in the form of a final EIR; they were quite sure that was not going to happen. He noted that he went into the City a couple of weeks ago to get the staff report, and produced the comments distributed today. He commented that they expected a longer turn-around in order to be able to do this and he believes Mr. Nunny did, also.

Commissioner Lock-Dawson commented that this is the first she has heard about the litigation at the Potrero. She asked if they are suing based on the legitimacy of the Potrero being used to achieve the acreage standards within the HCP.

Mr. Hauge stated that is part of it. He stated that it was in the newspaper and there was a press release. He explained that the original SKR HCP said that they were going to preserve 50% of the habitat with the study area; however, the problem is, the Potrero is outside of the study area. So when March is eliminated you are then dipping below 50% of the study area when it is done. They also said they would allow 50% of the SKR land to be built upon; but now, if you include March, you are actually perhaps increasing that 50% within the study area to be built upon. He stated there are quite a few other things and he is sure copies could be provided by staff if asked.

## Response to Comment O-1

Refer to Response to Comment H-3 and N-3.

Pursuant to CEQA Guidelines Section 15088(c), the City of Riverside is required to evaluate comments on environmental issues and to provide a written response to public agencies on comments made by that public agency at least 10 days prior to certifying the EIR. The EIR is not certified until the project is approved by the City Council following a public City Council hearing. In compliance with the CEQA Guidelines, the City of Riverside evaluated the comment letters received during the public comment period prior to the Planning Commission. However, preparation of response to comments is not required prior to Planning Commission public hearings since Planning Commission is only providing a recommendation to City Council for approval of the project and is not certifying the DEIR. A response to comments is provided to commenting public agencies 10 days prior to the City Council hearing where the EIR may be certified, if the project is approved.

Certain comment letters were received from commentors after the close of the official 45-day public review and comment period established by CEQA. The official comment period commenced on July 3, 2009 and closed on August 19, 2009. The City received 4 comment letters following the close of that 45-day public comment period, including the Friends of Riverside Hills letter.

Section 15088(a) of the State CEQA Guidelines states that, “The lead agency shall respond to comments received during the noticed comment period and any extensions and may respond to late comments.” (Emphases added.) Accordingly, nothing in CEQA “requires the lead agency to respond to comments not received within the comment periods....” (Pub. Res. Code, § 21092.5(c); see also *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1111.) Nonetheless, and in the interest of public disclosure and providing a full and good-faith CEQA analysis, the City is providing written response to these late comment letters.

The City of Riverside recognizes that a lawsuit was filed by the Center for Biological Diversity and San Bernardino Valley Audubon Society in September 2009 regarding the realignment of MAB. This case is in review by a federal court and the City of Riverside is not a party to this lawsuit. Since the RCHCA is the management authority for the HCP, the maps provided are accurate and the

official current boundaries of the HCP. It is outside of the scope of this EIR to analyze the changes to map boundaries by RCHCA. Furthermore, this project does not propose changes to the HCP maps. The Western Riverside MSHCP and SKR HCP were established to conserve and manage covered wildlife and plant species. The MSHCP identifies wildlife linkages and sets forth measures to protect wildlife movement within criteria cells. The project site is located within the Riverside/Norco Plan Area of the MSHCP (DEIR, Page 3.3-8). The Riverside/Norco Plan Area planning species include in the bobcat and biological issues and considerations include maintaining core and linkage habitat for the bobcat. Linkage habitat is mapped by the MSHCP to retain movement corridors for species (MSHCP, Section 3.2). The project site is not located within the vicinity of a special linkage, nor is it located within a criteria cell (DEIR, Pages 3.3-8 and 3.3-9). Therefore, the project does not include core habitat, linkages or other corridors identified by the MSHCP for the bobcat, nor will the project result in any impacts to MSHCP identified resources for bobcats. The proposed project is in compliance with the conditions of the Western Riverside MSHCP and the SKR HCP (DEIR, Page 3.3-48 to 3.3-52).

In accordance with a letter received from the RCHCA, dated February 25, 2009, the RCHCA has concluded that with the completion of the Potrero acquisition, the acquisition requirements under the SKR HCP were met. Refer to Response to Comments H-3 and I-3.

# **Chapter 3**

## **Errata to the Draft EIR**



Chapter 3  
**Errata to the Draft EIR**

## Introduction

As provided in Section 15088(c) of the State CEQA Guidelines, responses to comments may take the form of a revision to a Draft EIR or may be a separate section in the Final EIR. This section complies with the latter and provides changes to the draft EIR in revision-mode text (i.e., deletions are shown with strikethrough text (~~text~~) and additions are shown with underline text (text). These notations are meant to provide clarification, corrections, or minor revisions as needed as a result of public comments or because of changes in the project since the release of the draft EIR as required by Section 15132 of the CEQA Guidelines. None of the corrections and additions constitutes significant new information or substantial project changes requiring recirculation as defined by Section 15088.5 of the CEQA Guidelines.

## Changes to the Draft EIR

The following changes to the text are incorporated into the Final EIR as presented below. Page numbers reference the pages as they appeared in the Draft EIR.

### Executive Summary

#### Page ES-13 (Project Impact/Mitigation Summary)

**Table ES-1.** Summary of Environmental Impacts, Mitigation, and Residual Impacts

<b>Cultural Resources</b>			
Impact CR-1. Cause a Substantial Adverse Change in the Significance of a Historical/Archaeological Resource	Significant	<b>CR-1:</b> A qualified professional archaeologist and a culturally affiliated <sup>1</sup> Native American monitor shall monitor the initial phase of ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground-disturbing activities, the archeologist <u>and the</u>	Less than Significant

<sup>1</sup> It is anticipated that the Pechanga Tribe will be the “culturally affiliated” Tribe due to its prior coordination within the City and due to its demonstrated cultural affiliation with the project area.

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Native American representative shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities.

Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist in consultation with the Native American representative can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

**CR-2:** Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural materials may be found in the area. At the conclusion of all grading activities, all protective fencing shall be removed and discarded.

**CR-3:** At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered onsite.

**CR-4:** The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.

**CR-5:** All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

**CR-6:** CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.

		<p><b>CR-7:</b> <u>CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe. CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.</u></p> <p><b>CR-8:</b> <u>The Project Applicant and Project Archeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archeological sites which will not be avoided by the Project.</u></p> <p><b>CR-9</b><del>CR-3:</del> <u>In the event of the discovery of human remains, the County coroner shall be immediately notified. If human remains of Native American origin are discovered during ground-disturbing activities, the applicant shall comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the NAHC (PRC Section 5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner shall contact the NAHC to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts.</u></p>	
Impact CR-2. Disturb Any Known Human Remains, Including Those Interred Outside of Formal Cemeteries	Less than Significant		Less than Significant

### Page ES-16 (Project Impact/Mitigation Summary)

**Table ES-1.** Summary of Environmental Impacts, Mitigation, and Residual Impacts

<b>Noise</b>			
Impact LUP-3. Be Incompatible with Existing Land Use in the Vicinity	Significant Less Than Significant	<del>Implement mitigation measures AES-1, AES-2, and AES-3.</del> <u>No mitigation is required.</u>	Less Than Significant

### Page ES-18 (Project Impact/Mitigation Summary)

**Table ES-1.** Summary of Environmental Impacts, Mitigation, and Residual Impacts

<b>Noise</b>			
Impact NOISE-3. Cause a Substantial Permanent Increase in Ambient Noise in the Project Vicinity	Less than Significant	<del>No mitigation is required.</del> <b>NOISE-5:</b> Operations in all buildings in the project that involve use of noise producing equipment, including trucks and other vehicles, would be limited to normal business hours (8 a.m. to approximately 6 p.m.).	Less than Significant

## Page ES-19 (Project Impact/Mitigation Summary)

**Table ES-1.** Summary of Environmental Impacts, Mitigation, and Residual Impacts

<b>Recreation</b>			
Impact REC-1. Affect Existing Recreational Opportunities, Including Trails	<b>Direct</b> Significant	<b>Direct</b> <b>REC-1:</b> The applicant will pay Local Park Development Fees in accordance with Section 16.60 of the City of Riverside Municipal Code prior to issuance of grading permits by the City of Riverside (City of Riverside 2007m). In addition, Regional Parks and Reserve Parks Development Fees must be paid prior to the issuance of a building permit for new development to comply with Section <del>16.60</del> 16.44 of the Riverside Municipal Code (City of Riverside 2007l). In accordance with Section 16.44.070 of the City Municipal Code, fees to support Regional Parks will be offset through dedication/donation of 36.23 acres of land by the developer to the City of Riverside Parks, Recreation, and Community Services Department. (City of Riverside 2007l)  The project proposes to dedicate 36.23 acres for inclusion within the City’s Sycamore Canyon Wilderness Park site; therefore, reduction of development fees is warranted. Dedication of land and payment of reduced development fees, if any apply, will ensure that impacts to recreational opportunities are minimized.	Less than Significant

## Page ES-21 (Project Impact/Mitigation Summary)

**Table ES-1.** Summary of Environmental Impacts, Mitigation, and Residual Impacts

<b>Transportation and Circulation</b>			
Impact TRN-2. Increased Reduction in Intersection LOS	Significant	<b>TRN-11:</b> Contribute a fair share (6.1%) towards the following infrastructural improvement measures at Trautwein Road and Alessandro Blvd: <ul style="list-style-type: none"> <li>• Construct an additional northbound left turn lane.</li> <li>• Construct an additional eastbound through lane.</li> </ul> <b>TRN-12:</b> Contribute a fair share (7.8%) towards the installation of a northbound right turn overlap on Mission Grove Parkway at Alessandro Blvd. <b>TRN-13:</b> Contribute a fair share (16.1%) towards the following infrastructural improvement measures at San Geronio Drive and Alessandro Blvd:	Less than significant

- Construct a southbound left turn lane.
- Construct an additional eastbound through lane.
- Construct an additional westbound through lane.

**TRN-14:** Contribute a fair share (7.8%) towards the following infrastructural improvement measures at Sycamore Canyon Blvd. and Alessandro Blvd:

- Construct a northbound left turn lane.
- Construct a northbound through lane.
- Construct a northbound dual right turn lane.
- Install a northbound right turn overlap.
- Construct an additional eastbound through lane.

**TRN-15:** Contribute a fair share (7.4%) towards the following infrastructural improvement measures at Alessandro Blvd. and the I-215 Northbound Ramp:

- Construct an additional eastbound left turn lane.
- Construct an additional westbound through lane.

Note that the project is responsible for paying only its “fair share” for the recommended infrastructural improvements because it would not be solely responsible for the impacted intersections. The impacts would also occur because current infrastructure does not adequately support existing traffic volume, and in addition, areawide traffic is expected to increase.

**TRN-16:** Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer’s fair share participation to install traffic signal interconnect between Barton Street and the I-215 Freeway. The interconnect facilities will consist of underground fiber optic cable in conduits or other suitable alternative as determined by the City. The project’s estimated contribution to the impact is 50%. The total estimated cost for this mitigation measure is \$168,000. The cash payment for the project’s estimated fair share participation of 50% is \$84,000.

**TRN-17:** Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer’s fair share participation to widen the southerly side of Alessandro Boulevard to provide a free right-turn lane from eastbound Alessandro Boulevard to the I-215 Freeway southbound on ramp. The project’s estimated contribution to the impact is 25%. The total estimated cost for this mitigation measure is \$180,000. The cash payment for the project’s estimated fair share participation of 25% is \$45,000.

**TRN-18:** Prior to occupancy, the applicant will install closed-circuit television (CCTV) cameras at the intersection of San Gorgonio Drive and Alessandro Boulevard, including necessary hardware and appurtenances to enable video transmission to the City’s Traffic Management Center (TMC) via wireless medium, which includes CDMA Radio or Wi-Fi with connection to

the City’s Traffic Management Center. The estimated cost to install the facilities is \$15,000.

The applicant has the option to enter into a reimbursement agreement with the City to receive up to a 50% refund of their costs to install the improvements upon receipt of fair share payment for these facilities from subsequent development of the adjacent property.

In the event the CCTV cameras are installed in conjunction with an adjacent development, this project will be required to submit a cash payment for 50% of the cost of the improvements as the developer’s fair share participation. The cash payment for the project’s estimated fair share participation of 50% is \$7,500.

TRN-19: In the event that the Alessandro Boulevard EB/SB I-215 Ramp Improvements Project is not constructed by 2013 (TRN-17), the City of Riverside will restripe the I-215 Freeway NB ramp at Alessandro Boulevard to create a dual eastbound left lane and shared westbound right through lane.

## Section 2.0 Project Description

### Page 2.4 (Proposed Project)

The remaining property comprises approximately 6.15 acres of vacant land located at the southwest corner of the property, and 36.23 acres to be dedicated to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park. The 36.23 acres will be added to the SKR HCP Sycamore Canyon Core Reserve, managed by the Riverside County Habitat Conservation Authority (RCHCA). A deed restriction would be recorded for the dedicated 36.23-acre area to preserve the property as open space in perpetuity.

## Section 3.4 Cultural Resources

### Page 3.4-1 (Impact Summary)

**Table 3.4-1.** Summary of Project Impacts and Mitigation on Cultural Resources

<b>Impact</b>	<b>Level of Significance before Mitigation</b>	<b>Mitigation Measure</b>	<b>Level of Significance after Mitigation</b>
Impact CR-1. Cause a Substantial Adverse Change in the Significance of a Historical/Archaeological	Significant	<b>CR-1:</b> A qualified professional archaeologist and a culturally affiliated <sup>2</sup> Native American monitor shall monitor the initial phase of	Less than Significant

<sup>2</sup> It is anticipated that the Pechanga Tribe will be the “culturally affiliated” Tribe due to its prior coordination within the City and due to its demonstrated cultural affiliation with the project area.

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Resource		<p>ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground-disturbing activities, the archeologist <u>and the Native American representative</u> shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities.</p> <p>Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist <u>in consultation with the Native American representative</u> can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.</p> <p><b>CR-2:</b> Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural materials may be found in the area. <u>At the conclusion of all grading activities, all protective fencing shall be removed and discarded.</u></p>	

<b>Impact</b>	<b>Level of Significance before Mitigation</b>	<b>Mitigation Measure</b>	<b>Level of Significance after Mitigation</b>
		<p><u>CR-3: At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered onsite.</u></p> <p><u>CR-4: The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.</u></p> <p><u>CR-5: All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.</u></p> <p><u>CR-6: CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.</u></p> <p><u>CR-7: CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction,</u></p>	

<b>Impact</b>	<b>Level of Significance before Mitigation</b>	<b>Mitigation Measure</b>	<b>Level of Significance after Mitigation</b>
<p>Impact CR-2. Disturb Any Known Human Remains, Including Those Interred Outside of Formal Cemeteries</p>	<p>Less than Significant</p>	<p><u>the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe. CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.</u></p> <p><u>CR-8: The Project Applicant and Project Archeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archeological sites which will not be avoided by the Project.</u></p> <p><u>CR-9CR-3: In the event of the discovery of human remains, the County coroner shall be immediately notified. If human remains of Native American origin are discovered during ground-disturbing activities, the applicant shall comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the NAHC (PRC Section 5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner shall contact the NAHC to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely living descendants to determine the most appropriate means of treating the human remains and any associated</u></p>	<p>Less than Significant</p>

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
		grave artifacts.	

## Page 3.4-27 through 3.4-28 (Mitigation Measures for Impact CR-1)

### Mitigation Measures

**CR-1:** A qualified professional archaeologist and a culturally affiliated<sup>3</sup> Native American monitor shall monitor the initial phase of ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground-disturbing activities, the archeologist and the Native American representative shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities.

Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist in consultation with the Native American representative can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

**CR-2:** Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural materials may be found in the area. At the conclusion of all grading activities, all protective fencing shall be removed and discarded.

**CR-3:** At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing

<sup>3</sup> It is anticipated that the Pechanga Tribe will be the “culturally affiliated” Tribe due to its prior coordination within the City and due to its demonstrated cultural affiliation with the project area.

activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered onsite.

**CR-4:** The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.

**CR-5:** All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

**CR-6:** CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.

**CR-7:** CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe. CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.

**CR-8:** The Project Applicant and Project Archeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archeological sites which will not be avoided by the Project.

## **Page 3.4-28 (Mitigation Measure for Impact CR-2)**

### **Mitigation Measure**

~~CR-9~~**CR-3:** In the event of the discovery of human remains, the County coroner shall be immediately notified. If human remains of Native American origin are discovered during ground-disturbing activities, the applicant shall comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the NAHC (PRC Section 5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner shall contact the NAHC to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the

most likely living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts.

## Section 3.7 Land Use and Planning

### Page 3.7-1 (Impact Summary)<sup>4</sup>

**Table 3.7-1.** Summary of Project Impacts and Mitigation on Land Use

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact LUP-3. Be Incompatible with Existing Land Use in the Vicinity	Less Than Significant	<del>Implement mitigation measures AES-1, AES-2, and AES-3.</del> No mitigation is required.	Less Than Significant

### Page 3.7-26 (Impact LUP-3)

In considering this potentially significant incompatibility, ~~mitigation measures AES-1, AES-2, and AES-3~~ installation of walls, fencing and landscaping along the boundary of the development adjacent to the park, as proposed by the project, would reduce the potential for impacts to park users by buffering the views and noise from the site. A 10 to 12-foot high solid wall shall be provided at the top of slope along the westerly side of Building A for screening of the loading docks and noise attenuation. The wall shall wrap around to the northerly side for approximately 40-feet past the northwest corner of the building. The northerly end of the development consists of a parking lot with no loading docks facing the park. A 6-foot high wrought iron fence and vegetation along the northerly property line shall be provided at development boundary. Additionally, dedication of 36.23 acres of land north and east of the proposed 36.91-acre development would improve and expand the existing park area resulting in a larger, higher-quality park buffer around the proposed project site and providing a City owned connection between existing parkland to the west and an isolated portion of the park to the northeast. ~~Incorporation of these mitigation measures~~ Installation of the proposed fencing and landscaping and dedication of lands to the City of Riverside Parks, Recreation, and Community Services Department, which is part of the proposed project, would reduce the potential for impacts associated with incompatible land uses to less than significant levels.

<sup>4</sup> Mitigation Measures AES-1, AES-2 and AES-3 required installation of landscaping and fencing and dedication of the 36.23-acres of property to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into Sycamore Canyon Wilderness Park. Landscaping, fencing, and dedication of the 36.23-acres of property are components of the project and therefore, AES-1, AES-2, and AES-3 were removed from the DEIR as mitigation.

### Mitigation Measures

Implement mitigation measures AES 1, AES 2, and AES 3. No mitigation is required.

### Significance after Mitigation

Impacts would be less than significant with implementation of mitigation measures AES 1, AES 2, and AES 3. Impacts would be less than significant.

## Section 3.8 Noise

### Page 3.8-4 (Impact Summary)

**Table 3.8-1.** Summary of Project Impacts and Mitigation on Noise

<b>Impact</b>	<b>Level of Significance before Mitigation</b>	<b>Mitigation Measure</b>	<b>Level of Significance after Mitigation</b>
Impact NOISE-3. Cause a Substantial Permanent Increase in Ambient Noise in the Project Vicinity	Less than Significant	<del>No mitigation is required</del> <b><u>NOISE-5: Operations in all buildings in the project that involve use of noise producing equipment, including trucks and other vehicles, would be limited to normal business hours (8 a.m. to approximately 6 p.m.).</u></b>	Less than Significant

### Page 3.8-23 (Mitigation Measure for Impact NOISE-3)

#### Mitigation Measures

Impacts would be less than significant, and no mitigation is required. However, the following mitigation measure would be implemented on site to further reduce project-related operational noise.

#### **Mitigation Measure NOISE-5:**

Operations in all buildings in the project that involve use of noise producing equipment, including trucks and other vehicles, would be limited to normal business hours (8 a.m. to approximately 6 p.m.).

## Section 3.9 Recreation

### Page 3.9-1 (Impact Summary)

**Table 3.9-1.** Summary of Project Impacts and Mitigation on Recreation

<b>Impact</b>	<b>Level of Significance before Mitigation</b>	<b>Mitigation Measure</b>	<b>Level of Significance after Mitigation</b>
Impact REC-1. Affect Existing Recreational Opportunities, Including Trails	<b>Direct Significant</b>	<p><b>Direct</b></p> <p><b>REC-1:</b> The applicant will pay Local Park Development Fees in accordance with Section 16.60 of the City of Riverside Municipal Code prior to issuance of grading permits by the City of Riverside (City of Riverside 2007m). In addition, Regional Parks and Reserve Parks Development Fees must be paid prior to the issuance of a building permit for new development to comply with Section <del>16.60</del> <u>16.44</u> of the Riverside Municipal Code (City of Riverside 2007l). In accordance with Section 16.44.070 of the City Municipal Code, fees to support Regional Parks will be offset through dedication/donation of 36.23 acres of land by the developer to the City of Riverside Parks, Recreation, and Community Services Department. (City of Riverside 2007l)</p> <p>The project proposes to dedicate 36.23 acres for inclusion within the City’s Sycamore Canyon Wilderness Park site; therefore, reduction of development fees is warranted. Dedication of land and payment of reduced development fees, if any apply, will ensure that impacts to recreational opportunities are minimized.</p>	Less than Significant

### Page 3.9-11 (Mitigation Measures for Impact REC-1)

#### Mitigation Measures

**REC-1:** The applicant will pay Local Park Development Fees in accordance with Section 16.60 of the City of Riverside Municipal Code prior to issuance of grading permits by the City of Riverside (City of Riverside 2007m). In addition, Regional Parks and Reserve Parks Development Fees must be paid prior to the issuance of a building permit for new development to comply with Section ~~16.60~~ 16.44 of the Riverside Municipal Code (City of Riverside 2007l). In accordance with Section 16.44.070 of the City Municipal Code, fees to support Regional Parks will be offset through dedication/donation of 36.23 acres of land by the developer to the City of Riverside Parks, Recreation, and Community Services Department. (City of Riverside 2007l)

The project proposes to dedicate 36.23 acres for inclusion within the City’s Sycamore Canyon Wilderness Park site; therefore, reduction of development fees

is warranted. Dedication of land and payment of reduced development fees, if any apply, will ensure that impacts to recreational opportunities are minimized.

## Section 3.10 Transportation and Circulation

### Page 3.10-2 (Impact Summary)

**Table 3.10-1.** Summary of Project Impacts and Mitigation on Transportation and Circulation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact TRN-2. Increased Reduction in Intersection LOS	Significant	<p><b>TRN-11:</b> Contribute a fair share (6.1%) towards the following infrastructural improvement measures at Trautwein Road and Alessandro Blvd:</p> <ul style="list-style-type: none"> <li>• Construct an additional northbound left turn lane.</li> <li>• Construct an additional eastbound through lane.</li> </ul> <p><b>TRN-12:</b> Contribute a fair share (7.8%) towards the installation of a northbound right turn overlap on Mission Grove Parkway at Alessandro Blvd.</p> <p><b>TRN-13:</b> Contribute a fair share (16.1%) towards the following infrastructural improvement measures at San Gorgonio Drive and Alessandro Blvd:</p> <ul style="list-style-type: none"> <li>• Construct a southbound left turn lane.</li> <li>• Construct an additional eastbound through lane.</li> <li>• Construct an additional westbound through lane.</li> </ul> <p><b>TRN-14:</b> Contribute a fair share (7.8%) towards the following infrastructural improvement measures at Sycamore Canyon Blvd. and Alessandro Blvd:</p> <ul style="list-style-type: none"> <li>• Construct a northbound left turn lane.</li> <li>• Construct a northbound through lane.</li> <li>• Construct a northbound dual right turn lane.</li> <li>• Install a northbound right turn overlap.</li> <li>• Construct an additional eastbound through lane.</li> </ul> <p><b>TRN-15:</b> Contribute a fair share (7.4%) towards the following infrastructural improvement measures at Alessandro Blvd. and the I-215 Northbound Ramp:</p> <ul style="list-style-type: none"> <li>• Construct an additional eastbound left turn lane.</li> <li>• Construct an additional westbound through lane.</li> </ul> <p>Note that the project is responsible for paying only its “fair share” for the recommended infrastructural improvements because it would not be solely responsible for the impacted intersections. The impacts would also occur because current infrastructure does not adequately support existing traffic volume, and in addition, areawide traffic is expected to increase.</p> <p><b>TRN-16:</b> Prior to map recordation or issuance of any</p>	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
		<p>building permits, the applicant will submit cash payment for the developer’s fair share participation to install traffic signal interconnect between Barton Street and the I-215 Freeway. The interconnect facilities will consist of underground fiber optic cable in conduits or other suitable alternative as determined by the City. The project’s estimated contribution to the impact is 50%. The total estimated cost for this mitigation measure is \$168,000. The cash payment for the project’s estimated fair share participation of 50% is \$84,000.</p> <p><b>TRN-17:</b> Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer’s fair share participation to widen the southerly side of Alessandro Boulevard to provide a free right-turn lane from eastbound Alessandro Boulevard to the I-215 Freeway southbound on ramp. The project’s estimated contribution to the impact is 25%. The total estimated cost for this mitigation measure is \$180,000. The cash payment for the project’s estimated fair share participation of 25% is \$45,000.</p> <p><b>TRN-18:</b> Prior to occupancy, the applicant will install closed-circuit television (CCTV) cameras at the intersection of San Gorgonio Drive and Alessandro Boulevard, including necessary hardware and appurtenances to enable video transmission to the City’s Traffic Management Center (TMC) via wireless medium, which includes CDMA Radio or Wi-Fi with connection to the City’s Traffic Management Center. The estimated cost to install the facilities is \$15,000. The applicant has the option to enter into a reimbursement agreement with the City to receive up to a 50% refund of their costs to install the improvements upon receipt of fair share payment for these facilities from subsequent development of the adjacent property. In the event the CCTV cameras are installed in conjunction with an adjacent development, this project will be required to submit a cash payment for 50% of the cost of the improvements as the developer’s fair share participation. The cash payment for the project’s estimated fair share participation of 50% is \$7,500.</p> <p><u><b>TRN-19:</b> In the event that the Alessandro Boulevard EB/SB I-215 Ramp Improvements Project is not constructed by 2013 (TRN-17), the City of Riverside will restripe the I-215 Freeway NB ramp at Alessandro Boulevard to create a dual eastbound left lane and shared westbound right through lane.</u></p>	

## Page 3.10-18 (Mitigation Measures for Impact TRN-2)

### Mitigation Measures

**TRN-17:** Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer's fair share participation to widen the southerly side of Alessandro Boulevard to provide a free right-turn lane from eastbound Alessandro Boulevard to the I-215 Freeway southbound on ramp. The project's estimated contribution to the impact is 25%. The total estimated cost for this mitigation measure is \$180,000. The cash payment for the project's estimated fair share participation of 25% is \$45,000.

**TRN-18:** Prior to occupancy, the applicant will install closed-circuit television (CCTV) cameras at the intersection of San Geronio Drive and Alessandro Boulevard, including necessary hardware and appurtenances to enable video transmission to the City's Traffic Management Center (TMC) via wireless medium, which includes CDMA Radio or Wi-Fi with connection to the City's Traffic Management Center. The estimated cost to install the facilities is \$15,000.

**TRN-19:** In the event that the Alessandro Boulevard EB/SB I-215 Ramp Improvements Project is not constructed by 2013 (TRN-17), the City of Riverside will restripe the I-215 Freeway NB ramp at Alessandro Boulevard to create a dual eastbound left lane and shared westbound right through lane.

## Section 3.11 Hydrology and Water Quality

### Page 3.11-19 (Mitigation Measures for Impact WTR-3)

#### Mitigation Measures

Implement Mitigation Measures ~~BIO-25 and BIO-26~~ BIO-22 and BIO-23.

#### Significance after Mitigation

Impacts would be less than significant with incorporation of mitigation measures ~~BIO-25 and BIO-26~~ BIO-22 and BIO-23.

## Chapter 4 Cumulative

### Page 4-7 (Cumulative Cultural Resources)

In order to minimize and avoid potentially significant cumulative impacts on buried or otherwise unidentified cultural resources, implementation of project-specific mitigation measures (~~CR-1, CR-2, and CR-3~~ through CR-9) would reduce the project's contribution to cumulative impacts to less than cumulatively considerable levels. The requirements of PRC Section 5097 would also apply to

any project for which a burial, human bone, or suspected human bone are discovered, which essentially outlines provisions for Native American involvement, burial treatment, and re-burial. The effects of cumulative development on cultural resources would be mitigated to the extent feasible in accordance with full implementation of these legal requirements. Additionally, seven of the ten sites found within the property are located outside of the proposed development footprint and would be retained within the dedicated park area. These sites would be protected under the Sycamore Canyon Wilderness Park Cultural Resource Management Plan. As a result, cumulative impacts on cultural resources as a result of future development throughout the city would not be cumulatively considerable.

# **Chapter 4**

## **Mitigation Monitoring and Reporting Program**



# Mitigation Monitoring and Reporting Program

## Introduction

The California Public Resources Code, Section 21081.6, requires that a lead or responsible agency adopt a mitigation monitoring plan when approving or carrying out a project when an EIR identifies measures to reduce potential adverse environmental impacts. As lead agency for the proposed project, the City is responsible for adoption and implementation of the mitigation monitoring plan.

A draft EIR for the project has been prepared to address the potential environmental impacts and, where appropriate, recommend measures to mitigate these impacts. As such, a mitigation monitoring plan is required to ensure that the adopted mitigation measures are successfully implemented. This plan lists each mitigation measure, describes the methods for implementation and verification, and identifies the responsible party or parties.

## Project Overview

The proposed project involves the construction and operation of a 36.91-acre business park for light industrial, warehouse distribution, and office uses within an 80.07-acre property located at the northwest corner of Alessandro Boulevard and San Gorgonio Drive in the City of Riverside. Approximately 6.15 acres of land located at the southwest corner of the property would be reserved for future development. An additional 0.7 acre would be dedicated to San Gorgonio Drive. The remaining 36.23 acres of property would be dedicated to the City of Riverside Parks, Recreation, and Community Services Department for incorporation into the adjacent Sycamore Canyon Wilderness Park.

The proposed business park would consist of four buildings (identified as Buildings A through D) ranging in size from 36,243 square feet to 440,374 square feet. Parkway improvements, including sidewalks and landscaping, would be constructed along the approximately 1,300-linear-foot project frontage on Alessandro Boulevard at the top of the slope. Additionally, three existing blocked stormdrain pipes that extend under Alessandro Boulevard from property north of the project site would be repaired or improved.

Blasting may be required during the initial phase of the project due to existing granitic soils that underlay the site. The blasting would occur intermittently for a period of approximately 2 weeks prior to grading. The proposed project would involve grading and earthwork within the 36.91-acre development footprint to accommodate the project. All utilities are available on adjacent properties and would be extended onto the site. All grading activity would begin immediately following all project approvals and permits and is anticipated to be completed within approximately one month. Upon grading completion, project construction, including building construction, paving, painting, and landscaping, is expected to take approximately 11 months, thereafter.

## Monitoring and Reporting Procedures

The mitigation monitoring plan for the proposed project will be in place through all phases of the project, including design, construction, and operation. The City will be responsible for administering the mitigation monitoring plan and ensuring that all parties comply with its provisions. The City may delegate monitoring activities to staff, consultants, or contractors. The City will also ensure that monitoring is documented through periodic reports and that deficiencies are promptly corrected. The designated environmental monitor will track and document compliance with mitigation measures, note any problems that may result, and take appropriate action to rectify problems.

## Mitigation Monitoring and Reporting Program Implementation

Table 4-1 lists each mitigation measure included in the draft EIR. Certain inspections and reports may require preparation by qualified individuals and these are specified as needed. The timing and method of verification for each measure are also specified.

**Table 4-1.** Mitigation Monitoring and Reporting Program Summary

Mitigation Measure No.	Mitigation Measures	Timing of Implementation	Method of Implementation	Responsible Party
<b>AIR QUALITY</b>				
AQ-1	Use solar or low-emission water heaters.	During design and construction	The applicant will design the buildings to include solar or low-emission water heaters. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-2	Use energy-efficient (i.e., Energy Star) appliances.	During final design	The applicant will design the building with energy-efficient appliances such as Energy Star or equivalent standard. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-3	Use energy-efficient and automated controls for air conditioners.	During final design	The applicant will design the building with energy-efficient and automated controls for air conditioners. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-4	Use double-glass-paned windows.	During final design	The applicant will design the building with double-glass-paned windows to conserve energy. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-5	Use energy-efficient low-sodium parking lot lights.	During final design	The applicant will design the exterior parking areas to utilize energy-efficient low-sodium in parking lot lights. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-6	Use lighting controls and energy-efficient lighting.	During final design	The applicant will design the building with energy-efficient lighting and lighting controls. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-7	Use light-colored roof materials to reflect heat.	During final design	The applicant will design the building with light-colored roof materials to reflect heat and conserve energy. Plans, including and materials and color palette, will be submitted and reviewed	Building and Safety Division

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
			by staff, and results verified during plan check.	
AQ-8	Increase exterior walls and attic/roof insulation beyond Title 24 requirements.	During final design	The applicant will design the building such that exterior walls and attic/roof insulation exceeds Title 24 requirements to conserve energy. Plans will be reviewed and results verified during plan check.	Building and Safety Division
AQ-9	Utilize recycled, low-carbon, and otherwise climate-friendly building materials such as salvaged and recycled-content materials for building, hard surfaces, and nonplant landscaping materials.	During final design and construction	The applicant will design the building and site plan to include recycled, low-carbon, and otherwise climate friendly building materials. The applicant will prepare documentation to demonstrate how such materials are incorporated into the overall project design plans. Plans will be reviewed and results verified during plan check.	Building and Safety Division; Project Applicant; Contractor
AQ-10	Minimize, reuse, and recycle construction-related waste to the maximum extent practicable.	Prior to the issuance of grading permits; during construction	The applicant will prepare a document detailing construction waste minimization requirements to be approved by the City Engineer; the applicant will solicit construction bids requiring contractors to minimize, reuse and recycle construction waste in accordance with the approved document.	City Engineer; Project Applicant; Contractor
AQ-11	Minimize grading, earth-moving, and other energy-intensive construction practices to the maximum extent practicable.	During design and construction	Prior to construction, the applicant will work with the City Engineering Department to determine ways to minimize grading and other energy-intensive construction activities and incorporate them into the construction plans. Plans will be reviewed and results verified during plan check. During construction, the contractor will perform grading activities as in accordance with the approved plans.	City Engineer; Project Applicant Contractor
AQ-12	Landscape to preserve natural vegetation and maintain watershed integrity.	During design and construction	Prior to construction, the applicant will prepare detailed landscape plans identifying a plant palette that consists of native vegetation and	Planning Division;

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
			seeks to preserve existing natural vegetation on site where possible. The landscape plan will be reviewed and subject to approval from the Planning Director. During construction, the contractor will plant the vegetation in accordance with the approved plans.	Contractor
AQ-13	Utilize alternative fuels in construction equipment and require construction equipment to utilize the best available technology to reduce emissions.	During construction bid process, and during construction activities	The applicant will solicit construction bids requiring contractors to utilize alternative fuels in construction equipment and requiring construction equipment to utilize the best available technology to reduce emissions. Equipment will be verified during City inspection.	Building and Safety Division; Project Applicant; Contractor
AQ-14	For vehicles that will serve the proposed project on a frequent basis (e.g., forklifts, switcher tractors/hostelling units), require use of alternative fuels and measures to maximize fleet efficiency.	Prior to building occupancy; During building operation	Prior to occupancy of the building, the applicant shall include provisions in the lease agreement to require tenant fleet equipment to maximize use of alternative fuel vehicles (i.e., natural gas, propane, electric). Prior to issuance of occupancy permit, the applicant (or tenant designee) shall identify the number and types of fleet equipment intended to be used for normal operations, and demonstrate the efficiency of the fleet compared to standard (or non fuel-efficient) vehicles to determine the amount of emissions improvement. Equipment will be verified during City inspection.	Building and Safety Division; Planning Division; Project Applicant
AQ-15	Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.	During design and construction	Prior to construction, the applicant will prepare detailed landscape plans identifying the water-efficient irrigation system for landscaping (potentially including moisture-based controls or drip irrigation). As with AQ-12, the landscape plan will be reviewed and subject to approval from the Planning Director. During construction, the contractor will follow the	Planning Division; Contractor

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
AQ-16	Restrict the use of water for cleaning outdoor surfaces and vehicles.	During construction and building operation	irrigation plan specified. Prior to construction, the applicant and contractor will host a training session to inform construction workers of proper and restricted uses of water onsite. Documentation that the meeting was held will be provided to the City. During building operation, the applicant will restrict the use of water for cleaning outdoor surfaces and vehicles. A sign will be posted onsite to state the policy. Tenant leases shall include provisions to restrict vehicle washing onsite.	Planning Division; Project Applicant; Contractor
AQ-17	Provide interior and exterior storage areas for recyclables and green waste, and adequate recycling containers located in public areas.	Prior to building occupancy; During building operation	The project applicant will clearly indicate interior and exterior storage areas for recyclables and green waste on project plans. Containers sized to adequately meet demand will be provided in these areas. The designation of such storage/collection areas will be verified during plan check and City inspection.	Building and Safety Division; Project Applicant
AQ-18	Restrict the idling of trucks using loading docks to 2 minutes or less.	During building operation	The applicant will restrict the idling of trucks using the loading docks to 2 minutes or less. A sign will be posted informing drivers of the policy; however, it is the applicant's responsibility to ensure compliance with the restriction. Tenant leases shall include provisions to restrict vehicle idling onsite. Adherence to the policy will be verified during City inspection.	Building and Safety Division; Project Applicant
<b>BIOLOGICAL RESOURCES</b>				
BIO-1	The applicant will pay all development fees required under the MSHCP to the City of Riverside prior to issuance of a grading permit.	Prior to the issuance of a grading permit	The applicant will pay development fees levied under the MSHCP to the City. Confirmation of payment will be submitted to the applicant to	Planning Division; Project

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
BIO-2	The applicant will pay all development fees required under the SKR HCP to the City of Riverside prior to issuance of a grading permit.	Prior to the issuance of a grading permit	confirm compliance.  The applicant will pay development fees levied under the SKR HCP to the City. Confirmation of payment will be submitted to the applicant to confirm compliance.	Applicant  Planning Division; Project Applicant
BIO-3	The applicant will obtain regulatory permits under Section 1602 of the Fish and Game Code and Section 401 and 404 of the Clean Water Act. Issuance of these permits will involve payment of permit fees, project review, and compensatory mitigation in accordance with the regulations of the applicable resource agency and will ensure there is no net loss of waters as a result of project implementation, in accordance with state and federal no net loss guidance.	Prior to construction	The applicant will apply for and obtain regulatory permits (including Section 1602, 401 and 404). Copies of approved permits will be submitted to the City. Any specific mitigation identified by regulatory agencies shall be incorporated into revised plans. The contractor will retain proof of permits onsite during construction. Plans will be verified during plan check, and verified during City inspection.	Planning Division; Building and Safety Division; Project Applicant; Contractor
BIO-4	The applicant will enhance 1 acre of the dedicated land through nonnative invasive species removal and clearing of the existing clogged storm drain under Alessandro Boulevard to improve flow to the downstream reach of Sycamore Canyon Creek.	During design and construction	During project design, project plans shall identify the proposed enhancement activities. During construction or prior to building occupancy, the applicant will implement the enhancement plan for 1 acre of dedicated lands through nonnative species removal and clearing the clogged stormdrain under Alessandro Boulevard. Improvements will be documented by the applicant or applicant’s contractor and confirmed by City.	Planning Division; Building and Safety Division; Project Applicant; Contractor
BIO-5	The applicant will mitigate impacts to state and federal waters at a ratio of 2:1 through preservation and enhancement of the lower tributary of Sycamore Canyon Creek in the project area. Repair of the clogged stormdrains under Alessandro Boulevard will benefit Sycamore Canyon Creek. Accommodating the discharge of flows to this segment of the creek is	During project design and construction; post-construction	During project design, project plans shall identify the proposed preservation and enhancement activities. During construction or prior to building occupancy, the applicant will implement the preservation and enhancement plans for the lower tributary of Sycamore Canyon Creek. After construction, the applicant will demonstrate that mitigation (2:1	Planning Division; Building and Safety Division; Project Applicant; Contractor

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>expected to aid in reducing vegetation stress, recreate wetland conditions, and support additional willows and sycamore trees. Following construction, the temporary construction area will be restored to pre-project grade</p>		<p>preservation and enhancement) of the lower tributary of Sycamore Canyon Creek has occurred. In addition, the temporary construction area will be restored to pre-project grade. Activities will be documented by the applicant or applicant’s contractor and conditions will be confirmed by the City.</p>	
BIO-6	<p>The drainage system will collect onsite stormwater and other associated runoff from the development and direct it into the detention basin. Water will be retained in this basin with the only water transport out of the basin occurring during high volume storm events. Under these circumstances, the outflow will be released to the north and west. Water quality features of this basin as well as for the development in general will conform to RWQCB requirements.</p>	<p>During project design and construction</p>	<p>The applicant will design the stormwater system to include a detention basin conforming to the water quality control features required by the RWQCB. Plans will be reviewed and results verified during plan check.</p>	<p>Building and Safety Division; City Engineer; Project Applicant</p>
BIO-7	<p>A condition will be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading. The training will include a description of the species of concern and its habitats, the general provisions of the ESA and the MSHCP, the need to adhere to the provisions of the ESA and the MSHCP, the penalties associated with violating the provisions of the ESA, the general measures that are being implemented to conserve the species of concern as they relate to the project, and the access routes to and project site boundaries within which the project activities must be accomplished. This measure is required under the MSHCP (Volume I, Appendix C) and is intended to avoid direct and indirect impacts to</p>	<p>Prior to grading</p>	<p>The applicant will have a qualified biologist conduct a training session for project personnel prior to grading. Documentation of the date of the training session, attendees, and signature of the biologist will be submitted to the City. The requirement shall be included within construction bid documents and grading plan submittals, which are to be approved by the City Engineer.</p>	<p>City Engineer; Project Applicant; Contractor; Project Biologist</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
BIO-8	<p>riparian/riverine resources, sensitive habitats, and species outside of the development footprint during construction activities.</p> <p>A preconstruction burrowing owl survey will be conducted within the development footprint and a 500-foot buffer within 30 days of grading or other significant site disturbance. If the species is present and it is outside the breeding season (from September 1 through January 31), passive or active relocation will be performed by a qualified biologist. Based on California DFG requirements (DFG 1995), passive relocation will only apply to burrowing owls not actively nesting and can occur outside of the nesting season from September 1 through January 31, unless a qualified biologist approved by DFG verifies through non-invasive methods that the birds have not begun laying eggs or incubating, or that juveniles from occupied burrows are independently foraging and capable of independent survival.</p> <p>If the species is found to be present during breeding season (February 1 through August 31), construction will be limited to beyond at least 300 feet of the active burrows until it has been confirmed by a qualified biologist that the nesting effort has been completed. At this time, passive relocation can be employed as described above.</p> <p>No permits are necessary for passively relocating burrowing owls. Prior to passive relocation of the birds from occupied burrows, potentially suitable burrows within the project site will be collapsed so that the birds being passively relocated do not take up occupation of a nearby</p>	A maximum of 30 days prior to construction grading	Preconstruction burrowing owl surveys will be conducted within the development footprint and 500-foot buffer within 30 days of grading or other significant site disturbance. Results of the survey will be provided to the City and all relevant regulatory agencies. If species are not present, a grading permit may be issued. If species are determined to be present and active relocation is necessary, consultation with the RCA will be conducted regarding the location of active relocation sites and site selection prior to relocation. Should this be necessary, no grading permit shall be issued until the RCA provides clearance.	Planning Division; City Engineer; Project Applicant; Project Biologist

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>burrow. At least 48 hours will pass between the start of passive relocation and the collapse of the occupied burrows. This will ensure that the birds are gone.</p> <p>Active relocation must be performed by a permitted biologist and must occur after it has been confirmed that the birds proposed for displacement are not nesting. The birds will be actively trapped and transported from the property. At the same time that the birds are being removed from the occupied burrows, it is essential that all potential burrows are collapsed to ensure no burrowing owls can reoccupy the project site. If there is greater than a 30-day delay from passive/active relocation action, a preconstruction survey will be performed within 30 days prior to the commencement of construction. In accordance with the requirements of the MSHCP (Appendix E, Objective 7), relocation sites for the burrowing owl will be created in the MSHCP Conservation Area for the establishment of new colonies. Consultation with the RCA will be conducted regarding the location of active relocation sites and site selection prior to relocation.</p>			
BIO-9	<p>Beginning 30 days prior to the disturbance of suitable nesting habitat, the biologist will conduct weekly bird surveys (i.e., once each calendar week, and at 2 to 10 day intervals) to detect probable or confirmed nesting by any native birds in the habitat to be removed and any other such habitat within 500 feet (raptors) or 300 feet (nonraptors) of the construction work area. A qualified biologist with relevant, professional experience in performing nesting bird surveys</p>	<p>Prior to construction; during construction</p>	<p>Beginning 30 days prior to the disturbance of suitable nesting habitat, the biologist will conduct weekly bird surveys to detect nesting by any native birds in the habitat within 500 feet (raptors) or 300 feet (nonraptors) of the construction work area. The surveys will be performed weekly, ending no more than 3 days prior to the initiation of clearance/construction work. If no nesting birds are identified, construction may commence. If nesting by a</p>	<p>Planning Division; Project Applicant; Project Biologist; Contractor</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>and experienced in identifying bird species found in western Riverside County will conduct the surveys. The surveys will continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If probable or confirmed nesting by a native bird is found, the project proponent will delay all clearance/construction disturbance activities within the above distances of suitable nesting habitat for that species until September 15 or continue the surveys in order to locate any active nests. If an active nest is located, clearing and construction within the above distances will be postponed until the nest is vacated and juveniles have fledged and there is no evidence of a second active nesting effort.</p> <p>Limits of construction to avoid a nest will be established in the field with flagging and stakes, flagged silt fencing, or other method clearly visible and identifiable to construction personnel. Construction personnel will be instructed on the sensitivity of the area. The biologist will record the results of implementing the recommended protective features described above to document compliance with applicable state and federal laws pertaining to the protection of native birds, with copies provided to both the U.S. Fish and Wildlife Service and DFG within 45 days of the end of surveys.</p>		<p>native bird is found, the project proponent will delay all disturbance activities within 500 (raptors) or 300 feet (nonraptors) until September 15 or continue the surveys in order to locate any active nests. If an active nest is located, clearing and construction within the above distances will be postponed until the nest is vacated and juveniles have fledged and there is no evidence of a second active nesting effort. Limits of avoidance of a nest will be marked with flagging and stakes, flagged silt fencing, or other method clearly visible and identifiable to construction personnel. The biologist will document the completion of the above activities and record the results of implementing the recommended protective features. Copies of reports/documentation will be provided to the City and both the U.S. Fish and Wildlife Service and DFG within 45 days of the end of surveys.</p>	
BIO-10	<p>Blasting and grading activities will occur outside the window of March 15 and September 15 due to adjacency to known occupied least Bell’s vireo habitat within Sycamore Canyon Creek and Unnamed Drainage 2, and Conservation Areas</p>	<p>Prior to approval of the grading plan</p>	<p>The contractor will avoid blasting and grading from March 15 to September 15 to avoid impacts to least Bell’s vireo. Restrictions will be included in construction bid documents, and the contractor will include dates of blasting and</p>	<p>City Engineer; Project Applicant; Contractor</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	associated with Sycamore Canyon Wilderness Park.		grading activities in the grading plan. The City will confirm during plan check and any grading permits will identify the schedule restrictions.	
BIO-11	Activities associated with the project that cannot be conducted without placing equipment or personnel in sensitive habitats will be timed to avoid the breeding season of riparian species identified in MSHCP Global Species Objective No. 7.	Prior to construction; during construction	The project applicant and contractor will ensure that activities that must occur in sensitive habitats will be planned to avoid the breeding season (typically from March 15 to September 15). Documentation of the dates activities occurred in these areas will be provided by the contractor to the City. Construction schedules shall be prepared to demonstrate how these areas will be avoided during seasonal restrictions. Grading permits shall identify such restrictions as conditions.	City Engineer; Project Applicant; Contractor
BIO-12	The qualified project biologist will monitor construction activities for the duration of the project to ensure that practicable measures, as described in the Mitigation Monitoring and Reporting Program and the conditions of the forthcoming 404, 401, and 1602 permits, are being employed to avoid incidental disturbance of habitat and species of concern outside the development footprint.	During construction	The applicant will retain a qualified biologist to be present during construction activities to ensure compliance of mitigation measures and other permit conditions. Monitoring logs will be filled out on a regular basis to document potential issues and how they were resolved. Logs will be provided to the City and applicant to confirm compliance with requirements.	Planning Division; Project Applicant; Project Biologist
BIO-13	Exotic species that prey upon or displace target species of concern will be permanently removed from the site.	During construction; after construction	The applicant will provide documentation to the City that exotic species which may displace target species of concern are eradicated from the site. A qualified biologist may be retained to identify species for removal and document pre- and post-removal conditions and results.	Planning Division; Project Applicant; Project Biologist (potentially); Contractor
BIO-14	To avoid attracting predators of the species of concern during site grading and construction	During construction	The contractor will be responsible for keeping the site clear of debris and food waste. All trash	Project Applicant;

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	activities, the project site will be kept clean of debris. All food related trash items will be enclosed in sealed containers and regularly removed from the site(s). This requirement will be addressed by the biologist conducting the training session prior to site grading (See Mitigation Measure BIO-8).		will be properly disposed of in adequate containers and removed from the site. The project biologist will train personnel on requirements during the training session required in BIO-8 and will report on compliance with this measure in the Monitoring Logs.	Contractor; Project Biologist
BIO-15	Any night lighting will be directed away from natural open space areas and direct downward and towards the center of the development. Energy-efficient LPS or HPS lamps will be used exclusively to damper glare.	During final design and construction	The applicant will design the building and site plan to have any night lighting directed away from natural open space areas and into the center of development. Energy-efficient lamps will be used. Plans will be reviewed and results verified during plan check.	Building and Safety Division; Project Applicant
BIO-16	Construction employees will strictly limit their activities, vehicles, equipment, and construction materials to the proposed development footprint and designated staging areas and routes of travel. The construction area(s) will be the minimal area necessary to complete the project and will be specified in the City-approved construction plans. Construction limits will be fenced with orange snow screen. Exclusion fencing will be maintained until the completion of all construction activities. Employees will be instructed that their activities are restricted to the construction areas.	Prior and during construction	The construction limits, included in City-approved construction plans will be fenced with orange snow screen by the contractor. Construction employees will be required to avoid impacts to those areas and follow designated staging areas and routes of travel. These stipulations shall be included in the contractor conditions, and shown on the grading plans to be approved by the City Engineer.	City Engineer; Project Applicant; Contractor; Project Biologist
BIO-17	The removal of native vegetation will be avoided and minimized. Temporary impacts will be returned to pre-existing contours and revegetated with appropriate native species.	During design and construction; After construction	The applicant will design grading plans to minimize the removal of native vegetation. Plans will be checked during the final plan check to confirm that removal of native vegetation has been minimized. During construction, the contractor will follow approved plans; any areas that are identified as necessary to remove will be discussed with City staff. In conjunction with	Planning Division; City Engineer; Project Applicant; Contractor

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
			<p>BIO-12, the biological monitor will educate the construction crew and stake off areas of native vegetation to be avoided. Should any native areas be inadvertently disturbed, all temporary impacted areas will be returned to pre-existing contours and revegetated with appropriate species after construction is complete. Documentation of revegetation will be submitted to the City and regulatory agencies as required.</p>	
BIO-18	<p>Water pollution and erosion control plans will be developed and implemented in accordance with RWQCB requirements.</p>	<p>Prior to construction, during construction</p>	<p>The applicant will develop water pollution and erosion control plans that incorporate RWQCB requirements. The plans will be submitted to the City Engineer for approval prior to issuance of a grading plan, and will be verified at plan check. The contractor will be required to implement erosion control measures as indicated in the plan. The monitoring biologist or City inspector will confirm that erosion control measures are in place during construction.</p>	<p>City Engineer; Building and Safety Division; Project Applicant; Contractor</p>
BIO-19	<p>The upstream and downstream limits of the project’s disturbance plus lateral limits of disturbance on either side of the stream will be clearly defined and marked in the field and reviewed by the biologist prior to initiation of work.</p>	<p>Prior to construction</p>	<p>The applicant will retain a project biologist to mark the upstream, downstream, and lateral limits of disturbance areas of streams in cooperation with the contractor. Confirmation that the limits have been flagged will be documented through photographs in a monitoring log and provided to the City.</p>	<p>Planning Division; Project Applicant; Contractor; Project Biologist</p>
BIO-20	<p>When stream flows must be diverted, the diversions will be conducted using sandbags or other methods requiring minimal in-stream impacts. Silt fencing or other sediment trapping materials will be installed at the downstream end of construction activity to minimize the transport of sediments offsite. Settling ponds where sediment is collected will be cleaned out in a</p>	<p>During construction, after construction</p>	<p>If the contractor determines that a stream flow must be diverted, minimally invasive practices will be used to reduce impacts to streams. Silt fencing will be installed at the downstream end of construction to prevent sedimentation of downstream resources. Implementation of these measures will be verified by the biologist retained by the applicant and by the City during</p>	<p>Project Applicant; Contractor; Project Biologist</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>manner that prevents the sediment from reentering the stream. Care will be exercised when removing silt fences, as feasible, to prevent debris or sediment from returning to the stream.</p>		<p>inspection. After construction, or when necessary during construction, settling ponds will be cleaned out in a manner that avoids re-deposition of sediment within the stream. In addition, when silt fences require removal, all feasible caution will be exercised to prevent sediment/debris from entering the stream.</p>	
<p>BIO-21</p>	<p>During construction, equipment storage, fueling, and staging areas will be located on upland sites with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas will be located in such a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions will be taken to prevent the release of cement or other toxic substances into surface waters. Project related spills of hazardous materials will be reported to appropriate entities including but not limited to applicable jurisdictional city, FWS, and CDFG, RWQCB and will be cleaned up immediately and contaminated soils removed to approved disposal areas.</p>	<p>During construction</p>	<p>Equipment storage, fueling, and staging areas will be located on upland sites that pose little risk of contaminating (through direct drainage or runoff) riparian areas or other sensitive habitats. Precautions by the contractor and construction staff will be taken to prevent the release of cement or toxic substances into surface waters. The project biologist or inspector will verify the location of such staging/fueling areas and confirm that they are sufficient during inspection.</p> <p>Project related spills of hazardous materials will be reported by the contractor to appropriate entities including but not limited to the City of Riverside, FWS, CDFG, and RWQCB; spills will be cleaned up immediately by the contractor or an appropriate recovery team and contaminated soils will be removed to City- or agency-approved disposal area(s).</p>	<p>Building and Safety Division; Project Applicant; Contractor; Project Biologist</p>
<p>BIO-22</p>	<p>Erodible fill material will not be deposited into water courses. Brush, loose soils, or other similar debris material will not be stockpiled within the stream channel or on its banks.</p>	<p>During construction</p>	<p>The biological monitor will educate construction crews prior to construction activities, and will monitor ongoing activities to minimize the potential for deposition of materials into water courses. In conjunction with BIO-16, all activities will be restricted to designated limits of work to avoid such potential impacts. Should inadvertent deposition of materials into water</p>	<p>Building and Safety Division; Project Applicant; Contractor; Project Biologist</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
			courses occur, the materials shall be removed in expedited fashion, and the work area shall be returned to pre-disturbance conditions.	
BIO-23	The City of Riverside will access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including all project BMPs set forth in the Mitigation Monitoring Plan and Stormwater Pollution Prevention Plan (SWPPP).	Prior to construction, during construction	The City will inspect the project site and any restoration/enhancement areas for compliance with approval conditions, the MMRP, and the SWPPP. Documentation of compliance and dates of inspection will be recorded and copies provided to the applicant and any necessary correction measures/recommendations will be provided to the contractor.	Planning Division; Building and Safety Division;
BIO-24	Landscaping within 330 feet of the drainages will comprise species native to the vicinity of the project site (western Riverside County).	During final design, during construction	During final design, the applicant will ensure that landscape plans (required by measure AQ-12 above) include a plant palette that consists of species native to western Riverside County for areas within 330 feet of drainages. The landscape plan will be reviewed and subject to approval from the Planning Director. During construction, the contractor will plant the vegetation in accordance with the approved plans.	Planning Division; Project Applicant; Contractor
BIO-25	All graded slopes adjacent to natural open space will be prepared and seeded with a native plant seed mix comprised of local species (western Riverside County) to reduce the transmission of nonnative and invasive plant species.	During final design, during construction	The applicant will include a native plant seed mix with species native to western Riverside County for application on graded slopes within the landscape plans (to be prepared for measures AQ-12 and BIO-24). Plans will be reviewed and approved by the Planning Director. Prior to the end of construction, all graded slopes adjacent to natural open space will be prepared and seeded by the contractor in accordance with the plans. Implementation and application of seed will be confirmed by the monitoring biologist.	Planning Division; Project Applicant; Contractor; Project Biologist
BIO-26	Landscaping for the development will prohibit	During final design,	The applicant will avoid inclusion of any	Planning

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	the planting of invasive exotic plant species identified by the MSHCP (MSHCP Vol. I, Table 6-2).	during construction	invasive exotic plant species identified in Table 6-2 of the MSHCP (Vol. I) in landscape plans (to be prepared for measures AQ-12, BIO-24, and BIO-25). Plans will be reviewed, checked for species on the aforementioned list, and approved by the Planning Director. During construction, the contractor will implement landscaping in accordance with the plans.	Division; Project Applicant; Contractor

**CULTURAL RESOURCES**

CR-1	<p>A qualified professional archaeologist and a culturally affiliated Native American monitor shall monitor the initial phase of ground-disturbing activities and grading for the project. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are discovered during ground-disturbing activities, the archeologist and the Native American representative shall have the authority to stop and/or redirect grading to recover cultural resources that are uncovered during grading activities.</p> <p>Work shall stop in the area that the discovery is made and within 50 feet of the find until a qualified archaeologist in consultation with the Native American representative can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.</p>	Prior to ground-disturbing activities, during initial phase of ground-disturbing construction	The applicant will identify and retain a qualified archaeologist and a culturally affiliated Native American monitor prior to commencing ground-disturbing activities. The monitor(s) will record observations of earthwork activities and confirm the presence or absence of cultural resources and provide monitoring logs to the applicant and City. The monitor will have the authority to cease construction in the immediate area of the find if any significant (or potentially significant) resources are uncovered. The monitor(s) will be responsible for developing and implementing treatment measures, if necessary. The requirement to retain a monitor shall be included as a condition on the grading plans, to be approved by the City Engineer.	Planning Division; Project Applicant; Archaeologist and Native American Monitor
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<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
CR-2	<p>Prior to the initiation of grading and project construction, exclusionary fencing shall be erected at the boundaries of the project construction limits as directed by a qualified professional archaeologist to restrict vehicles and machinery to the construction area and prevent inadvertent impacts to cultural resources located outside of the development footprint. Prior to the start of construction activities, as well as during construction, training shall be provided by a qualified archeologist for all construction workers regarding site avoidance, the requirement to support the monitoring effort, and what types of cultural materials may be found in the area. At the conclusion of all grading activities, all protective fencing shall be removed and discarded.</p>	<p>Prior to ground-disturbing activities, during construction</p>	<p>The applicant shall retain a qualified archaeologist to place exclusionary fencing to restrict vehicles and machinery to the construction area. The archaeologist will conduct a training session prior to construction for all construction workers about avoidance measures, requirements to support the monitoring effort, and potential cultural materials that may be found in the area. Confirmation of the training session will include documentation by the archaeologist performing the session of the date and time the session was held. Documentation of the training session will be provided to the City and applicant.</p>	<p>Project Applicant; Archaeologist; Contractor</p>
CR-3	<p><b>CR-3:</b> At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered onsite.</p>			
CR-4	<p><b>CR-4:</b> The landowner shall relinquish</p>			

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the Pechanga Tribe for proper treatment and disposition.			
CR-5	<b>CR-5:</b> All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.			
CR-6	<b>CR-6:</b> CA-RIV-2523 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.			
CR-7	<b>CR-7:</b> CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe. CA-RIV-2505 shall be avoided and preserved during Project construction through use of protective fencing and other safe guards developed in consultation with the Pechanga Tribe. Subsequent to Project construction, the site shall be appropriately protected and preserved in a manner determined in consultation with the Tribe.			

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CR-8	<b>CR-8:</b> The Project Applicant and Project Archeologist shall consult with the Pechanga Tribe regarding appropriate treatment for those archeological sites which will not be avoided by the Project.			
CR-9	In the event of the discovery of human remains, the County coroner shall be immediately notified. If human remains of Native American origin are discovered during ground-disturbing activities, the applicant shall comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the NAHC (PRC Section 5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner shall contact the NAHC to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts.	During construction	If human remains are found, the excavation occurring in the vicinity of the remains will be immediately stopped by the monitoring archaeologist and/or Native American monitor. All required entities (including the County coroner) will be contacted by either monitor or the contractor. Work within the vicinity of the find will be halted until the remains can be assessed and appropriately removed.	Project Applicant; Archaeologist and Native American Monitor; County Coroner

**HAZARDS AND HAZARDOUS MATERIALS**

HAZ-1	<ul style="list-style-type: none"> <li>▪ Prior to project development, recordation of the map, or sale to an entity exempt from the Subdivision Map Act, the project proponents will convey</li> </ul>	During project design	The applicant will design the project site to include the requirements provided by the ALUC, including acoustical treatments to reduce interior noise levels below 45 decibels and avoidance of	Planning Division; Building and Safety Division;
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<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>an aviation easement to the MARB/MIP Airport.</p> <ul style="list-style-type: none"> <li>▪ Incorporation of noise attenuation measures into any office areas, such as installation of fixed windows with acoustical glazing, acoustical wall insulation, and design of ventilation ducting to avoid direct line of sight from interior to exterior, within the proposed buildings will be required to ensure interior noise levels are at or below 45 decibels.</li> <li>▪ The following uses will be prohibited:                             <ul style="list-style-type: none"> <li>❑ Any use which would direct a steady light or flashing light or red, white, green, or amber color associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.</li> <li>❑ Any use that would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.</li> <li>❑ Any use that would generate smoke or water vapor or which would attract</li> </ul> </li> </ul>		<p>the uses prohibited. The plans will be verified in accordance with the Airport Land Use Commission (ALUC) requirements during plan check. The contractor will be responsible for implementing the plans and also avoiding storage of explosive or flammable material above-ground during construction. If any proposed changes in the use of this structure occur, new uses must be submitted to the ALUC staff for consistency review.</p>	<p>ALUC; Project Applicant; Contractor</p>

Mitigation Measure No.	Mitigation Measures	Timing of Implementation	Method of Implementation	Responsible Party
	<p>large concentrations of birds, or which may otherwise affect safe air navigations within the area.</p> <ul style="list-style-type: none"> <li>❑ Any use that would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.</li> <li>▪ The above ground storage of explosive or flammable material is prohibited.</li> <li>▪ A notice, provided by the ALUC, will be provided to all potential purchasers and tenants.</li> <li>▪ Until such time as an Airport Protection Overlay Zone is applied to the property by the City of Riverside, any proposed change in the use of this structure will be submitted to the Airport Land Use Commission staff for consistency review.</li> </ul>			
<b>NOISE</b>				
N-1	<p>Construction noise is unavoidable and could adversely affect nearby residents during construction. However, the noise would be temporary and limited to the duration of the construction. The following measures should be incorporated into the project contract specifications to minimize construction noise levels:</p> <ul style="list-style-type: none"> <li>▪ All noise-producing project equipment and vehicles using internal combustion engines will be equipped with mufflers,</li> </ul>	During construction	<p>The applicant will solicit construction bids requiring contractors to equip all noise-producing equipment and vehicles with mufflers, air-inlet silencers where appropriate, and any other noise reducing features (as detailed in the measure) in good operating condition that meet or exceed original factory specification. Contractors using electrically powered equipment will also be sought. During construction, the contractor will ensure that stockpiles are located as far as possible from sensitive receptors, that road speed limits are</p>	<p>Building and Safety Division; Project Applicant; Contractor</p>

Mitigation Measure No.	Mitigation Measures	Timing of Implementation	Method of Implementation	Responsible Party
	<p>air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.</p> <ul style="list-style-type: none"> <li>▪ All mobile or fixed noise-producing equipment used on the project regulated for noise output by a local, state, or federal agency will comply with such regulation while in the course of project activity.</li> <li>▪ Electrically powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible.</li> <li>▪ Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors.</li> <li>▪ Construction site and access road speed limits will be established and enforced during the construction period.</li> <li>▪ The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only.</li> </ul>		<p>established and followed, and that no project-related public address or music systems can be heard by an adjacent receptor. Equipment and compliance with noise requirements will be verified during City inspection.</p> <p>The onsite construction supervisor will have the responsibility and authority to receive and resolve noise complaints.</p>	

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<ul style="list-style-type: none"> <li>▪ No project-related public address or music system will be audible at any adjacent receptor.</li> <li>▪ The onsite construction supervisor will have the responsibility and authority to receive and resolve noise complaints.</li> </ul>			
N-2	<p>Construction operations will not occur between 7:00 p.m. and 7:00 a.m. Monday through Friday, 5 p.m. to 8 a.m. on Saturdays, or at any time on Sunday or on federal holidays. The hours of construction, including noisy maintenance activities and all spoils and material transport, will be restricted to the periods and days permitted by the City’s Noise Code (City of Riverside 1996). Noise-producing project activity will comply with local noise control regulations affecting construction activity or obtain exemptions therefrom.</p>	During construction	<p>The contractor not schedule construction activities between 7:00 p.m. and 7:00 a.m. Monday through Friday, 5:00 p.m. and 8:00 a.m. on Saturday, or at any time on Sunday or federal holidays. Schedule hours will be verified during City inspection.</p>	<p>Building and Safety Division; Contractor</p>
N-3	<p>A blasting plan will be prepared by the blasting engineer, which will include measures to reduce the magnitude and effect of blasting noise at nearby noise-sensitive land uses to the extent practicable. These measures include selection of individual charge weight, charge depth, and charge timing delay.</p>	Prior to and during construction	<p>The applicant will retain a blasting engineer to prepare a blasting plan prior to blasting activities, including measures to reduce the magnitude and effect of blasting noise at nearby noise-sensitive land uses to the extent practicable. The blasting plan will be reviewed and approved by the City. Measures identified in the blasting plan shall be adhered to during construction activities.</p>	<p>Building and Safety Division; Project Applicant; Blasting Engineer</p>
N-4	<p>A minimum of one week prior to blasting activities, nearby residences and businesses will be notified of the pending blasting activities. In addition, signs will be posted onsite with notification of the pending blasting activities.</p>	Prior to blasting activities	<p>At least one week or more prior to initiation of blasting activities, the applicant will notify nearby residences and business of the planned activities. The applicant will also post signs with notification of the activities onsite at the same time. Verification of this notification will be</p>	<p>Building and Safety Division; Project Applicant</p>

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
provided by the applicant to the City.				
N-5	Operations in all buildings in the project that involve use of noise producing equipment, including trucks and other vehicles, would be limited to normal business hours (8 a.m. to approximately 6 p.m.).			
<b>RECREATION</b>				
REC-1	<p>The applicant will pay Local Park Development Fees in accordance with Section 16.60 of the City of Riverside Municipal Code prior to issuance of grading permits by the City of Riverside (City of Riverside 2007m). In addition, Regional Parks and Reserve Parks Development Fees must be paid prior to the issuance of a building permit for new development to comply with Section 16.44 of the Riverside Municipal Code (City of Riverside 2007l). In accordance with Section 16.44.070 of the City Municipal Code, fees to support Regional Parks will be offset through dedication/donation of 36.23 acres of land by the developer to the City of Riverside Parks, Recreation, and Community Services Department. (City of Riverside 2007l)</p> <p>The project proposes to dedicate 36.23 acres for inclusion within the City’s Sycamore Canyon Wilderness Park site; therefore, reduction of development fees is warranted. Dedication of land and payment of reduced development fees, if any apply, will ensure that impacts to recreational opportunities are minimized.</p>	Prior to the issuance of grading permits; Prior to issuance of building permits	The applicant will pay Local Park Development Fees to the City prior to issuance of grading permits by the City. Reduced Regional Parks and Reserve Parks Development Fees will be assessed by the City based on the 36.23 acres of land to be dedicated by the applicant. Reduced fees must be paid prior to issuance of building permits. Receipt of fee payments will be provided by the City to the applicant.	Planning Division; Project Applicant
REC-2	The grading plans for all grading of slopes facing	During project	The applicant and/or contractor will develop	City Public

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	the Sycamore Canyon Wilderness Park will be approved by the City Public Works Department and the Planning Division prior to issuance of a grading permit to ensure that contour grading is implemented.	design; Prior to issuance of a grading permit	grading plans including contour grading for all slopes facing Sycamore Canyon Wilderness Park and submit them to the City for approval. Plans will be approved by the City prior to the issuance of a grading permit. The contractor will follow all approved grading plans during construction.	Works Department and Planning Division; Project Applicant; Contractor
REC-3	The boundary of the business park will be buffered from adjacent park uses through the installation of a vegetation buffer. The landscape plan and irrigation plans used to create the buffer will be approved by the City Planning Division prior to issuance of building permits. The landscape plan review and approval by the City will ensure project compliance with the native plant requirements set forth in the Western Riverside MSHCP (mitigation measures BIO-25, and BIO-26) and ensure that an appropriate visual buffer is provided by the species designated in the plan. Review of the irrigation plan will ensure that irrigation runoff into the adjacent Wilderness Park is minimized.	During project design; Prior to issuance of a grading permit	The landscape plan (to be prepared for measures AQ-12, BIO-24, BIO-25, and BIO-26) will include details of the vegetation buffer to be installed between the boundary of the business park and adjacent park uses. The plan for the buffer will also ensure that the plant requirements of the Western Riverside MSHCP are incorporated and that the species included provide an appropriate visual buffer. All irrigation plans will be included in the landscape plan for approval by the City Planning Division. The City will issue a grading permit only after plans have been approved. The contractor will follow all approved plans during construction.	Planning Division; Project Applicant; Contractor
<b>TRAFFIC</b>				
TRN-1	Submit a construction Traffic Management Plan to the City for approval.	Prior to construction, during construction	The applicant will develop a construction Traffic Management Plan and provided it to the City for approval. The contractor will be required to comply with all requirements of the plan during construction activities.	City Traffic Engineer; Project Applicant; Contractor
TRN-2	Construct San Gorgonio Drive from Alessandro Boulevard to Mount Baldy Drive at its ultimate half-section width including landscaping and parkway improvements in conjunction with development.	Prior to issuance of a grading permit; during construction	The applicant will design the construction of San Gorgonio Drive from Alessandro Boulevard to Mount Baldy Drive at its ultimate half-section width including landscaping and parkway improvements. All proposed plans will be	City Traffic Engineer; Project Applicant; Contractor

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
TRN-3	Construct Alessandro Boulevard from the west project boundary to San Gorgonio Drive at its ultimate half-section width as an arterial (120 foot right-of-way) including landscaping and parkway improvements in conjunction with development.	Prior to issuance of a grading permit; during construction	subject to approval by the City Traffic Engineer. The construction of San Gorgonio Drive will take place concurrent with the construction of the proposed project and will be complete prior to operation of the proposed building.  The applicant will design the construction of Alessandro Boulevard from the west project boundary to San Gorgonio Drive at its ultimate half-section width as an arterial including landscaping and parkway improvements. All proposed plans will be subject to approval by the City Traffic Engineer prior to the issuance of a grading permit. The construction activities of Alessandro Boulevard will take place concurrent with the construction of the proposed project and will be complete prior to operation of the proposed building.	City Traffic Engineer; Project Applicant; Contractor
TRN-4	Install raised islands on Alessandro Boulevard at San Gorgonio Drive and at the project driveway fronting Alessandro Boulevard to ensure that all truck traffic entering and exiting the site must use Alessandro Boulevard easterly of the project. Truck traffic shall be prohibited from making left-turn movements onto San Gorgonio Drive from eastbound Alessandro Boulevard and from making right-turn movements onto westbound Alessandro Boulevard from San Gorgonio Drive. Driveways fronting Alessandro Boulevard will be restricted to right-turn ingress and egress only. These driveways will also be restricted to prohibit truck traffic from exiting onto westbound Alessandro Boulevard.	Prior to issuance of a grading permit; during construction	The project applicant will design street improvements and traffic control measures for Alessandro Boulevard (at San Gorgonio Drive) and at the project driveway to ensure truck traffic entering and exiting must use Alessandro Boulevard easterly. In addition, plans will include measures to prohibit truck traffic from left-turns onto San Gorgonio Drive or right-turns onto westbound Alessandro Boulevard. Driveways will also be restricted. All proposed improvements and traffic control measures will be subject to approval by the City Traffic Engineer to ensure compliance with these requirements. All features will be installed during construction and will be complete prior to operation of the proposed building.	City Traffic Engineer; Project Applicant

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
TRN-5	Onsite traffic signing and striping will be implemented in conjunction with detailed construction plans for the project.	Prior to issuance of a grading permit; during construction	The project applicant will design onsite traffic signing and striping plans and include the plans in the detailed construction plans for the project. Traffic signs and striping will be subject to approval by the City Traffic Engineer. All signage and striping will be installed during construction and will be complete prior to operation of the proposed building.	City Traffic Engineer; Project Applicant
TRN-6	Sight distance at the project accesses will be reviewed with respect to California Department of Transportation/City of Riverside standards in conjunction with the preparation of final grading, landscaping, and street improvement plans.	Prior to issuance of a grading permit	In conjunction with the preparation of final grading, landscaping, and street improvement plans, the project applicant will design traffic plans including the sight distance at access points to the project site. The sighting distances will be reviewed with respect to Caltrans and City standards. Sight distance will be evaluated and subject to approval by the City Traffic Engineer prior to the issuance of a grading permit.	Planning Division and City Traffic Engineer; Project Applicant
TRN-7	Participate in the phased construction of offsite traffic signals through payment of traffic signal mitigation fees. The traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.	Prior to building permit issuance	The project applicant will participate in the phased construction of offsite traffic signals through payment of traffic signal mitigation fees. Implementation of the improvements will be conducted by the City, as needed but including an interconnect of traffic signals at buildout.	City Traffic Engineer; Project Applicant
TRN-8	The developer will submit a construction traffic management plan for review and acceptance by the City prior to issuance of any permits. The plan will include signage or other acceptable measures to prohibit truck traffic from making left-turn movements onto San Gorgonio Drive from eastbound Alessandro Boulevard and from making right-turn movements onto westbound Alessandro Boulevard from either San Gorgonio	Prior to issuance of a grading permit	The applicant will submit a construction traffic management plan for review and acceptance by the City prior to issuance of any permits. The plan which is also required under measure TRN-1 will include turning restrictions (TRN-4) and signage requirements (TRN-5/TRN-9).	City Traffic Engineer; Project Applicant

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	Drive or any driveway fronting Alessandro Boulevard.			
TRN-9	Onsite traffic signing and striping will be implemented in conjunction with detailed construction plans for the project.	Prior to issuance of a grading permit; during construction	Same as measure TRN-5 (see above).	City Traffic Engineer; Project Applicant
TRN-10	Sight distance at the project accesses will be reviewed with respect to California Department of Transportation/City of Riverside standards in conjunction with the preparation of final grading, landscaping and street improvement plans.	Prior to issuance of a grading permit	Same as measure TRN-6 (see above).	Planning Division; City Traffic Engineer; Project Applicant
TRN-11	Contribute a fair share (6.1%) towards the following infrastructural improvement measures at Trautwein Road and Alessandro Blvd: <ul style="list-style-type: none"> <li>• Construct an additional northbound left turn lane.</li> <li>• Construct an additional eastbound through lane.</li> </ul>	Prior to map recordation or issuance of any building permits	The project applicant will submit payment to the City of Riverside Department of Public Works for the full amount owed for all fair-share contributions to traffic improvements specified in Mitigation Measures TRN-11 through -14.	Project Applicant; City Traffic Engineer
TRN-12	Contribute a fair share (7.8%) towards the installation of a northbound right turn overlap on Mission Grove Parkway at Alessandro Blvd.	Prior to map recordation or issuance of any building permits	Same as measure TRN-11 (see above).	Project Applicant; City Traffic Engineer
TRN-13	Contribute a fair share (16.1%) towards the following infrastructural improvement measures at San Gorgonio Drive and Alessandro Blvd: <ul style="list-style-type: none"> <li>• Construct a southbound left turn lane.</li> <li>• Construct an additional eastbound through lane.</li> <li>• Construct an additional westbound through</li> </ul>	Prior to map recordation or issuance of any building permits	Same as measure TRN-11 (see above).	Project Applicant; City Traffic Engineer

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	lane.			
TRN-14	<p>Contribute a fair share (7.8%) towards the following infrastructural improvement measures at Sycamore Canyon Blvd. and Alessandro Blvd:</p> <ul style="list-style-type: none"> <li>• Construct a northbound left turn lane.</li> <li>• Construct a northbound through lane.</li> <li>• Construct a northbound dual right turn lane.</li> <li>• Install a northbound right turn overlap.</li> <li>• Construct an additional eastbound through lane.</li> </ul>	Prior to map recordation or issuance of any building permits	Same as measure TRN-11 (see above).	Project Applicant; City Traffic Engineer
TRN-15	<p>Contribute a fair share (7.4%) towards the following infrastructural improvement measures at Alessandro Blvd. and the I-215 Northbound Ramp:</p> <ul style="list-style-type: none"> <li>• Construct an additional eastbound left turn lane.</li> <li>• Construct an additional westbound through lane.</li> </ul> <p>Note that the project is responsible for paying only its “fair share” for the recommended infrastructural improvements because it would not be solely responsible for the impacted intersections. The impacts would also occur because current infrastructure does not adequately support existing traffic volume, and in addition, areawide traffic is expected to increase.</p>	Prior to map recordation or issuance of any building permits	The project applicant will submit payment to the City of Riverside Department of Public Works for the full amount owed for all fair-share contributions to traffic improvements specified	Project Applicant; City Traffic Engineer;
TRN-16	Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer’s fair share participation to install traffic signal interconnect	Prior to map recordation or issuance of any	Same as measure TRN-15 (see above).	Project Applicant; City Traffic

<b>Mitigation Measure No.</b>	<b>Mitigation Measures</b>	<b>Timing of Implementation</b>	<b>Method of Implementation</b>	<b>Responsible Party</b>
	<p>between Barton Street and the I-215 Freeway. The interconnect facilities will consist of underground fiber optic cable in conduits or other suitable alternative as determined by the City. The project's estimated contribution to the impact is 50%. The total estimated cost for this mitigation measure is \$168,000. The cash payment for the project's estimated fair share participation of 50% is \$84,000.</p>	<p>building permits</p>		<p>Engineer;</p>
<p>TRN-17</p>	<p>Prior to map recordation or issuance of any building permits, the applicant will submit cash payment for the developer's fair share participation to widen the southerly side of Alessandro Boulevard to provide a free right-turn lane from eastbound Alessandro Boulevard to the I-215 Freeway southbound on ramp. The project's estimated contribution to the impact is 25%. The total estimated cost for this mitigation measure is \$180,000. The cash payment for the project's estimated fair share participation of 25% is \$45,000.</p>	<p>Prior to map recordation or issuance of any building permits</p>	<p>Same as measure TRN-15 (see above).</p>	<p>Project Applicant; City Traffic Engineer;</p>
<p>TRN-18</p>	<p>Prior to occupancy, the applicant will install closed-circuit television (CCTV) cameras at the intersection of San Gorgonio Drive and Alessandro Boulevard, including necessary hardware and appurtenances to enable video transmission to the City's Traffic Management Center (TMC) via wireless medium, which includes CDMA Radio or Wi-Fi with connection to the City's Traffic Management Center. The estimated cost to install the facilities is \$15,000. The applicant has the option to enter into a reimbursement agreement with the City to receive up to a 50% refund of their costs to install the improvements upon receipt of fair</p>	<p>Prior to occupancy</p>	<p>The project applicant will either hire a contractor to install a CCTV system at the specified intersection or, if the City has already installed such CCTV system has already been installed, submit a check to City covering half of the costs incurred by the City for the installation. If the former occurs, then the City will reimburse the applicant for half of the costs of installation, pursuant to a forthcoming agreement made for such purpose.</p>	<p>Project Applicant; Contractor; City Traffic Engineer</p>

Mitigation Measure No.	Mitigation Measures	Timing of Implementation	Method of Implementation	Responsible Party
	<p>share payment for these facilities from subsequent development of the adjacent property.</p> <p>In the event the CCTV cameras are installed in conjunction with an adjacent development, this project will be required to submit a cash payment for 50% of the cost of the improvements as the developer's fair share participation. The cash payment for the project's estimated fair share participation of 50% is \$7,500.</p>			
TRN-19	<p>In the event that the Alessandro Boulevard EB/SB I-15 Ramp Improvements Project is not constructed by 2013 (TRN-17), the City of Riverside will restripe the I-215 Freeway NB ramp at Alessandro Boulevard to create a dual eastbound left lane and shared westbound right through lane.</p>	<p>Prior to January 2013</p>	<p>The City will submit plans for restriping the referenced ramp to Caltrans for their approval, and conduct the restriping.</p>	<p>City Traffic Engineer; Caltrans</p>

**HYDROLOGY AND WATER QUALITY**

WTR-1	<p><b>Stormwater Pollution Prevention Plan.</b> Prior to construction or any ground disturbing activities, coverage under the General Construction NPDES permit will be obtained and a project-specific SWPPP will be developed for the proposed project. BMPs will be implemented on site to capture polluted runoff from the proposed project site and will be incorporated into the construction contracts. BMPs implemented during the construction phase will include:</p> <ul style="list-style-type: none"> <li>▪ proper stockpiling and disposal of demolition debris, concrete, and soil;</li> </ul>	<p>Prior to ground disturbing activities</p>	<p>Coverage under the General Construction NPDES permit will be obtained and a SWPPP will be developed prior to ground disturbing activities. BMPs, to be detailed in the SWPPP, will be implemented onsite to capture polluted runoff from the proposed project site. The final design of BMPs will provide maximum runoff containment and contaminant removal and will represent the best available technology that is economically achievable. BMPs will be incorporated into design specifications and the construction contracts and will be implemented by the contractor. The SWPPP shall be submitted to the City Engineer for review and approval. Implementation and effectiveness of</p>	<p>City Engineer; Project Applicant; Contractor</p>
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Mitigation Measure No.	Mitigation Measures	Timing of Implementation	Method of Implementation	Responsible Party
	<ul style="list-style-type: none"> <li>▪ protecting existing storm drain inlets;</li> <li>▪ stabilizing disturbed areas (soil stabilizers);</li> <li>▪ erosion controls (gravel bag berms and straw bale barriers);</li> <li>▪ proper management of construction materials;</li> <li>▪ waste management;</li> <li>▪ aggressive litter control; and</li> <li>▪ sediment controls (silt fencing).</li> </ul> <p>The final design of BMPs by the project engineer will provide maximum runoff containment and contaminant removal and will represent the best available technology that is economically achievable. Once chosen, these BMPs will be incorporated into design specifications and the construction contracts. Implementation and effectiveness of the SWPPP and the BMPs will be monitored by the RWQCB through site inspections under the General Construction NPDES Permit.</p>		<p>the SWPPP and the BMPs will be monitored by the City Engineer.</p>	
WTR-2	<p><b>Project-Specific Water Quality Management Plan.</b> Prior to issuance of grading permits, a final WQMP will be submitted to the City of Riverside for review and approval prior to construction. Maintenance of the basin will be incorporated into the CC&amp;Rs for the development and conducted by the future occupants of the business park.</p>	<p>Prior to issuance of grading permits</p>	<p>A WQMP will be developed by the applicant and submitted to the City for review and approval prior to construction. The contractor will construct the site in accordance with this plan. Maintenance of the basin will be incorporated into the CC&amp;Rs for the development and conducted by the future occupants of the business park. The WQMP shall be submitted to the City Engineer for review and approval.</p>	<p>City Engineer; Project Applicant; Contractor</p>



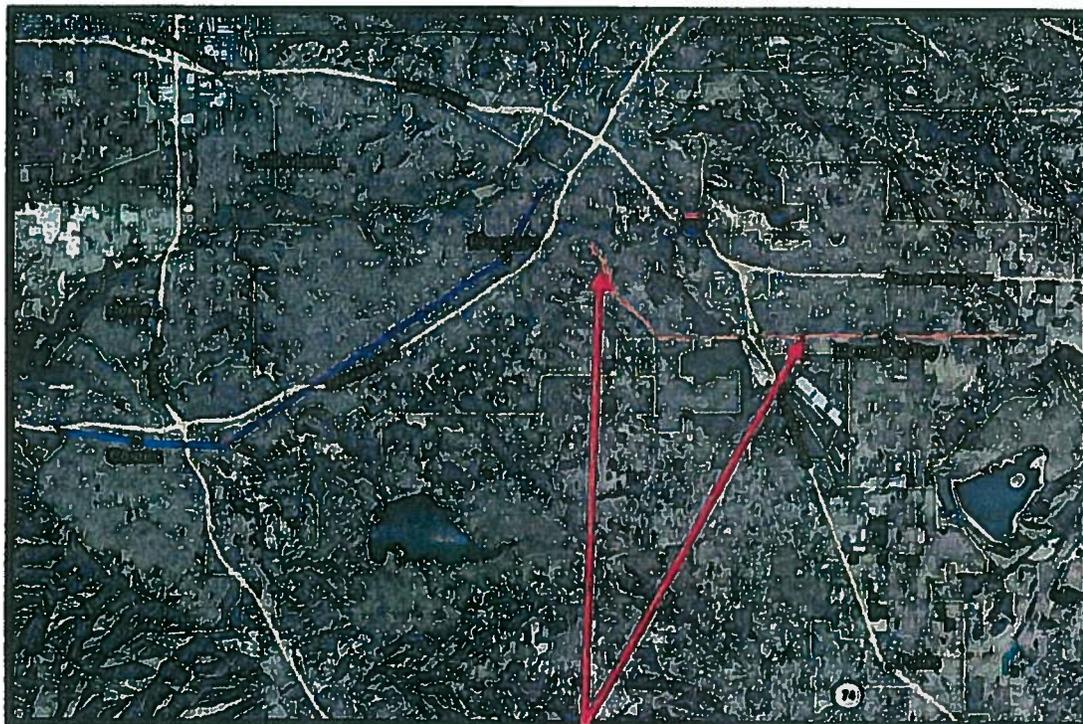
**Appendix A**  
**Multi-Jurisdictional Traffic Signal Synchronization**  
**Project Information**



# **Multi-Jurisdictional Traffic Signal Synchronization**

*Alessandro Boulevard Corridor*

## **PROJECT 1**



**Project 1**



**Riverside County Transportation Commission**  
4080 Lemon Street, 3<sup>rd</sup> Floor  
Riverside, CA 92502



**City of Moreno Valley**  
14177 Frederick Street  
Moreno Valley, CA 92552



**City of Riverside**  
3900 Main Street  
Riverside, CA 92522

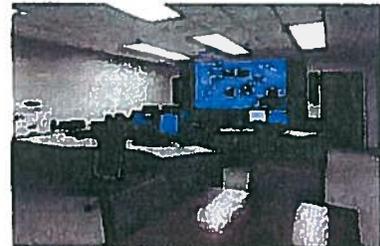
## **INTRODUCTION**

The cities of Corona, Moreno Valley and Riverside represent a population of nearly 628,000. The Southern California Association of Governments (SCAG) projects the population to increase to 812,000 in 2035. All three cities have all experienced dramatic growth in recent history. The impact on traffic in these communities has required innovative and technological approaches to moving commuters through their jurisdictions. State Route 91 and State Route 60 provide the only major east/west freeways and Interstate 15 and 215 provide the only major north/south freeways in Riverside County. These major freeway routes create a "web type" route within the City of Riverside, which creates a unique problem when commuters today are always looking for the quickest travel route. The major corridors of Alessandro Boulevard, Magnolia Avenue and Sixth Street, and Van Buren Boulevard have become popular alternatives to these well traveled freeways, which represents a total length of nearly 39 miles and are some of the busiest arterials in Riverside County.

Traffic signal synchronization is the most cost efficient way to in reducing delay on a roadway. Reducing delay improves gas mileage, reduces gas usage, reduces pollution, and of course saves time. In order to accurately synchronize traffic signals, they must be interconnected and communicate to each other or to a central system. The cities of Corona and Riverside already have invested over



21 million dollars in infrastructure (i.e. Traffic Management Center's, wireless and hardwire communication, traffic



signal controller upgrades, and coordination and communication software. The City of Moreno Valley is well on its way to building their Traffic Management Center. These TMCs allow each agency to monitor and control their local traffic signals and thus maintain traffic signal synchronization. The major issue now faced is how to synchronize and coordinate one city's traffic signals with an adjacent city's traffic signals.

To resolve this issue and to allow for the seamless synchronization of traffic signals on Alessandro Boulevard, Magnolia Avenue and Sixth Street, and Van Buren Boulevard, a Multi-jurisdictional Traffic Signal Synchronization Project was developed as a joint effort by the agencies. This undertaking was broken down into three separate project corridors.

## **PROJECT 1**

### **ALESSANDRO BOULEVARD**

Alessandro Boulevard/Central Avenue, a major arterial, is 9.4 miles in length that traverses through both the City of Riverside and Moreno Valley. It is used as a major route for commuters to travel between SR-91 and I-215, bypassing the 215/60/91 interchange. The Average Daily Traffic (ADT) reaches up to 64,000 vehicles per day within the corridor. It is estimated that there are approximately 450,000 vehicle miles traveled (VMT) on an average weekday within the corridor. This does not take into account "spikes" in traffic volumes from diverted traffic due to freeway incidents and events. It is projected by SCAG that the VMT will increase substantially over the next few years. It is imperative the traffic flow be efficient to minimize traffic delays not only in peak hours, but constantly throughout the day, which will in turn lessen the impact of vehicle emissions within the corridor.

#### **PROJECT GOAL**

Utilize an Interagency Advanced Transportation Management System (ATMS) to provide the efficient progression of traffic within a corridor in response to peak traffic volumes, special events and incidents, and response to major "spikes" in traffic volume. Goal achievement will require the implementation of traffic signal coordination, real time roadway surveillance (CCTV and traffic flow detection), and communication links between the agency's TMC's. The TMC's will also interconnect to Caltrans District 8 TMC for live freeway camera feeds. The Cities currently have a Memorandum of Understanding (MOU) with Caltrans District 8 for fiber optic intertie to the District's TMC.

The project has 3 key elements: (1) Traffic Signal Coordination on the three corridors; (2) Develop coordination timing plans for peak hour, special events, and traffic Incident Management Plans (TIMP)); (3) Communication interface between the agency's TMC's sharing live camera feeds, timing plans, and vehicle volumes and speeds.

To verify project success, the Cities will conduct before and after studies on the corridor. The methodology for the analysis will be travel time based on the criteria set by the Highway Capacity Manual (2000), *Transportation Research Board*, utilizing the "test car" method.

A future element is the integration of Transit Signal Priority (TSP) with the Riverside Transit Agency (RTA) for reducing bus trip times and delays.

To achieve the project's goal, the Cities of Riverside and Moreno Valley are submitting this application (ATTACHED) to the Mobile Source Air Pollution Reduction Review Committee (MSRC) under the Local Government Match Program FY 2008/2009 for Multi-Jurisdictional Traffic Signal Coordination and Synchronization Funding for the Alessandro Boulevard Corridor.

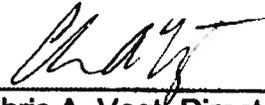
**SUMMARY**

The City of Riverside will be the lead agency under this project with the application being jointly submitted by the City of Riverside and Moreno Valley. Should there be any questions regarding this application, you may contact: Steve Libring, City Traffic Engineer, City of Riverside (951) 826-5368 or Eric Lewis, City Traffic Engineer, City of Moreno Valley (951) 413-3140.

Respectively Submitted:



Tom Boyd, Assistant Director  
City of Riverside, Public Works



Chris A. Vogt, Director  
City of Moreno Valley, Public Works

**Appendix B**  
**Alessandro Boulevard Street Improvement**  
**Project Negative Declaration**



# NEGATIVE DECLARATION

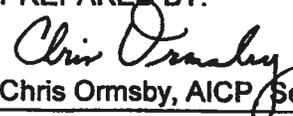
<b>PROJECT TITLE AND FILE NUMBER:</b> Alessandro Boulevard Street Improvement Project	
<b>PROJECT APPLICANT:</b> City of Moreno Valley	<b>TELEPHONE NUMBER:</b> (951) 413-3229
<b>PROJECT LOCATION:</b> The project location would be from the I-215 easterly to Frederick St, approximately an 8,100 square foot segment. The segment from the I-215 to the Old Highway 215 would be within the City of Riverside and unincorporated County of Riverside. The segment from the Old Highway 215 to Frederick Street would be within the City Moreno Valley.	
<b>PROJECT DESCRIPTION:</b> The proposed improvements between the I-215 easterly to the Old Highway 215 would include curb, gutter, and sidewalk improvements, three traffic signal modifications, intersection improvements at Old 215 Road, widening improvements to both sides of Alessandro Boulevard, and median modifications to raised medians. The proposed improvements easterly of the Old Highway 215 to Frederick St. within Moreno Valley would include roadway widening ranging from four to twelve feet, curb, gutter, and sidewalk improvements, landscape median modifications, and full intersection improvements at the intersection of Grant Street and Alessandro Boulevard.	

## FINDING

The City of Moreno Valley has reviewed the above project in accordance with the City of Moreno Valley's Guidelines for the Implementation of the California Environmental Quality Act, and has determined that an Environmental Impact Report need not be prepared because:

- The proposed project will not have a significant effect on the environment.
- Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures described in the attached Initial Study and hereby made a part of this Negative Declaration have been added to the project.

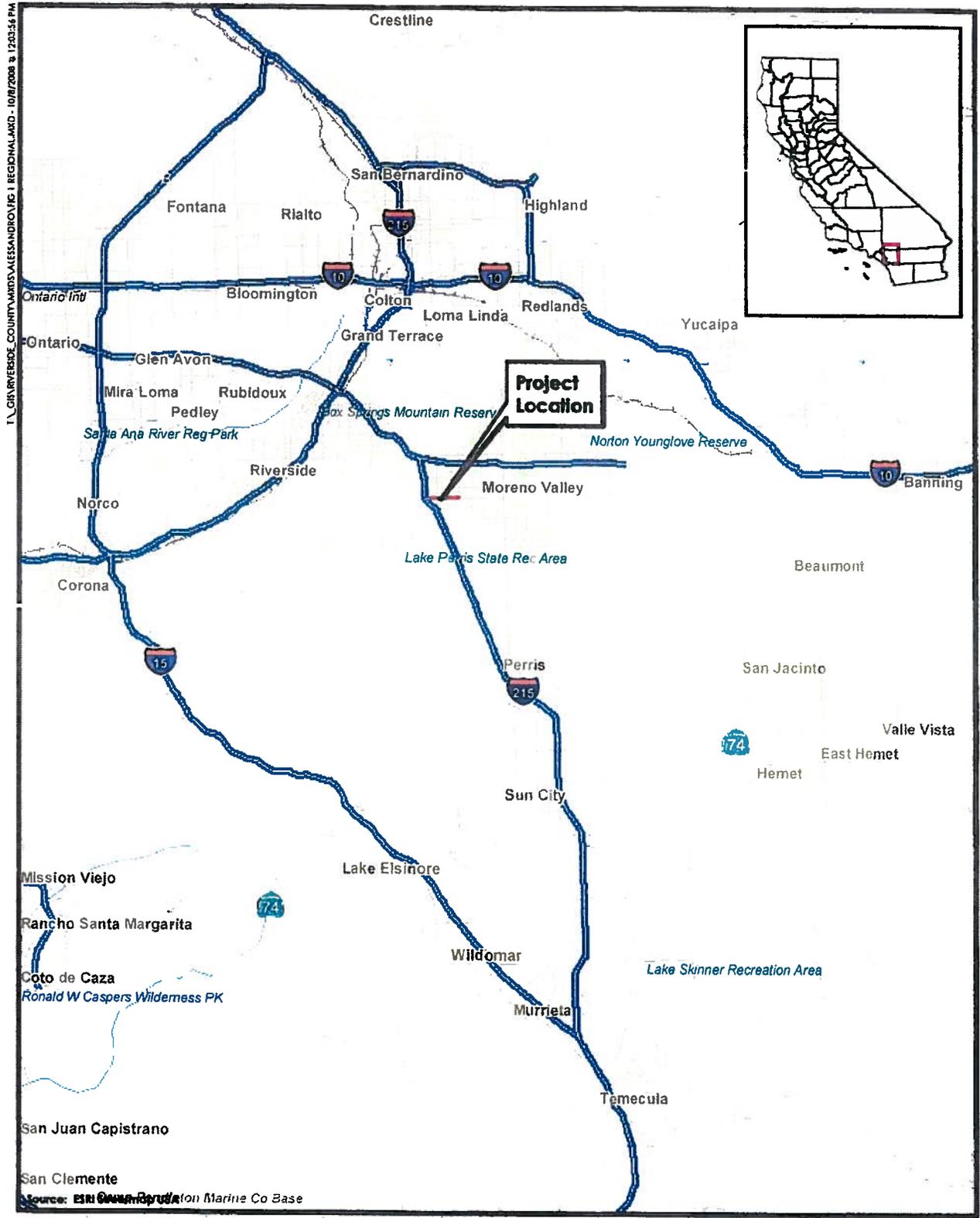
This determination is based upon an Initial Study. The project file, including the Initial Study and related documents is available for review during normal business hours (8:00 a.m. to 5:00 p.m. Monday through Friday) at the City of Moreno Valley, Community Development Department, Planning Division, 14177 Frederick Street, Moreno Valley, California 92553, Telephone (951) 413-3206.

<b>PREPARED BY:</b>  Chris Ormsby, AICP Senior Planner	<b>DATE:</b> February 19, 2009
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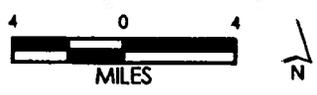
## NOTICE

The public is invited to comment on the Negative Declaration. The appropriateness and adoption of the Negative Declaration is considered at the time of project approval in light of comments received.

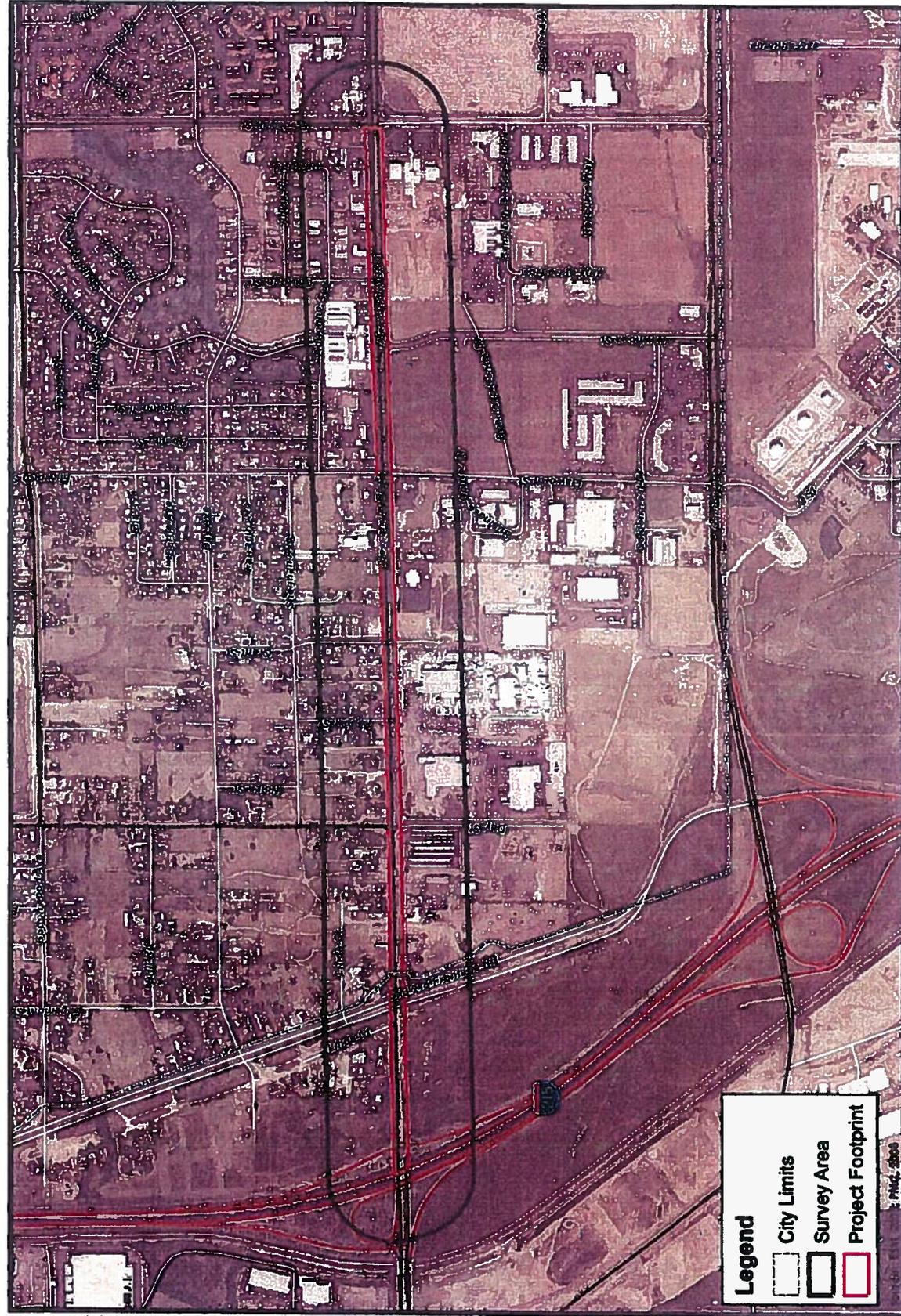
<b>DATE ADOPTED:</b>	<b>BY:</b>
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**Figure 2-1**  
Regional Map  
**PMC**



T:\OR\IN\SIDE COUNTY\WDS\ALESSANDRO\FIG 2-3 SURVEY AREA.AXD - 1/20/2009 @ 2:18:31 PM

**Figure 2-3**  
Survey Area  
**PMC**

## 2.0 PROJECT DESCRIPTION

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### PREVIOUS ENVIRONMENTAL STUDIES AND DOCUMENTS

Portions of the Alessandro Boulevard Street Improvement Project have been previously evaluated in the City of Moreno Valley General Plan Final Environmental Impact Report (2006). The City of Riverside also evaluated Alessandro Boulevard in Riverside General Plan 2025 and Final Program Environmental Impact Report for the City of Riverside General Plan (2007).

Related traffic improvement projects in the vicinity of Alessandro Boulevard are as follows:

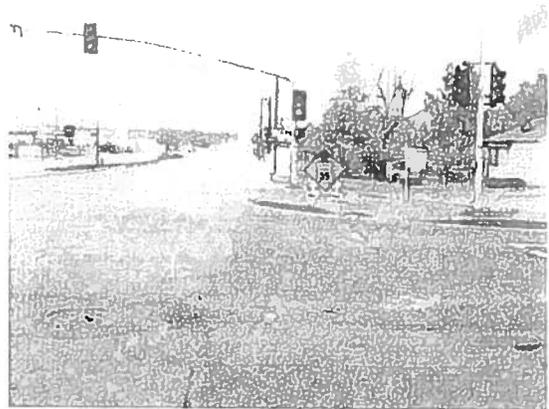
- Plans for roadway improvements to Day Street north of Alessandro Boulevard.
- Signage and striping improvements necessary to reconfigure all lane approaches at the intersection of Old 215 Road and Alessandro Boulevard.
- Plans for additions/modifications to the Civic Center Campus, located at the southwest corner of Alessandro Boulevard and Frederick Street, including the expansion of the City Police Department Vehicle Parking Area and a new Public Library Facility.

### 2.3 PROJECT PURPOSE AND OBJECTIVES

The purpose of the project is to construct street improvements for the 8,100-foot segment of Alessandro Boulevard from I-215 to the west, to Frederick Street to the east. These improvements would include pre-cast concrete (PCC) curbs, gutters, sidewalks and driveways, extensions and modifications to existing raised landscape medians, replacement of non-ADA conforming PCC access ramps, construction of PCC cross gutters and spandrels, modifications to existing traffic signals and local roadway storm drain improvements.

Currently, Alessandro Boulevard in the City of Moreno Valley consists of the following within a 134-foot wide right-of-way:

- Two (2) 12-foot wide travel lanes in both the east-bound and westbound direction.
- One (1) 14-foot wide travel lane in both the eastbound and westbound direction.
- One (1) 8-foot wide paved shoulder lined with concrete curb, gutter (2-foot wide gutter pan), 5.5-foot wide sidewalk and 6-foot wide parkway in both the eastbound and westbound directions.
- An 18-foot wide raised landscape median separating eastbound traffic from westbound traffic.



In the City of Riverside, Alessandro Boulevard consists of the following within a 153' right-of-way:

- Three (3) thru-lanes in both the east-bound and westbound direction; 106' of paved width.

- Two (2) raised medians of varying width; the first median is west of Old 215 Road and extends approximately 450' to the west and second median begins 550' west of Old 215 Road and extends 275' to the west.
- PCC curb and gutter line both the eastbound and westbound directions with varying widths of sidewalk on the north side of Alessandro Boulevard. There is no sidewalk on the southerly side of Alessandro Boulevard.

### 2.4 PROJECT CHARACTERISTICS

Proposed widening improvements along the northerly side of Alessandro Boulevard would be limited to a 3,300-foot segment of Alessandro Boulevard beginning just east of Old 215 Road and continuing east to existing curb, gutter and sidewalk improvements located approximately 600 feet east of Grant Street. Proposed improvements include the following:

- Roadway widening ranging from 4-feet to 12-feet wide;
- PCC curb, gutter and sidewalk improvements;
- Removal of existing access ramps, spandrels and cross gutters at Pepper Street, Day Street and, possibly, Old 215 Road;
- PCC curb, gutter and sidewalk extensions from existing improvements on Grant Street to Alessandro Boulevard;
- Full intersection improvements at the intersection of Grant Street and Alessandro Boulevard;
- Parking lot improvements at Pepper Street (Mexican restaurant and gas station),
- Parking lot improvements 500 feet east of Old 215 (Tattoo Shop, Liquor Store and Auto Mechanic Shop) and 200 feet east of Old 215 (Furniture Store);
- 125 feet of retaining wall along the northerly right-of-way line of Alessandro Boulevard east of Day Street (4' - 6' high);
- 120 feet of retaining wall along the northerly right-of-way line of Alessandro Boulevard west of Grant Street (4' - 6' high); and
- Relocation of numerous overhead and underground utilities, including existing overhead lines and power poles along the northerly side of Alessandro Boulevard (specifically the power pole at the northwest corner of Alessandro Boulevard and Pepper Street).

Improvements along the northerly side of Alessandro Boulevard from I-215 east to Old Road 215, approximately 1,500 linear feet include:

- PCC curb, gutter and sidewalk improvements;
- Three (3) traffic signal modifications (I-215 on/off ramp, commercial driveway and Old 215 Road);
- Intersection improvements at Old 215 Road;

## **2.0 PROJECT DESCRIPTION**

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- Widening improvements to both sides of Alessandro Boulevard;
- Median modifications to both raised medians

## **2.5 PROJECT CONSTRUCTION**

The project would be constructed in accordance with the Public Contracts Code of the State of California, the State of California Department of Transportation Standard Plans and Standard Specifications, Project Plans, and Project Special Provisions under development by the City of Moreno Valley.

Construction would include grubbing/clearing, grading, paving, and striping, using both heavy-duty and light-duty construction equipment. Specific equipment to be utilized may include, but is not limited to, track-mounted excavators, dump trucks, backhoes, paving equipment, graders, compactors, concrete trucks, dozers and rollers. Construction activities are expected to commence in January 2011. No roadway closures are anticipated to occur during the project construction. Temporary fencing may be installed around some of the staging areas in order to avoid disturbance of adjoining areas and/or contain construction equipment after-hours.

The project is required to comply with the State of California Standard Specifications for Construction of Local Streets and Roads (July 2002), written by the State of California Department of Transportation. The project must also conform with applicable local, regional, and state regulations, including but not limited to the South Coast Air Management District regulations, the City of Moreno Valley's General Plan and Municipal Code, and the City of Riverside's General Plan and Municipal Code.

**Appendix C**  
**Alessandro Business Park Traffic Conditions**  
**Table**



LOS and Level of Significance With and Without Project (2010)

Intersection	Existing Conditions <sup>(1)</sup>		Existing + Project (2010) <sup>(2)</sup>		Existing + Project + Ambient Growth (2010) <sup>(2)</sup>		Existing + Project + Ambient Growth + Cumulative (2010) <sup>(2)</sup>			Existing + Project + Ambient Growth + Cumulative with Mitigation (2010) <sup>(2)</sup>		
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Significant Impact	Delay	LOS	Significant Impact
Trautwein Rd/ Alessandro Bl	AM	D	39.2	D	40.3	D	79.9	E	Yes	30.9	C	No
	PM	E	59.9	E	61.2	E	106.3	F	No <sup>(3)</sup>	27.6	C	No
Mission Grove/ Alessandro Bl	AM	C	33.4	C	34.5	C	49.3	D	No <sup>(3)</sup>	40.7	D	No
	PM	D	38.1	D	39.6	D	60.8	E	Yes	39.0	D	No
San Geronio/ Alessandro Bl	AM	B	29.5	C	34.6	C	351.7	F	Yes	23.1	C	No
	PM	B	30.1	C	35.2	D	325.5	F	No <sup>(3)</sup>	36.1	D	No
Sycamore Cyn/ Alessandro Bl	AM	B	22.4	C	26.9	C	422.3	F	Yes	25.1	C	No
	PM	B	26.2	C	30.2	C	244.5	F	Yes	27.9	C	No
I-215 SB Ramp/ Alessandro Bl	AM	B	16.4	B	17.6	B	16.1	B	No	N/A	N/A	N/A
	PM	B	17.3	B	18.3	B	28.2	C	No	N/A	N/A	N/A
I-215 NB Ramp/ Alessandro Bl	AM	D	39.6	D	41.0	D	138.9	F	Yes	35.1	D	No
	PM	C	27.2	C	29.8	C	126.4	F	Yes	26.0	C	No

(1) Alessandro Bl was a 4 lane roadway under existing conditions. In 2009 the roadway was improved to a 6 lane arterial with intersection improvements at Sycamore Canyon Boulevard

(2) Under 2010 scenario, Alessandro Blvd. and Sycamore Canyon Blvd. are improved by the City

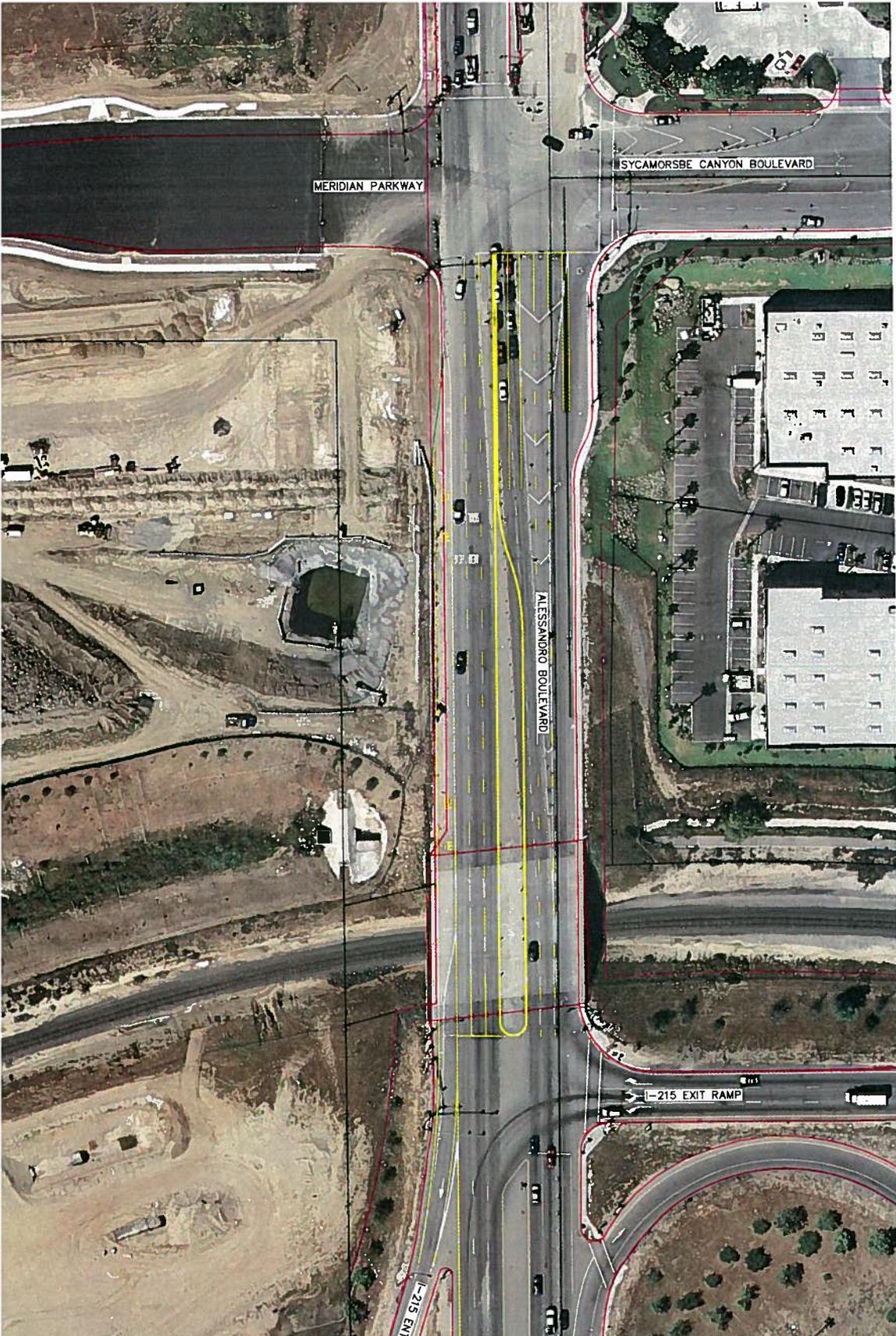
(3) Although no significant impact, improvements are already programmed by the City

N/A – No impact, therefore mitigation is not required



**Appendix D**  
**Alessandro Boulevard NB/SB I-215 Ramp**  
**Improvements Project Plan**





MERIDIAN PARKWAY

SYCAMORSBE CANYON BOULEVARD

ALESSANDRO BOULEVARD

I-215 EXIT RAMP

I-215 ENTR



# **Appendix E**

## **Synchro Analysis**



# AM EXISTING

## HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Fr <sub>t</sub>		1.00	0.85		1.00	0.85				1.00		0.85
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	891	538	0	1995	295	0	0	0	157	0	293
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	968	585	0	2168	321	0	0	0	171	0	318
RTOR Reduction (vph)	0	0	247	0	0	136	0	0	0	0	0	4
Lane Group Flow (vph)	0	968	338	0	2168	185	0	0	0	171	0	314
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.19			c0.43							
v/s Ratio Perm		0.21			0.12					0.05		c0.20
v/c Ratio		0.33	0.37		0.74	0.20				0.15		0.59
Uniform Delay, d <sub>1</sub>		9.9	10.2		14.0	9.1				21.0		24.9
Progression Factor		1.13	3.31		0.69	0.78				1.00		1.00
Incremental Delay, d <sub>2</sub>		0.3	1.0		1.2	0.4				0.3		4.9
Delay (s)		11.5	34.8		10.8	7.5				21.3		29.8
Level of Service		B	C		B	A				C		C
Approach Delay (s)		20.2			10.4			0.0			26.8	
Approach LOS		C			B			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay		15.5			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		63.4%			ICU Level of Service			B				
Analysis Period (min)		15										

c Critical Lane Group

AM EXISTING  
 HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	5	1462	1947	8	12	3
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1589	2116	9	13	3
RTOR Reduction (vph)	0	0	0	3	0	2
Lane Group Flow (vph)	5	1589	2116	6	13	1
Turn Type	Prot		Perm		pm+ov	
Protected Phases	7	4	8		6	7
Permitted Phases				8		6
Actuated Green, G (s)	8.0	62.7	50.2	50.2	18.3	26.3
Effective Green, g (s)	8.5	63.2	50.7	50.7	18.8	27.3
Actuated g/C Ratio	0.09	0.70	0.56	0.56	0.21	0.30
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	167	2485	1994	892	370	551
v/s Ratio Prot	0.00	c0.45	c0.60		c0.01	0.00
v/s Ratio Perm				0.00		0.00
v/c Ratio	0.03	0.64	1.06	0.01	0.04	0.00
Uniform Delay, d1	37.0	7.2	19.6	8.6	28.4	21.9
Progression Factor	0.43	1.49	0.46	0.02	1.00	1.00
Incremental Delay, d2	0.3	1.0	35.2	0.0	0.2	0.0
Delay (s)	16.2	11.8	44.3	0.2	28.5	21.9
Level of Service	B	B	D	A	C	C
Approach Delay (s)		11.8	44.2		27.3	
Approach LOS		B	D		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			30.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

# AM EXISTING

## HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 		 	 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0				4.0		4.0
Lane Util. Factor	1.00	0.91			0.91	1.00				0.97		1.00
Fr <sub>t</sub>	1.00	1.00			1.00	0.85				1.00		0.85
Fl <sub>t</sub> Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1770	5085			5085	1583				3433		1583
Fl <sub>t</sub> Permitted	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (perm)	1770	5085			5085	1583				3433		1583
Volume (vph)	189	1257	0	0	1886	392	0	0	0	79	0	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	205	1366	0	0	2050	426	0	0	0	86	0	107
RTOR Reduction (vph)	0	0	0	0	0	208	0	0	0	0	0	73
Lane Group Flow (vph)	205	1366	0	0	2050	218	0	0	0	86	0	34
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.0	49.0			46.0	46.0				4.0		24.0
Effective Green, g (s)	7.0	49.0			46.0	46.0				4.0		24.0
Actuated g/C Ratio	0.08	0.54			0.51	0.51				0.04		0.27
Clearance Time (s)	4.0	4.0			4.0	4.0				4.0		4.0
Lane Grp Cap (vph)	138	2769			2599	809				153		422
v/s Ratio Prot	c0.12	0.27			c0.40					c0.03		c0.01
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.49	0.49			0.79	0.27				0.56		0.08
Uniform Delay, d <sub>1</sub>	41.5	12.8			18.0	12.5				42.1		24.7
Progression Factor	1.08	0.31			0.41	0.05				1.00		1.00
Incremental Delay, d <sub>2</sub>	245.8	0.5			1.7	0.6				14.1		0.4
Delay (s)	290.4	4.4			9.1	1.1				56.2		25.1
Level of Service	F	A			A	A				E		C
Approach Delay (s)		41.7			7.8			0.0			39.0	
Approach LOS		D			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.8				HCM Level of Service					C
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			60.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c	Critical Lane Group											

# AM EXISTING

## HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1854	1854	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1854	1854	
Volume (vph)	34	1059	30	158	1907	107	113	241	224	125	146	5	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	37	1151	33	172	2073	116	123	262	243	136	159	5	
RTOR Reduction (vph)	0	0	22	0	0	63	0	0	192	0	2	0	
Lane Group Flow (vph)	37	1151	11	172	2073	53	123	262	51	136	162	0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			8			2				
Actuated Green, G (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Effective Green, g (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Actuated g/C Ratio	0.04	0.32	0.32	0.18	0.46	0.46	0.08	0.21	0.21	0.11	0.24		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Grp Cap (vph)	79	1639	510	315	2317	721	267	393	334	197	453		
v/s Ratio Prot	0.02	c0.23		0.10	c0.41		0.04	c0.14		c0.08	0.09		
v/s Ratio Perm			0.01			0.03			0.03				
v/c Ratio	0.47	0.70	0.02	0.55	0.89	0.07	0.46	0.67	0.15	0.69	0.36		
Uniform Delay, d1	42.0	26.7	20.8	33.7	22.5	13.8	39.7	32.6	28.9	38.5	28.2		
Progression Factor	0.69	1.14	2.02	0.63	0.44	0.26	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	17.1	2.3	0.1	2.2	2.0	0.1	5.6	8.7	1.0	18.0	2.2		
Delay (s)	46.2	32.9	42.0	23.6	11.8	3.7	45.3	41.3	29.9	56.5	30.4		
Level of Service	D	C	D	C	B	A	D	D	C	E	C		
Approach Delay (s)		33.6			12.3			37.7			42.2		
Approach LOS		C			B			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			23.6									HCM Level of Service	C
HCM Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	16.0
Intersection Capacity Utilization			73.1%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

AM EXISTING  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.17	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	625	5085	4990	1583
Volume (vph)	1123	12	72	1967	1258	18
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1221	13	78	2138	1367	20
RTOR Reduction (vph)	0	6	0	0	0	12
Lane Group Flow (vph)	1221	7	78	2138	1367	8
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	333	2712	1885	598
v/s Ratio Prot	0.24			c0.42	c0.27	
v/s Ratio Perm		0.00	0.12			0.00
v/c Ratio	0.45	0.01	0.23	0.79	0.73	0.01
Uniform Delay, d1	12.9	9.8	11.2	16.9	24.0	17.5
Progression Factor	1.00	1.00	0.03	0.12	1.00	1.00
Incremental Delay, d2	0.5	0.0	0.8	1.2	2.5	0.0
Delay (s)	13.4	9.9	1.1	3.3	26.5	17.5
Level of Service	B	A	A	A	C	B
Approach Delay (s)	13.4			3.2	26.3	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay		12.4		HCM Level of Service		B
HCM Volume to Capacity ratio		0.76				
Actuated Cycle Length (s)		90.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		68.6%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

AM EXISTING  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frnt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5016		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5016		3433		1583			
Volume (vph)	77	984	0	0	1522	152	816	0	400	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	1070	0	0	1654	165	887	0	435	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	43	0	0	0
Lane Group Flow (vph)	84	1070	0	0	1806	0	887	0	392	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0						47.0		35.0			
Effective Green, g (s)	47.0						47.0		35.0			
Actuated g/C Ratio	0.52						0.52		0.39			
Clearance Time (s)	4.0						4.0		4.0			
Lane Grp Cap (vph)	83	2656				2619	1335		616			
v/s Ratio Prot		0.21				0.36						
v/s Ratio Perm	c0.53						c0.26		0.25			
v/c Ratio	1.01	0.40				0.69	0.66		0.64			
Uniform Delay, d1	21.5	13.0				16.1	22.7		22.3			
Progression Factor	0.68	0.73				1.00	1.00		1.00			
Incremental Delay, d2	100.6	0.4				1.5	2.6		5.0			
Delay (s)	115.2	9.9				17.6	25.3		27.3			
Level of Service	F	A				B	C		C			
Approach Delay (s)		17.5				17.6	25.9		0.0			
Approach LOS		B				B	C		A			
<b>Intersection Summary</b>												
HCM Average Control Delay			20.1				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			70.3%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

PM EXISTING

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1674	773	0	1410	352	0	0	0	245	0	422
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1820	840	0	1533	383	0	0	0	266	0	459
RTOR Reduction (vph)	0	0	355	0	0	162	0	0	0	0	0	20
Lane Group Flow (vph)	0	1820	485	0	1533	221	0	0	0	266	0	439
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		c0.36			0.30							
v/s Ratio Perm		0.31			0.14					0.08		c0.28
v/c Ratio		0.62	0.53		0.52	0.24				0.23		0.83
Uniform Delay, d1		12.5	11.6		11.5	9.3				21.7		27.7
Progression Factor		0.67	2.91		0.80	1.41				1.00		1.00
Incremental Delay, d2		0.4	1.0		0.6	0.5				0.5		14.2
Delay (s)		8.8	34.6		9.7	13.7				22.2		41.8
Level of Service		A	C		A	B				C		D
Approach Delay (s)		16.9			10.5			0.0			34.6	
Approach LOS		B			B			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay		17.0			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		60.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c	Critical Lane Group											

PM EXISTING  
 HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	4	2246	1816	15	10	17
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2441	1974	16	11	18
RTOR Reduction (vph)	0	0	0	7	0	6
Lane Group Flow (vph)	4	2441	1974	9	11	12
Turn Type	Prot			Perm		pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				8		6
Actuated Green, G (s)	8.0	62.7	50.2	50.2	18.3	26.3
Effective Green, g (s)	8.5	63.2	50.7	50.7	18.8	27.3
Actuated g/C Ratio	0.09	0.70	0.56	0.56	0.21	0.30
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	167	2485	1994	892	370	551
v/s Ratio Prot	0.00	c0.69	0.56		c0.01	0.00
v/s Ratio Perm				0.01		0.01
v/c Ratio	0.02	0.98	0.99	0.01	0.03	0.02
Uniform Delay, d <sub>1</sub>	37.0	12.9	19.4	8.6	28.3	22.0
Progression Factor	0.63	1.92	0.61	0.05	1.00	1.00
Incremental Delay, d <sub>2</sub>	0.0	2.7	15.3	0.0	0.1	0.1
Delay (s)	23.2	27.4	27.1	0.5	28.5	22.1
Level of Service	C	C	C	A	C	C
Approach Delay (s)		27.4	26.8		24.5	
Approach LOS		C	C		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			27.1		HCM Level of Service	C
HCM Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			72.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

PM EXISTING  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Lane Util. Factor	1.00	0.91			0.91	1.00				0.97	1.00	1.00
Frt	1.00	1.00			1.00	0.85				1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	1770	5085			5085	1583				3433	1583	1583
Flt Permitted	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)	1770	5085			5085	1583				3433	1583	1583
Volume (vph)	65	2156	0	0	1602	97	0	0	0	216	0	239
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	2343	0	0	1741	105	0	0	0	235	0	260
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	0	76
Lane Group Flow (vph)	71	2343	0	0	1741	54	0	0	0	235	0	184
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.0	49.0			46.0	46.0				4.0		24.0
Effective Green, g (s)	7.0	49.0			46.0	46.0				4.0		24.0
Actuated g/C Ratio	0.08	0.54			0.51	0.51				0.04		0.27
Clearance Time (s)	4.0	4.0			4.0	4.0				4.0		4.0
Lane Grp Cap (vph)	138	2769			2599	809				153		422
v/s Ratio Prot	0.04	c0.46			c0.34					c0.07		c0.03
v/s Ratio Perm						0.03						0.08
v/c Ratio	0.51	0.85			0.67	0.07				1.54		0.44
Uniform Delay, d1	39.9	17.3			16.4	11.1				43.0		27.4
Progression Factor	1.09	0.35			0.57	0.09				1.00		1.00
Incremental Delay, d2	3.6	0.9			1.1	0.1				271.2		3.2
Delay (s)	47.2	7.0			10.4	1.1				314.2		30.6
Level of Service	D	A			B	A				F		C
Approach Delay (s)		8.2			9.9			0.0			165.2	
Approach LOS		A			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			61.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c	Critical Lane Group											

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 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1807	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1807	
Volume (vph)	68	1854	108	293	1514	60	88	117	292	172	185	46
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	2015	117	318	1646	65	96	127	317	187	201	50
RTOR Reduction (vph)	0	0	70	0	0	35	0	0	250	0	10	0
Lane Group Flow (vph)	74	2015	47	318	1646	30	96	127	67	187	241	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0	
Effective Green, g (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0	
Actuated g/C Ratio	0.04	0.32	0.32	0.18	0.46	0.46	0.08	0.21	0.21	0.11	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	79	1639	510	315	2317	721	267	393	334	197	442	
v/s Ratio Prot	0.04	c0.40		c0.18	0.32		0.03	c0.07		c0.11	c0.13	
v/s Ratio Perm			0.03			0.02			0.04			
v/c Ratio	0.94	1.23	0.09	1.01	0.71	0.04	0.36	0.32	0.20	0.95	0.55	
Uniform Delay, d1	42.9	30.5	21.3	37.0	19.7	13.6	39.4	30.1	29.2	39.7	29.6	
Progression Factor	0.61	0.96	1.65	0.59	0.35	0.26	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	52.2	105.7	0.2	30.0	0.6	0.0	3.7	2.2	1.3	52.1	4.8	
Delay (s)	78.4	135.1	35.3	51.8	7.4	3.6	43.1	32.2	30.6	91.8	34.4	
Level of Service	E	F	D	D	A	A	D	C	C	F	C	
Approach Delay (s)		127.9			14.3			33.2			58.9	
Approach LOS		F			B			C			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			68.0			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			81.3%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

PM EXISTING  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘↘	↑↑↑	↘↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	2229	12	199	1448	718	18
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2423	13	216	1574	780	20
RTOR Reduction (vph)	0	6	0	0	0	1
Lane Group Flow (vph)	2423	7	216	1574	780	19
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.48			0.31	c0.16	
v/s Ratio Perm		0.00	c0.72			0.01
v/c Ratio	0.89	0.01	1.34	0.58	0.41	0.03
Uniform Delay, d1	18.7	9.8	21.0	14.2	20.7	17.6
Progression Factor	1.00	1.00	0.36	0.13	1.00	1.00
Incremental Delay, d2	5.0	0.0	180.5	0.7	0.7	0.1
Delay (s)	23.8	9.9	188.1	2.6	21.3	17.7
Level of Service	C	A	F	A	C	B
Approach Delay (s)	23.7			24.9	21.2	
Approach LOS	C			C	C	
<b>Intersection Summary</b>						
HCM Average Control Delay		23.7		HCM Level of Service		C
HCM Volume to Capacity ratio		0.96				
Actuated Cycle Length (s)		90.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		72.4%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

PM EXISTING

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Fr <sub>t</sub>	1.00	1.00			0.97		1.00		0.85			
Fl <sub>t</sub> Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			4957		3433		1583			
Fl <sub>t</sub> Permitted	0.10	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	187	5085			4957		3433		1583			
Volume (vph)	326	1564	0	0	1195	241	612	0	400	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	354	1700	0	0	1299	262	665	0	435	0	0	0
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	8	0	0	0
Lane Group Flow (vph)	354	1700	0	0	1527	0	665	0	427	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4								2		2	
Actuated Green, G (s)	47.0	47.0			47.0			35.0	35.0			
Effective Green, g (s)	47.0	47.0			47.0			35.0	35.0			
Actuated g/C Ratio	0.52	0.52			0.52			0.39	0.39			
Clearance Time (s)	4.0	4.0			4.0			4.0	4.0			
Lane Grp Cap (vph)	98	2656			2589			1335	616			
v/s Ratio Prot	0.33				0.31							
v/s Ratio Perm	c1.90							0.19	c0.27			
v/c Ratio	3.61	0.64			0.59			0.50	0.69			
Uniform Delay, d <sub>1</sub>	21.5	15.4			14.8			20.8	23.0			
Progression Factor	0.78	0.86			1.00			1.00	1.00			
Incremental Delay, d <sub>2</sub>	1196.2	1.0			1.0			1.3	6.3			
Delay (s)	1213.0	14.2			15.8			22.2	29.3			
Level of Service	F	B			B			C	C			
Approach Delay (s)	220.8				15.8			25.0			0.0	
Approach LOS	F				B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay	107.3		HCM Level of Service				F					
HCM Volume to Capacity ratio	2.37											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	74.0%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Flt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1289	641	0	1813	330	0	0	0	176	0	820
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1401	697	0	1971	359	0	0	0	191	0	891
RTOR Reduction (vph)	0	0	294	0	0	152	0	0	0	0	0	7
Lane Group Flow (vph)	0	1401	403	0	1971	207	0	0	0	191	0	884
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases					4					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.28			c0.39							
v/s Ratio Perm		0.25			0.13					0.06		c0.56
v/c Ratio		0.48	0.44		0.67	0.23				0.17		1.67
Uniform Delay, d1		11.1	10.8		13.1	9.2				21.2		30.0
Progression Factor		0.22	3.95		0.72	0.53				1.00		1.00
Incremental Delay, d2		0.3	0.7		0.7	0.3				0.3		311.9
Delay (s)		2.7	43.2		10.1	5.2				21.5		341.9
Level of Service		A	D		B	A				C		F
Approach Delay (s)		16.1			9.3			0.0		285.4		
Approach LOS		B			A			A		F		
<b>Intersection Summary</b>												
HCM Average Control Delay		66.1			HCM Level of Service			E				
HCM Volume to Capacity ratio		1.04										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		92.5%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		  			  									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95			1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770			1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95			1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770			1583	
Volume (vph)	5	2006	61	403	2270	19	68	0	84	12	0		3	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	5	2180	66	438	2467	21	74	0	91	13	0		3	
RTOR Reduction (vph)	0	0	36	0	0	9	0	0	91	0	0		1	
Lane Group Flow (vph)	5	2180	30	438	2467	12	74	0	0	13	0		2	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot			custom	
Protected Phases	7	4			8					6			7	
Permitted Phases						8							6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3			26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8			27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21			0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5			4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370			551	
v/s Ratio Prot	0.00	c0.43			c0.49					c0.01			0.00	
v/s Ratio Perm						0.01							0.00	
v/c Ratio	0.03	0.61	no cap	no cap	0.86	0.01	no cap		0.00	0.04			0.00	
Uniform Delay, d1	37.0	7.0	Error	Error	16.7	8.6	Error		45.0	28.4			21.9	
Progression Factor	0.63	1.20			0.32	0.05			1.00	1.00			1.00	
Incremental Delay, d2	0.1	0.2	Error	Error	1.0	0.0	Error		0.0	0.2			0.0	
Delay (s)	23.4	8.6	Error	Error	6.3	0.4	Error		45.0	28.5			21.9	
Level of Service	C	A	F	F	A	A	F		D	C			C	
Approach Delay (s)		Error			Error			Error					27.3	
Approach LOS		F			F			F					C	
<b>Intersection Summary</b>														
HCM Average Control Delay			Error										HCM Level of Service	F
HCM Volume to Capacity ratio			0.62											
Actuated Cycle Length (s)			90.0										Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.1%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1520	341	893	2494	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1652	371	971	2711	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	238	0	0	211	0	0	9	0	0	4
Lane Group Flow (vph)	230	1652	133	971	2711	266	96	18	227	96	73	116
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405
v/s Ratio Prot	0.07	c0.32		0.28	c0.53		c0.03	0.01	0.04	0.03	0.02	c0.02
v/s Ratio Perm			0.08			0.17			0.04			0.05
v/c Ratio	1.00	1.04	0.27	1.02	1.02	0.32	0.63	0.03	0.16	0.63	0.11	0.29
Uniform Delay, d1	42.0	31.0	23.3	32.5	21.5	12.3	42.3	29.8	13.8	42.3	30.2	26.9
Progression Factor	1.05	1.30	2.76	0.90	0.85	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.5	33.0	1.1	29.4	20.4	0.7	17.9	0.1	0.2	17.9	0.3	1.8
Delay (s)	98.6	73.4	65.3	58.7	38.7	6.0	60.2	29.8	14.1	60.2	30.6	28.7
Level of Service	F	E	E	E	D	A	E	C	B	E	C	C
Approach Delay (s)		74.6			39.6			27.5			39.6	
Approach LOS		E			D			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			50.2				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			74.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c	Critical Lane Group											

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	1.00	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	1822	
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	1822	
Volume (vph)	38	1614	34	186	2250	129	129	270	284	171	164	28	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	41	1754	37	202	2446	140	140	293	309	186	178	30	
RTOR Reduction (vph)	0	0	25	0	0	69	0	0	244	0	7	0	
Lane Group Flow (vph)	41	1754	12	202	2446	71	140	293	65	186	201	0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot			
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			8			2				
Actuated Green, G (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Effective Green, g (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Actuated g/C Ratio	0.04	0.32	0.32	0.18	0.46	0.46	0.08	0.21	0.21	0.11	0.24		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Grp Cap (vph)	79	1639	510	610	2317	721	267	393	334	197	445		
v/s Ratio Prot	0.02	c0.34		0.06	c0.48		0.04	c0.16		c0.11	0.11		
v/s Ratio Perm			0.01			0.05			0.04				
v/c Ratio	0.52	1.07	0.02	0.33	1.06	0.10	0.52	0.75	0.20	0.94	0.45		
Uniform Delay, d <sub>1</sub>	42.1	30.5	20.8	32.3	24.5	14.0	39.9	33.2	29.2	39.7	28.9		
Progression Factor	0.68	1.05	1.70	0.53	0.31	0.16	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d <sub>2</sub>	18.0	41.7	0.1	0.9	32.2	0.2	7.2	12.1	1.3	51.0	3.3		
Delay (s)	46.6	73.8	35.4	17.9	39.9	2.4	47.1	45.4	30.5	90.7	32.2		
Level of Service	D	E	D	B	D	A	D	D	C	F	C		
Approach Delay (s)		72.4			36.4			39.5			59.8		
Approach LOS		E			D			D			E		
<b>Intersection Summary</b>													
HCM Average Control Delay			49.9									HCM Level of Service	D
HCM Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			83.8%									ICU Level of Service	E
Analysis Period (min)			15										
c	Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	1588	128	108	2292	1409	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1726	139	117	2491	1532	107
RTOR Reduction (vph)	0	65	0	0	0	8
Lane Group Flow (vph)	1726	74	117	2491	1532	99
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.34			c0.49	c0.31	
v/s Ratio Perm		0.05	0.39			0.06
v/c Ratio	0.64	0.09	0.73	0.92	0.81	0.17
Uniform Delay, d1	14.8	10.3	16.0	19.2	25.1	18.6
Progression Factor	1.00	1.00	0.18	0.20	1.00	1.00
Incremental Delay, d2	1.2	0.2	2.6	0.7	4.0	0.6
Delay (s)	16.0	10.5	5.5	4.5	29.1	19.2
Level of Service	B	B	A	A	C	B
Approach Delay (s)	15.6			4.5	28.5	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.7%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5016		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5016		3433		1583			
Volume (vph)	176	1263	0	0	1705	170	1051	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1373	0	0	1853	185	1142	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	19	0	0	0
Lane Group Flow (vph)	191	1373	0	0	2025	0	1142	0	468	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0						47.0		35.0			
Effective Green, g (s)	47.0						47.0		35.0			
Actuated g/C Ratio	0.52						0.52		0.39			
Clearance Time (s)	4.0						4.0		4.0			
Lane Grp Cap (vph)	83			2656			2619		1335		616	
v/s Ratio Prot	0.27			0.40								
v/s Ratio Perm	c1.20						c0.33		0.30			
v/c Ratio	2.30			0.52			0.77		0.86		0.76	
Uniform Delay, d1	21.5			14.1			17.2		25.2		23.9	
Progression Factor	1.13			1.03			1.00		1.00		1.00	
Incremental Delay, d2	618.7			0.7			2.3		7.2		8.6	
Delay (s)	643.1			15.2			19.5		32.4		32.4	
Level of Service	F			B			B		C		C	
Approach Delay (s)	91.9			19.5			32.4		0.0			
Approach LOS	F			B			C		A			
<b>Intersection Summary</b>												
HCM Average Control Delay	45.2			HCM Level of Service			D					
HCM Volume to Capacity ratio	1.68											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	86.5%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	2924	983	0	1813	394	0	0	0	274	0	625
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3178	1068	0	1971	428	0	0	0	298	0	679
RTOR Reduction (vph)	0	0	404	0	0	181	0	0	0	0	0	7
Lane Group Flow (vph)	0	3178	664	0	1971	247	0	0	0	298	0	672
Turn Type			Perm			Perm				custom		custom
Protected Phases		4			8							
Permitted Phases			4			8				6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		c0.62			0.39							
v/s Ratio Perm			0.42			0.16				0.09		c0.42
v/c Ratio		1.08	0.73		0.67	0.27				0.26		1.27
Uniform Delay, d1		19.0	13.8		13.1	9.5				21.9		30.0
Progression Factor		0.75	2.43		0.72	0.97				1.00		1.00
Incremental Delay, d2		37.5	0.5		0.9	0.5				0.6		137.2
Delay (s)		51.7	34.1		10.2	9.7				22.5		167.2
Level of Service		D	C		B	A				C		F
Approach Delay (s)		47.3			10.2			0.0			123.1	
Approach LOS		D			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			45.3				HCM Level of Service			D		
HCM Volume to Capacity ratio			1.15									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			80.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Volume (vph)	4	2701	18	119	2370	17	205	0	265	11	0	19
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2936	20	129	2576	18	223	0	288	12	0	21
RTOR Reduction (vph)	0	0	8	0	0	8	0	0	245	0	0	1
Lane Group Flow (vph)	4	2936	12	129	2576	10	223	0	43	12	0	20
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom
Protected Phases	7	4			8					6		7
Permitted Phases						8						6
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551
v/s Ratio Prot	0.00	c0.58			c0.51					0.01		c0.00
v/s Ratio Perm						0.01						0.01
v/c Ratio	0.02	0.82	no cap	no cap	0.90	0.01	no cap		no cap	0.03		0.04
Uniform Delay, d1	37.0	9.4	Error	Error	17.4	8.6	Error		Error	28.4		22.1
Progression Factor	0.74	1.72			0.56	0.31				1.00		1.00
Incremental Delay, d2	0.0	0.2	Error	Error	2.0	0.0	Error		Error	0.2		0.1
Delay (s)	27.4	16.4	Error	Error	11.8	2.7	Error		Error	28.5		22.2
Level of Service	C	B	F	F	B	A	F		F	C		C
Approach Delay (s)		Error			Error			Error			24.5	
Approach LOS		F			F			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			Error									F
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			90.0							4.0		
Intersection Capacity Utilization			81.9%									D
Analysis Period (min)			15									
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frts	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	73	2758	107	264	1916	109	333	65	822	242	21	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	2998	116	287	2083	118	362	71	893	263	23	291
RTOR Reduction (vph)	0	0	46	0	0	66	0	0	2	0	0	1
Lane Group Flow (vph)	79	2998	70	287	2083	52	362	71	891	263	23	290
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	9.0	41.0	41.0	8.0	40.0	40.0	8.0	18.0	26.0	7.0	17.0	26.0
Effective Green, g (s)	9.0	41.0	41.0	8.0	40.0	40.0	8.0	18.0	26.0	7.0	17.0	26.0
Actuated g/C Ratio	0.10	0.46	0.46	0.09	0.44	0.44	0.09	0.20	0.29	0.08	0.19	0.29
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	343	2317	721	305	2260	704	305	708	929	267	668	457
v/s Ratio Prot	0.02	c0.59		0.08	c0.41		c0.11	0.02	c0.09	0.08	0.01	0.06
v/s Ratio Perm			0.04			0.03			0.23			0.12
v/c Ratio	0.23	1.29	0.10	0.94	0.92	0.07	1.19	0.10	0.96	0.99	0.03	0.63
Uniform Delay, d1	37.3	24.5	14.0	40.8	23.5	14.4	41.0	29.4	31.5	41.4	29.8	27.9
Progression Factor	0.97	0.60	0.42	0.83	0.71	0.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	133.9	0.1	25.7	4.5	0.1	112.2	0.3	21.1	51.4	0.1	6.6
Delay (s)	36.9	148.5	6.0	59.7	21.2	4.5	153.2	29.7	52.6	92.8	29.9	34.4
Level of Service	D	F	A	E	C	A	F	C	D	F	C	C
Approach Delay (s)		140.6			24.9			78.8			60.9	
Approach LOS		F			C			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			85.8				HCM Level of Service				F	
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			98.9%				ICU Level of Service			F		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	1806
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	1806
Volume (vph)	76	2207	121	354	2128	93	101	131	338	202	207	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	2399	132	385	2313	101	110	142	367	220	225	57
RTOR Reduction (vph)	0	0	66	0	0	52	0	0	243	0	10	0
Lane Group Flow (vph)	83	2399	66	385	2313	49	110	142	124	220	272	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	22.0
Effective Green, g (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	22.0
Actuated g/C Ratio	0.06	0.37	0.37	0.16	0.47	0.47	0.06	0.20	0.20	0.10	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	98	1865	580	534	2373	739	191	373	317	177	441	441
v/s Ratio Prot	0.05	c0.47		0.11	c0.45		c0.03	0.08		c0.12	c0.15	
v/s Ratio Perm			0.04			0.03			0.08			
v/c Ratio	0.85	1.29	0.11	0.72	0.97	0.07	0.58	0.38	0.39	1.24	0.62	0.62
Uniform Delay, d1	42.1	28.5	18.8	36.1	23.5	13.2	41.5	31.2	31.2	40.5	30.3	30.3
Progression Factor	0.66	1.02	1.50	0.57	0.31	0.12	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.2	129.2	0.0	4.5	8.9	0.1	12.0	2.9	3.6	147.8	6.3	6.3
Delay (s)	36.1	158.2	28.3	25.1	16.1	1.7	53.5	34.1	34.8	188.3	36.6	36.6
Level of Service	D	F	C	C	B	A	D	C	C	F	D	D
Approach Delay (s)		147.8			16.8			38.0			103.1	
Approach LOS		F			B			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			77.8				HCM Level of Service			E		
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			84.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	2597	128	319	1928	804	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2823	139	347	2096	874	107
RTOR Reduction (vph)	0	59	0	0	0	1
Lane Group Flow (vph)	2823	80	347	2096	874	106
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.56			0.41	c0.18	
v/s Ratio Perm		0.05	c1.15			0.07
v/c Ratio	1.04	0.09	2.16	0.77	0.46	0.18
Uniform Delay, d1	21.0	10.3	21.0	16.7	21.1	18.7
Progression Factor	1.00	1.00	0.28	0.10	1.00	1.00
Incremental Delay, d2	29.1	0.2	526.6	0.7	0.8	0.7
Delay (s)	50.1	10.5	532.5	2.4	21.9	19.3
Level of Service	D	B	F	A	C	B
Approach Delay (s)	48.2			77.7	21.7	
Approach LOS	D			E	C	

Intersection Summary

HCM Average Control Delay	55.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

PM 2010 AMBIENT+CUMULATIVE  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frnt	1.00	1.00			0.98		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			4971		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			4971		3433		1583			
Volume (vph)	824	2342	0	0	1530	270	727	0	261	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	896	2546	0	0	1663	293	790	0	284	0	0	0
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	1	0	0	0
Lane Group Flow (vph)	896	2546	0	0	1928	0	790	0	283	0	0	0
Turn Type	Perm					custom		custom				
Protected Phases		4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0	47.0			47.0		35.0		35.0			
Effective Green, g (s)	47.0	47.0			47.0		35.0		35.0			
Actuated g/C Ratio	0.52	0.52			0.52		0.39		0.39			
Clearance Time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Grp Cap (vph)	83	2656			2596		1335		616			
v/s Ratio Prot		0.50			0.39							
v/s Ratio Perm	c5.65						c0.23		0.18			
v/c Ratio	10.80	0.96			0.74		0.59		0.46			
Uniform Delay, d1	21.5	20.6			16.8		21.8		20.5			
Progression Factor	0.76	0.77			1.00		1.00		1.00			
Incremental Delay, d2	4410.0	1.3			2.0		1.9		2.5			
Delay (s)	4426.3	17.2			18.8		23.8		22.9			
Level of Service	F	B			B		C		C			
Approach Delay (s)		1164.9			18.8			23.5			0.0	
Approach LOS		F			B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay		629.1					HCM Level of Service		F			
HCM Volume to Capacity ratio		6.44										
Actuated Cycle Length (s)		90.0					Sum of lost time (s)		8.0			
Intersection Capacity Utilization		112.0%					ICU Level of Service		H			
Analysis Period (min)		15										
c Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘↘		↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1670	641	0	3133	330	0	0	0	176	0	897
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1815	697	0	3405	359	0	0	0	191	0	975
RTOR Reduction (vph)	0	0	294	0	0	127	0	0	0	0	0	0
Lane Group Flow (vph)	0	1815	403	0	3405	232	0	0	0	191	0	975
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.36			c0.67							
v/s Ratio Perm		0.25			0.15					0.06		c0.62
v/c Ratio		0.62	0.44		1.16	0.25				0.17		1.85
Uniform Delay, d1		12.5	10.8		19.0	9.4				21.2		30.0
Progression Factor		0.28	2.23		0.81	0.93				1.00		1.00
Incremental Delay, d2		0.6	1.0		72.5	0.2				0.3		388.3
Delay (s)		4.1	25.0		87.9	8.9				21.5		418.3
Level of Service		A	C		F	A				C		F
Approach Delay (s)		9.9			80.3			0.0		353.3		
Approach LOS		A			F			A		F		
<b>Intersection Summary</b>												
HCM Average Control Delay		99.3			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.41										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		122.7%			ICU Level of Service			H				
Analysis Period (min)		15										

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Volume (vph)	96	2006	61	403	2326	129	68	0	84	50	0	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	2180	66	438	2528	140	74	0	91	54	0	11
RTOR Reduction (vph)	0	0	36	0	0	61	0	0	91	0	0	1
Lane Group Flow (vph)	104	2180	30	438	2528	79	74	0	0	54	0	10
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom
Protected Phases	7	4			8					6		7
Permitted Phases						8						6
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551
v/s Ratio Prot	0.06	c0.43			c0.50					c0.03		0.00
v/s Ratio Perm						0.05						0.00
v/c Ratio	0.62	0.61	no cap	no cap	0.88	0.09	no cap		0.00	0.15		0.02
Uniform Delay, d1	39.2	7.0	Error	Error	17.1	9.0	Error		45.0	29.0		22.0
Progression Factor	0.64	1.16			0.64	0.09			1.00	1.00		1.00
Incremental Delay, d2	1.6	0.1	Error	Error	3.8	0.2	Error		0.0	0.8		0.1
Delay (s)	26.8	8.2	Error	Error	14.8	1.0	Error		45.0	29.9		22.0
Level of Service	C	A	F	F	B	A	F		D	C		C
Approach Delay (s)		Error			Error			Error				28.5
Approach LOS		F			F			F				C
<b>Intersection Summary</b>												
HCM Average Control Delay			Error									F
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.0							8.0		
Intersection Capacity Utilization			81.1%									D
Analysis Period (min)			15									

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1558	341	843	1851	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1693	371	916	2012	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	239	0	0	228	0	0	9	0	0	7
Lane Group Flow (vph)	230	1693	132	916	2012	249	96	18	227	96	73	113
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405
v/s Ratio Prot	0.07	c0.33		c0.27	0.40		c0.03	0.01	0.04	0.03	0.02	c0.02
v/s Ratio Perm			0.08			0.16			0.04			0.05
v/c Ratio	1.00	1.07	0.27	0.96	0.76	0.30	0.63	0.03	0.16	0.63	0.11	0.28
Uniform Delay, d1	42.0	31.0	23.3	32.0	17.0	12.2	42.3	29.8	13.8	42.3	30.2	26.8
Progression Factor	1.05	1.30	2.79	0.80	0.68	0.20	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.6	42.1	1.1	3.4	0.2	0.1	17.9	0.1	0.2	17.9	0.3	1.7
Delay (s)	98.8	82.5	66.1	29.0	11.7	2.5	60.2	29.8	14.1	60.2	30.6	28.5
Level of Service	F	F	E	C	B	A	E	C	B	E	C	C
Approach Delay (s)		81.5			15.0			27.5			39.6	
Approach LOS		F			B			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			40.9				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			73.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00		
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822		
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822		
Volume (vph)	38	1670	34	188	2263	131	129	270	295	182	164	28	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	41	1815	37	204	2460	142	140	293	321	198	178	30	
RTOR Reduction (vph)	0	0	24	0	0	69	0	0	253	0	7	0	
Lane Group Flow (vph)	41	1815	13	204	2460	73	140	293	68	198	201	0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot			
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			8			2				
Actuated Green, G (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Effective Green, g (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0		
Actuated g/C Ratio	0.04	0.32	0.32	0.18	0.46	0.46	0.08	0.21	0.21	0.11	0.24		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Grp Cap (vph)	79	1639	510	610	2317	721	267	393	334	197	445		
v/s Ratio Prot	0.02	c0.36		0.06	c0.48		0.04	c0.16		c0.11	0.11		
v/s Ratio Perm			0.01			0.05			0.04				
v/c Ratio	0.52	1.11	0.02	0.33	1.06	0.10	0.52	0.75	0.20	1.01	0.45		
Uniform Delay, d <sub>1</sub>	42.1	30.5	20.8	32.3	24.5	14.0	39.9	33.2	29.3	40.0	28.9		
Progression Factor	0.68	1.05	1.61	0.55	0.34	0.17	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d <sub>2</sub>	17.7	56.0	0.1	0.9	34.1	0.2	7.2	12.1	1.4	65.4	3.3		
Delay (s)	46.4	87.9	33.7	18.5	42.5	2.6	47.1	45.4	30.6	105.4	32.2		
Level of Service	D	F	C	B	D	A	D	D	C	F	C		
Approach Delay (s)		85.9			38.8			39.4			67.9		
Approach LOS		F			D			D			E		
<b>Intersection Summary</b>													
HCM Average Control Delay			56.1									HCM Level of Service	E
HCM Volume to Capacity ratio			0.97										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			84.7%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘↘	↑↑↑	↘↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	1633	128	108	2301	1409	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1775	139	117	2501	1532	107
RTOR Reduction (vph)	0	65	0	0	0	7
Lane Group Flow (vph)	1775	74	117	2501	1532	100
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.35			c0.49	c0.31	
v/s Ratio Perm		0.05	0.39			0.06
v/c Ratio	0.65	0.09	0.73	0.92	0.81	0.17
Uniform Delay, d1	15.1	10.3	16.0	19.3	25.1	18.6
Progression Factor	1.00	1.00	0.18	0.20	1.00	1.00
Incremental Delay, d2	1.2	0.2	2.6	0.7	4.0	0.6
Delay (s)	16.3	10.5	5.4	4.5	29.1	19.2
Level of Service	B	B	A	A	C	B
Approach Delay (s)	15.9			4.6	28.5	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.9%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5034		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5034		3433		1583			
Volume (vph)	176	1494	0	0	2360	170	1113	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1624	0	0	2565	185	1210	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	10	0	0	0
Lane Group Flow (vph)	191	1624	0	0	2741	0	1210	0	477	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0	47.0			47.0	35.0		35.0				
Effective Green, g (s)	47.0	47.0			47.0	35.0		35.0				
Actuated g/C Ratio	0.52	0.52			0.52	0.39		0.39				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	83	2656			2629	1335		616				
v/s Ratio Prot	0.32				0.54							
v/s Ratio Perm	c1.20					c0.35		0.30				
v/c Ratio	2.30	0.61			1.04	0.91		0.77				
Uniform Delay, d1	21.5	15.1			21.5	26.0		24.1				
Progression Factor	0.97	0.92			1.00	1.00		1.00				
Incremental Delay, d2	615.6	0.9			29.9	10.5		9.2				
Delay (s)	636.4	14.7			51.4	36.4		33.3				
Level of Service	F	B			D	D		C				
Approach Delay (s)	80.1				51.4	35.5				0.0		
Approach LOS	F				D	D				A		
<b>Intersection Summary</b>												
HCM Average Control Delay	55.4				HCM Level of Service		E					
HCM Volume to Capacity ratio	1.71											
Actuated Cycle Length (s)	90.0				Sum of lost time (s)		8.0					
Intersection Capacity Utilization	100.9%				ICU Level of Service		G					
Analysis Period (min)	15											
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1289	641	0	1813	330	0	0	0	176	0	820
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1401	697	0	1971	359	0	0	0	191	0	891
RTOR Reduction (vph)	0	0	294	0	0	152	0	0	0	0	0	7
Lane Group Flow (vph)	0	1401	403	0	1971	207	0	0	0	191	0	884
Turn Type			Perm			Perm				custom		custom
Protected Phases		4			8							
Permitted Phases			4			8				6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.28			c0.39							
v/s Ratio Perm			0.25			0.13				0.06		c0.56
v/c Ratio		0.48	0.44		0.67	0.23				0.17		1.67
Uniform Delay, d1		11.1	10.8		13.1	9.2				21.2		30.0
Progression Factor		0.22	3.95		0.72	0.53				1.00		1.00
Incremental Delay, d2		0.3	0.7		0.7	0.3				0.3		311.9
Delay (s)		2.7	43.2		10.1	5.2				21.5		341.9
Level of Service		A	D		B	A				C		F
Approach Delay (s)		16.2			9.3			0.0			285.4	
Approach LOS		B			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			66.1									HCM Level of Service E
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			90.0									Sum of lost time (s) 8.0
Intersection Capacity Utilization			92.5%									ICU Level of Service F
Analysis Period (min)			15									

c Critical Lane Group

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Volume (vph)	5	2006	61	403	2270	19	68	0	84	12	0	3	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	5	2180	66	438	2467	21	74	0	91	13	0	3	
RTOR Reduction (vph)	0	0	36	0	0	9	0	0	91	0	0	1	
Lane Group Flow (vph)	5	2180	30	438	2467	12	74	0	0	13	0	2	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom	
Protected Phases	7	4			8					6		7	
Permitted Phases						8						6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551	
v/s Ratio Prot	0.00	c0.43			c0.49					c0.01		0.00	
v/s Ratio Perm						0.01						0.00	
v/c Ratio	0.03	0.61	no cap	no cap	0.86	0.01	no cap		0.00	0.04		0.00	
Uniform Delay, d1	37.0	7.0	Error	Error	16.7	8.6	Error		45.0	28.4		21.9	
Progression Factor	0.74	1.22			0.32	0.05			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.1	Error	Error	1.0	0.0	Error		0.0	0.2		0.0	
Delay (s)	27.6	8.6	Error	Error	6.3	0.4	Error		45.0	28.5		21.9	
Level of Service	C	A	F	F	A	A	F		D	C		C	
Approach Delay (s)		Error			Error			Error				27.3	
Approach LOS		F			F			F				C	
<b>Intersection Summary</b>													
HCM Average Control Delay			Error									HCM Level of Service	F
HCM Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.1%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1520	341	893	2494	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1652	371	971	2711	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	238	0	0	211	0	0	9	0	0	4
Lane Group Flow (vph)	230	1652	133	971	2711	266	96	18	227	96	73	116
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405
v/s Ratio Prot	0.07	c0.32		0.28	c0.53		c0.03	0.01	0.04	0.03	0.02	c0.02
v/s Ratio Perm			0.08			0.17			0.04			0.05
v/c Ratio	1.00	1.04	0.27	1.02	1.02	0.32	0.63	0.03	0.16	0.63	0.11	0.29
Uniform Delay, d1	42.0	31.0	23.3	32.5	21.5	12.3	42.3	29.8	13.8	42.3	30.2	26.9
Progression Factor	1.00	1.27	2.67	0.90	0.85	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.5	33.0	1.1	29.4	20.4	0.7	17.9	0.1	0.2	17.9	0.3	1.8
Delay (s)	96.5	72.3	63.2	58.7	38.7	6.0	60.2	29.8	14.1	60.2	30.6	28.7
Level of Service	F	E	E	E	D	A	E	C	B	E	C	C
Approach Delay (s)		73.3			39.6			27.5			39.6	
Approach LOS		E			D			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			49.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			74.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  		  	  		 						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806		
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806		
Volume (vph)	76	2207	121	354	2128	93	101	131	338	202	207	52	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	83	2399	132	385	2313	101	110	142	367	220	225	57	
RTOR Reduction (vph)	0	0	66	0	0	52	0	0	243	0	10	0	
Lane Group Flow (vph)	83	2399	66	385	2313	49	110	142	124	220	272	0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot			
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			8			2				
Actuated Green, G (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0		
Effective Green, g (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0		
Actuated g/C Ratio	0.06	0.37	0.37	0.16	0.47	0.47	0.06	0.20	0.20	0.10	0.24		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Grp Cap (vph)	98	1865	580	534	2373	739	191	373	317	177	441		
v/s Ratio Prot	0.05	c0.47		0.11	c0.45		c0.03	0.08		c0.12	c0.15		
v/s Ratio Perm			0.04			0.03			0.08				
v/c Ratio	0.85	1.29	0.11	0.72	0.97	0.07	0.58	0.38	0.39	1.24	0.62		
Uniform Delay, d <sub>1</sub>	42.1	28.5	18.8	36.1	23.5	13.2	41.5	31.2	31.2	40.5	30.3		
Progression Factor	0.66	1.02	1.50	0.56	0.30	0.11	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d <sub>2</sub>	8.2	129.2	0.0	5.3	9.9	0.1	12.0	2.9	3.6	147.8	6.3		
Delay (s)	36.1	158.2	28.3	25.6	16.9	1.5	53.5	34.1	34.8	188.3	36.6		
Level of Service	D	F	C	C	B	A	D	C	C	F	D		
Approach Delay (s)		147.8			17.5			38.0			103.1		
Approach LOS		F			B			D			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			78.2					HCM Level of Service	E				
HCM Volume to Capacity ratio			1.07										
Actuated Cycle Length (s)			90.0					Sum of lost time (s)	16.0				
Intersection Capacity Utilization			84.8%					ICU Level of Service	E				
Analysis Period (min)	15												
c Critical Lane Group													

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	2597	128	319	1928	804	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2823	139	347	2096	874	107
RTOR Reduction (vph)	0	59	0	0	0	1
Lane Group Flow (vph)	2823	80	347	2096	874	106
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.56			0.41	c0.18	
v/s Ratio Perm		0.05	c1.15			0.07
v/c Ratio	1.04	0.09	2.16	0.77	0.46	0.18
Uniform Delay, d1	21.0	10.3	21.0	16.7	21.1	18.7
Progression Factor	1.00	1.00	0.28	0.10	1.00	1.00
Incremental Delay, d2	29.1	0.2	526.6	0.7	0.8	0.7
Delay (s)	50.1	10.5	532.5	2.4	21.9	19.3
Level of Service	D	B	F	A	C	B
Approach Delay (s)	48.2			77.7	21.7	
Approach LOS	D			E	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			55.4		HCM Level of Service	E
HCM Volume to Capacity ratio			1.46			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			84.6%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

PM 2010 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5016		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5016		3433		1583			
Volume (vph)	176	1263	0	0	1705	170	1051	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1373	0	0	1853	185	1142	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	19	0	0	0
Lane Group Flow (vph)	191	1373	0	0	2025	0	1142	0	468	0	0	0
Turn Type	Perm					custom		custom				
Protected Phases	4				8							
Permitted Phases	4					2		2				
Actuated Green, G (s)	47.0				47.0		35.0		35.0			
Effective Green, g (s)	47.0				47.0		35.0		35.0			
Actuated g/C Ratio	0.52				0.52		0.39		0.39			
Clearance Time (s)	4.0				4.0		4.0		4.0			
Lane Grp Cap (vph)	83	2656			2619		1335		616			
v/s Ratio Prot		0.27			0.40							
v/s Ratio Perm	c1.20					c0.33		0.30				
v/c Ratio	2.30	0.52			0.77		0.86		0.76			
Uniform Delay, d1	21.5	14.1			17.2		25.2		23.9			
Progression Factor	1.13	1.03			1.00		1.00		1.00			
Incremental Delay, d2	618.7	0.7			2.3		7.2		8.6			
Delay (s)	643.1	15.2			19.5		32.4		32.4			
Level of Service	F	B			B		C		C			
Approach Delay (s)		91.9			19.5		32.4		0.0			
Approach LOS		F			B		C		A			
<b>Intersection Summary</b>												
HCM Average Control Delay			45.2		HCM Level of Service				D			
HCM Volume to Capacity ratio			1.68									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			86.5%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑		↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				1.00		0.88
Fr <sub>t</sub>		1.00	0.85		1.00	0.85				1.00		0.85
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				1770		2787
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				1770		2787
Volume (vph)	0	1670	641	0	3133	330	0	0	0	176	0	897
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1815	697	0	3405	359	0	0	0	191	0	975
RTOR Reduction (vph)	0	0	287	0	0	127	0	0	0	0	0	0
Lane Group Flow (vph)	0	1815	410	0	3405	232	0	0	0	191	0	975
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases			4			8				6		6
Actuated Green, G (s)		53.0	53.0		53.0	53.0				29.0		29.0
Effective Green, g (s)		53.0	53.0		53.0	53.0				29.0		29.0
Actuated g/C Ratio		0.59	0.59		0.59	0.59				0.32		0.32
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2995	932		2995	932				570		898
v/s Ratio Prot		0.36			c0.67							
v/s Ratio Perm			0.26			0.15				0.11		c0.35
v/c Ratio		0.61	0.44		1.14	0.25				0.34		1.09
Uniform Delay, d <sub>1</sub>		11.8	10.3		18.5	8.9				23.2		30.5
Progression Factor		0.43	2.34		0.79	0.71				1.00		1.00
Incremental Delay, d <sub>2</sub>		0.6	1.0		62.7	0.1				1.6		56.1
Delay (s)		5.8	25.1		77.4	6.5				24.8		86.6
Level of Service		A	C		E	A				C		F
Approach Delay (s)		11.1			70.7			0.0			76.4	
Approach LOS		B			E			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay		51.5			HCM Level of Service			D				
HCM Volume to Capacity ratio		1.12										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		98.6%			ICU Level of Service			F				
Analysis Period (min)		15										

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583
Volume (vph)	96	2006	61	403	2326	129	68	0	84	50	0	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	2180	66	438	2528	140	74	0	91	54	0	11
RTOR Reduction (vph)	0	0	36	0	0	61	0	0	91	0	0	1
Lane Group Flow (vph)	104	2180	30	438	2528	79	74	0	0	54	0	10
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom
Protected Phases	7	4			8					6		7
Permitted Phases						8						6
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551
v/s Ratio Prot	0.06	c0.43			c0.50					c0.03		0.00
v/s Ratio Perm						0.05						0.00
v/c Ratio	0.62	0.61	no cap	no cap	0.88	0.09	no cap		0.00	0.15		0.02
Uniform Delay, d1	39.2	7.0	Error	Error	17.1	9.0	Error		45.0	29.0		22.0
Progression Factor	0.73	0.68			0.35	0.04			1.00	1.00		1.00
Incremental Delay, d2	9.5	0.4	Error	Error	3.8	0.2	Error		0.0	0.8		0.1
Delay (s)	38.2	5.2	Error	Error	9.7	0.5	Error		45.0	29.9		22.0
Level of Service	D	A	F	F	A	A	F		D	C		C
Approach Delay (s)		Error			Error			Error			28.5	
Approach LOS		F			F			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			Error									F
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.0							8.0		
Intersection Capacity Utilization			81.5%									D
Analysis Period (min)			15									
c	Critical Lane Group											

AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1558	341	843	1851	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1693	371	916	2012	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	205	0	0	233	0	0	9	0	0	7
Lane Group Flow (vph)	230	1693	166	916	2012	244	96	18	227	96	73	113
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	8.0	30.0	30.0	24.0	46.0	46.0	4.0	16.0	40.0	4.0	16.0	24.0
Effective Green, g (s)	8.0	30.0	30.0	24.0	46.0	46.0	4.0	16.0	40.0	4.0	16.0	24.0
Actuated g/C Ratio	0.09	0.33	0.33	0.27	0.51	0.51	0.04	0.18	0.44	0.04	0.18	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	305	1695	528	915	2599	809	153	629	1363	153	629	492
v/s Ratio Prot	0.07	c0.33		c0.27	0.40		c0.03	0.01	0.04	c0.03	0.02	c0.02
v/s Ratio Perm			0.10			0.15			0.04			0.05
v/c Ratio	0.75	1.00	0.31	1.00	0.77	0.30	0.63	0.03	0.17	0.63	0.12	0.23
Uniform Delay, d1	40.0	30.0	22.3	33.0	17.8	12.7	42.3	30.6	15.0	42.3	31.1	25.8
Progression Factor	0.99	0.98	1.91	0.74	1.01	1.69	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.1	19.4	1.3	9.2	0.2	0.1	17.9	0.1	0.3	17.9	0.4	1.1
Delay (s)	52.8	48.6	44.0	33.8	18.2	21.5	60.2	30.7	15.3	60.2	31.4	26.9
Level of Service	D	D	D	C	B	C	E	C	B	E	C	C
Approach Delay (s)		48.3			22.9			28.4			39.1	
Approach LOS		D			C			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			73.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	
Volume (vph)	38	1670	34	188	2263	131	129	270	295	182	164	28
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	1815	37	204	2460	142	140	293	321	198	178	30
RTOR Reduction (vph)	0	0	21	0	0	69	0	0	137	0	7	0
Lane Group Flow (vph)	41	1815	16	204	2460	73	140	293	184	198	201	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.0	40.0	40.0	7.0	43.0	43.0	8.0	17.0	17.0	10.0	19.0	
Effective Green, g (s)	4.0	40.0	40.0	7.0	43.0	43.0	8.0	17.0	17.0	10.0	19.0	
Actuated g/C Ratio	0.04	0.44	0.44	0.08	0.48	0.48	0.09	0.19	0.19	0.11	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	79	2260	704	267	2430	756	305	352	299	197	385	
v/s Ratio Prot	0.02	c0.36		0.06	c0.48		0.04	c0.16		c0.11	0.11	
v/s Ratio Perm			0.01			0.05			0.12			
v/c Ratio	0.52	0.80	0.02	0.76	1.01	0.10	0.46	0.83	0.62	1.01	0.52	
Uniform Delay, d <sub>1</sub>	42.1	21.6	14.0	40.7	23.5	12.9	38.9	35.1	33.5	40.0	31.5	
Progression Factor	0.71	1.48	2.43	0.65	0.36	0.25	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	18.2	2.5	0.0	11.4	17.0	0.1	4.9	20.1	9.1	65.4	5.0	
Delay (s)	48.0	34.5	34.2	37.9	25.5	3.3	43.9	55.2	42.6	105.4	36.5	
Level of Service	D	C	C	D	C	A	D	E	D	F	D	
Approach Delay (s)		34.8			25.3			47.7			70.1	
Approach LOS		C			C			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			84.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘↘	↑↑↑	↘↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	289	5085	4990	1583
Volume (vph)	1633	128	108	2301	1409	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1775	139	117	2501	1532	107
RTOR Reduction (vph)	0	62	0	0	0	9
Lane Group Flow (vph)	1775	77	117	2501	1532	98
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	50.0	50.0	50.0	50.0	32.0	32.0
Effective Green, g (s)	50.0	50.0	50.0	50.0	32.0	32.0
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2825	879	161	2825	1774	563
v/s Ratio Prot	0.35			c0.49	c0.31	
v/s Ratio Perm		0.05	0.40			0.06
v/c Ratio	0.63	0.09	0.73	0.89	0.86	0.17
Uniform Delay, d1	13.7	9.3	14.9	17.5	27.0	19.9
Progression Factor	1.00	1.00	0.18	0.19	1.00	1.00
Incremental Delay, d2	1.1	0.2	7.5	1.3	5.9	0.7
Delay (s)	14.7	9.5	10.3	4.6	32.8	20.6
Level of Service	B	A	B	A	C	C
Approach Delay (s)	14.3			4.9	32.0	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			15.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.9%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

# AM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS

## HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5034		3433		1583			
Flt Permitted	0.07	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	128	5085			5034		3433		1583			
Volume (vph)	176	1494	0	0	2360	170	1113	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1624	0	0	2565	185	1210	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	26	0	0	0
Lane Group Flow (vph)	191	1624	0	0	2741	0	1210	0	461	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4								2		2	
Actuated Green, G (s)	58.0	58.0			58.0		24.0		24.0			
Effective Green, g (s)	58.0	58.0			58.0		24.0		24.0			
Actuated g/C Ratio	0.64	0.64			0.64		0.27		0.27			
Clearance Time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Grp Cap (vph)	82	3277			3244		915		422			
v/s Ratio Prot		0.32			0.54							
v/s Ratio Perm	c1.49						c0.35		0.29			
v/c Ratio	2.33	0.50			0.84		1.32		1.09			
Uniform Delay, d1	16.0	8.4			12.5		33.0		33.0			
Progression Factor	0.88	0.25			1.00		1.00		1.00			
Incremental Delay, d2	628.2	0.4			2.9		152.7		70.8			
Delay (s)	642.3	2.6			15.4		185.7		103.8			
Level of Service	F	A			B		F		F			
Approach Delay (s)		69.9			15.4			162.2			0.0	
Approach LOS		E			B			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay	71.0			HCM Level of Service			E					
HCM Volume to Capacity ratio	2.02											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	100.9%			ICU Level of Service			G					
Analysis Period (min)	15											
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1289	641	0	1813	330	0	0	0	176	0	820
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1401	697	0	1971	359	0	0	0	191	0	891
RTOR Reduction (vph)	0	0	294	0	0	152	0	0	0	0	0	7
Lane Group Flow (vph)	0	1401	403	0	1971	207	0	0	0	191	0	884
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.28			c0.39							
v/s Ratio Perm		0.25			0.13					0.06		c0.56
v/c Ratio		0.48	0.44		0.67	0.23				0.17		1.67
Uniform Delay, d1		11.1	10.8		13.1	9.2				21.2		30.0
Progression Factor		0.22	3.95		0.72	0.53				1.00		1.00
Incremental Delay, d2		0.3	0.7		0.7	0.3				0.3		311.9
Delay (s)		2.7	43.2		10.1	5.2				21.5		341.9
Level of Service		A	D		B	A				C		F
Approach Delay (s)		16.2			9.3			0.0		285.4		
Approach LOS		B			A			A		F		
<b>Intersection Summary</b>												
HCM Average Control Delay		66.1			HCM Level of Service			E				
HCM Volume to Capacity ratio		1.04										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		92.5%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Volume (vph)	5	2006	61	403	2270	19	68	0	84	12	0	3	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	5	2180	66	438	2467	21	74	0	91	13	0	3	
RTOR Reduction (vph)	0	0	36	0	0	9	0	0	91	0	0	1	
Lane Group Flow (vph)	5	2180	30	438	2467	12	74	0	0	13	0	2	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom	
Protected Phases	7	4			8					6		7	
Permitted Phases						8						6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551	
v/s Ratio Prot	0.00	c0.43			c0.49					c0.01		0.00	
v/s Ratio Perm						0.01						0.00	
v/c Ratio	0.03	0.61	no cap	no cap	0.86	0.01	no cap		0.00	0.04		0.00	
Uniform Delay, d1	37.0	7.0	Error	Error	16.7	8.6	Error		45.0	28.4		21.9	
Progression Factor	0.74	1.22			0.32	0.05			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.1	Error	Error	1.0	0.0	Error		0.0	0.2		0.0	
Delay (s)	27.6	8.6	Error	Error	6.3	0.4	Error		45.0	28.5		21.9	
Level of Service	C	A	F	F	A	A	F		D	C		C	
Approach Delay (s)		Error			Error			Error				27.3	
Approach LOS		F			F			F				C	
<b>Intersection Summary</b>													
HCM Average Control Delay			Error									HCM Level of Service	F
HCM Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.1%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1520	341	893	2494	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1652	371	971	2711	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	238	0	0	211	0	0	9	0	0	4
Lane Group Flow (vph)	230	1652	133	971	2711	266	96	18	227	96	73	116
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405
v/s Ratio Prot	0.07	c0.32		0.28	c0.53		c0.03	0.01	0.04	0.03	0.02	c0.02
v/s Ratio Perm			0.08			0.17			0.04			0.05
v/c Ratio	1.00	1.04	0.27	1.02	1.02	0.32	0.63	0.03	0.16	0.63	0.11	0.29
Uniform Delay, d <sub>1</sub>	42.0	31.0	23.3	32.5	21.5	12.3	42.3	29.8	13.8	42.3	30.2	26.9
Progression Factor	1.00	1.27	2.67	0.90	0.85	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	54.5	33.0	1.1	29.4	20.4	0.7	17.9	0.1	0.2	17.9	0.3	1.8
Delay (s)	96.5	72.3	63.2	58.7	38.7	6.0	60.2	29.8	14.1	60.2	30.6	28.7
Level of Service	F	E	E	E	D	A	E	C	B	E	C	C
Approach Delay (s)		73.3			39.6			27.5			39.6	
Approach LOS		E			D			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			49.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			74.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	1806	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	1806	
Volume (vph)	76	2207	121	354	2128	93	101	131	338	202	207	52	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	83	2399	132	385	2313	101	110	142	367	220	225	57	
RTOR Reduction (vph)	0	0	66	0	0	52	0	0	243	0	10	0	
Lane Group Flow (vph)	83	2399	66	385	2313	49	110	142	124	220	272	0	
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			8			2				
Actuated Green, G (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	22.0	
Effective Green, g (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	22.0	
Actuated g/C Ratio	0.06	0.37	0.37	0.16	0.47	0.47	0.06	0.20	0.20	0.10	0.24	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	98	1865	580	534	2373	739	191	373	317	177	441	441	
v/s Ratio Prot	0.05	c0.47		0.11	c0.45		c0.03	0.08		c0.12	c0.15		
v/s Ratio Perm			0.04			0.03			0.08				
v/c Ratio	0.85	1.29	0.11	0.72	0.97	0.07	0.58	0.38	0.39	1.24	0.62	0.62	
Uniform Delay, d1	42.1	28.5	18.8	36.1	23.5	13.2	41.5	31.2	31.2	40.5	30.3	30.3	
Progression Factor	0.66	1.02	1.50	0.56	0.30	0.11	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.2	129.2	0.0	5.3	9.9	0.1	12.0	2.9	3.6	147.8	6.3	6.3	
Delay (s)	36.1	158.2	28.3	25.6	16.9	1.5	53.5	34.1	34.8	188.3	36.6	36.6	
Level of Service	D	F	C	C	B	A	D	C	C	F	D	D	
Approach Delay (s)		147.8			17.5			38.0			103.1		
Approach LOS		F			B			D			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			78.2									HCM Level of Service	E
HCM Volume to Capacity ratio			1.07										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	16.0
Intersection Capacity Utilization			84.8%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘↘	↑↑↑	↘↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	2597	128	319	1928	804	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2823	139	347	2096	874	107
RTOR Reduction (vph)	0	59	0	0	0	1
Lane Group Flow (vph)	2823	80	347	2096	874	106
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.56			0.41	c0.18	
v/s Ratio Perm		0.05	c1.15			0.07
v/c Ratio	1.04	0.09	2.16	0.77	0.46	0.18
Uniform Delay, d1	21.0	10.3	21.0	16.7	21.1	18.7
Progression Factor	1.00	1.00	0.28	0.10	1.00	1.00
Incremental Delay, d2	29.1	0.2	526.6	0.7	0.8	0.7
Delay (s)	50.1	10.5	532.5	2.4	21.9	19.3
Level of Service	D	B	F	A	C	B
Approach Delay (s)	48.2			77.7	21.7	
Approach LOS	D			E	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			55.4		HCM Level of Service	E
HCM Volume to Capacity ratio			1.46			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			84.6%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

PM 2010 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5016		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5016		3433		1583			
Volume (vph)	176	1263	0	0	1705	170	1051	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1373	0	0	1853	185	1142	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	19	0	0	0
Lane Group Flow (vph)	191	1373	0	0	2025	0	1142	0	468	0	0	0
Turn Type	Perm					custom		custom				
Protected Phases	4				8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0	47.0			47.0		35.0		35.0			
Effective Green, g (s)	47.0	47.0			47.0		35.0		35.0			
Actuated g/C Ratio	0.52	0.52			0.52		0.39		0.39			
Clearance Time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Grp Cap (vph)	83	2656			2619		1335		616			
v/s Ratio Prot		0.27			0.40							
v/s Ratio Perm	c1.20						c0.33		0.30			
v/c Ratio	2.30	0.52			0.77		0.86		0.76			
Uniform Delay, d1	21.5	14.1			17.2		25.2		23.9			
Progression Factor	1.13	1.03			1.00		1.00		1.00			
Incremental Delay, d2	618.7	0.7			2.3		7.2		8.6			
Delay (s)	643.1	15.2			19.5		32.4		32.4			
Level of Service	F	B			B		C		C			
Approach Delay (s)		91.9			19.5			32.4			0.0	
Approach LOS		F			B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			45.2		HCM Level of Service				D			
HCM Volume to Capacity ratio			1.68									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			86.5%		ICU Level of Service				E			
Analysis Period (min)			15									

c Critical Lane Group

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	1289	641	0	1813	330	0	0	0	176	0	820
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1401	697	0	1971	359	0	0	0	191	0	891
RTOR Reduction (vph)	0	0	294	0	0	152	0	0	0	0	0	7
Lane Group Flow (vph)	0	1401	403	0	1971	207	0	0	0	191	0	884
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		0.28			c0.39							
v/s Ratio Perm		0.25			0.13					0.06		c0.56
v/c Ratio		0.48	0.44		0.67	0.23				0.17		1.67
Uniform Delay, d1		11.1	10.8		13.1	9.2				21.2		30.0
Progression Factor		0.22	3.95		0.72	0.53				1.00		1.00
Incremental Delay, d2		0.3	0.7		0.7	0.3				0.3		311.9
Delay (s)		2.7	43.2		10.1	5.2				21.5		341.9
Level of Service		A	D		B	A				C		F
Approach Delay (s)		16.1			9.3			0.0		285.4		
Approach LOS		B			A			A		F		
<b>Intersection Summary</b>												
HCM Average Control Delay		66.1			HCM Level of Service			E				
HCM Volume to Capacity ratio		1.04										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		92.5%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  			  								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Volume (vph)	5	2006	61	403	2270	19	68	0	84	12	0	3	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	5	2180	66	438	2467	21	74	0	91	13	0	3	
RTOR Reduction (vph)	0	0	36	0	0	9	0	0	91	0	0	1	
Lane Group Flow (vph)	5	2180	30	438	2467	12	74	0	0	13	0	2	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom	
Protected Phases	7	4			8					6		7	
Permitted Phases						8						6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551	
v/s Ratio Prot	0.00	c0.43			c0.49					c0.01		0.00	
v/s Ratio Perm						0.01						0.00	
v/c Ratio	0.03	0.61	no cap	no cap	0.86	0.01	no cap		0.00	0.04		0.00	
Uniform Delay, d <sub>1</sub>	37.0	7.0	Error	Error	16.7	8.6	Error		45.0	28.4		21.9	
Progression Factor	0.63	1.20			0.32	0.05			1.00	1.00		1.00	
Incremental Delay, d <sub>2</sub>	0.1	0.2	Error	Error	1.0	0.0	Error		0.0	0.2		0.0	
Delay (s)	23.4	8.6	Error	Error	6.3	0.4	Error		45.0	28.5		21.9	
Level of Service	C	A	F	F	A	A	F		D	C		C	
Approach Delay (s)		Error			Error			Error				27.3	
Approach LOS		F			F			F				C	
<b>Intersection Summary</b>													
HCM Average Control Delay			Error									HCM Level of Service	F
HCM Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.1%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	212	1520	341	893	2494	439	88	17	217	88	67	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1652	371	971	2711	477	96	18	236	96	73	120
RTOR Reduction (vph)	0	0	238	0	0	211	0	0	9	0	0	4
Lane Group Flow (vph)	230	1652	133	971	2711	266	96	18	227	96	73	116
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405
v/s Ratio Prot	0.07	c0.32		0.28	c0.53		c0.03	0.01	0.04	0.03	0.02	c0.02
v/s Ratio Perm			0.08			0.17			0.04			0.05
v/c Ratio	1.00	1.04	0.27	1.02	1.02	0.32	0.63	0.03	0.16	0.63	0.11	0.29
Uniform Delay, d1	42.0	31.0	23.3	32.5	21.5	12.3	42.3	29.8	13.8	42.3	30.2	26.9
Progression Factor	1.05	1.30	2.76	0.90	0.85	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.5	33.0	1.1	29.4	20.4	0.7	17.9	0.1	0.2	17.9	0.3	1.8
Delay (s)	98.6	73.4	65.3	58.7	38.7	6.0	60.2	29.8	14.1	60.2	30.6	28.7
Level of Service	F	E	E	E	D	A	E	C	B	E	C	C
Approach Delay (s)		74.6			39.6			27.5			39.6	
Approach LOS		E			D			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			50.2				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			74.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1822	
Volume (vph)	38	1614	34	186	2250	129	129	270	284	171	164	28
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	1754	37	202	2446	140	140	293	309	186	178	30
RTOR Reduction (vph)	0	0	25	0	0	69	0	0	244	0	7	0
Lane Group Flow (vph)	41	1754	12	202	2446	71	140	293	65	186	201	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0	
Effective Green, g (s)	4.0	29.0	29.0	16.0	41.0	41.0	7.0	19.0	19.0	10.0	22.0	
Actuated g/C Ratio	0.04	0.32	0.32	0.18	0.46	0.46	0.08	0.21	0.21	0.11	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	79	1639	510	610	2317	721	267	393	334	197	445	
v/s Ratio Prot	0.02	c0.34		0.06	c0.48		0.04	c0.16		c0.11	0.11	
v/s Ratio Perm			0.01			0.05			0.04			
v/c Ratio	0.52	1.07	0.02	0.33	1.06	0.10	0.52	0.75	0.20	0.94	0.45	
Uniform Delay, d1	42.1	30.5	20.8	32.3	24.5	14.0	39.9	33.2	29.2	39.7	28.9	
Progression Factor	0.68	1.05	1.70	0.53	0.31	0.16	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.0	41.7	0.1	0.9	32.2	0.2	7.2	12.1	1.3	51.0	3.3	
Delay (s)	46.6	73.8	35.4	17.9	39.9	2.4	47.1	45.4	30.5	90.7	32.2	
Level of Service	D	E	D	B	D	A	D	D	C	F	C	
Approach Delay (s)		72.4			36.4			39.5			59.8	
Approach LOS		E			D			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			49.9				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			83.8%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘↘	↑↑↑	↘↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	1588	128	108	2292	1409	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1726	139	117	2491	1532	107
RTOR Reduction (vph)	0	65	0	0	0	8
Lane Group Flow (vph)	1726	74	117	2491	1532	99
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.34			c0.49	c0.31	
v/s Ratio Perm		0.05	0.39			0.06
v/c Ratio	0.64	0.09	0.73	0.92	0.81	0.17
Uniform Delay, d1	14.8	10.3	16.0	19.2	25.1	18.6
Progression Factor	1.00	1.00	0.18	0.20	1.00	1.00
Incremental Delay, d2	1.2	0.2	2.6	0.7	4.0	0.6
Delay (s)	16.0	10.5	5.5	4.5	29.1	19.2
Level of Service	B	B	A	A	C	B
Approach Delay (s)	15.6			4.5	28.5	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.7%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

AM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			5016		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			5016		3433		1583			
Volume (vph)	176	1263	0	0	1705	170	1051	0	448	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1373	0	0	1853	185	1142	0	487	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	19	0	0	0
Lane Group Flow (vph)	191	1373	0	0	2025	0	1142	0	468	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0						47.0		35.0			
Effective Green, g (s)	47.0						47.0		35.0			
Actuated g/C Ratio	0.52						0.52		0.39			
Clearance Time (s)	4.0						4.0		4.0			
Lane Grp Cap (vph)	83			2656			2619		1335			616
v/s Ratio Prot				0.27			0.40					
v/s Ratio Perm	c1.20						c0.33		0.30			
v/c Ratio	2.30			0.52			0.77		0.86			0.76
Uniform Delay, d1	21.5			14.1			17.2		25.2			23.9
Progression Factor	1.13			1.03			1.00		1.00			1.00
Incremental Delay, d2	618.7			0.7			2.3		7.2			8.6
Delay (s)	643.1			15.2			19.5		32.4			32.4
Level of Service	F			B			B		C			C
Approach Delay (s)				91.9			19.5		32.4			0.0
Approach LOS				F			B		C			A
<b>Intersection Summary</b>												
HCM Average Control Delay				45.2			HCM Level of Service			D		
HCM Volume to Capacity ratio				1.68								
Actuated Cycle Length (s)				90.0			Sum of lost time (s)			8.0		
Intersection Capacity Utilization				86.5%			ICU Level of Service			E		
Analysis Period (min)				15								
c Critical Lane Group												

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Flt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	2995	1040	0	1896	394	0	0	0	274	0	651
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3255	1130	0	2061	428	0	0	0	298	0	708
RTOR Reduction (vph)	0	0	417	0	0	181	0	0	0	0	0	5
Lane Group Flow (vph)	0	3255	713	0	2061	247	0	0	0	298	0	703
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		52.0	52.0		52.0	52.0				30.0		30.0
Effective Green, g (s)		52.0	52.0		52.0	52.0				30.0		30.0
Actuated g/C Ratio		0.58	0.58		0.58	0.58				0.33		0.33
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2938	915		2938	915				1144		528
v/s Ratio Prot		c0.64			0.41							
v/s Ratio Perm		0.45			0.16					0.09		c0.44
v/c Ratio		1.11	0.78		0.70	0.27				0.26		1.33
Uniform Delay, d1		19.0	14.6		13.5	9.5				21.9		30.0
Progression Factor		0.71	5.44		0.71	0.95				1.00		1.00
Incremental Delay, d2		49.1	0.6		1.0	0.5				0.6		161.5
Delay (s)		62.5	79.9		10.6	9.5				22.5		191.5
Level of Service		E	E		B	A				C		F
Approach Delay (s)		67.0			10.4			0.0		141.4		
Approach LOS		E			B			A		F		
<b>Intersection Summary</b>												
HCM Average Control Delay		58.6			HCM Level of Service			E				
HCM Volume to Capacity ratio		1.19										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		83.6%			ICU Level of Service			E				
Analysis Period (min)		15										
c	Critical Lane Group											

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Volume (vph)	33	2701	18	119	2598	58	205	0	265	175	0	51	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	36	2936	20	129	2824	63	223	0	288	190	0	55	
RTOR Reduction (vph)	0	0	8	0	0	27	0	0	83	0	0	1	
Lane Group Flow (vph)	36	2936	12	129	2824	36	223	0	205	190	0	54	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom	
Protected Phases	7	4			8					6		7	
Permitted Phases						8						6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551	
v/s Ratio Prot	0.02	c0.58			c0.56					c0.11		0.01	
v/s Ratio Perm						0.02						0.02	
v/c Ratio	0.22	0.82	no cap	no cap	0.99	0.04	no cap		no cap	0.51		0.10	
Uniform Delay, d <sub>1</sub>	37.7	9.4	Error	Error	19.3	8.8	Error		Error	31.5		22.5	
Progression Factor	0.77	1.72			0.76	0.38				1.00		1.00	
Incremental Delay, d <sub>2</sub>	0.3	0.2	Error	Error	2.7	0.0	Error		Error	5.0		0.4	
Delay (s)	29.1	16.4	Error	Error	17.3	3.4	Error		Error	36.6		22.9	
Level of Service	C	B	F	F	B	A	F		F	D		C	
Approach Delay (s)		Error			Error			Error				33.5	
Approach LOS		F			F			F				C	
<b>Intersection Summary</b>													
HCM Average Control Delay			Error									HCM Level of Service	F
HCM Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			88.3%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583	
Volume (vph)	73	2922	107	264	2174	109	333	65	822	242	21	268	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	79	3176	116	287	2363	118	362	71	893	263	23	291	
RTOR Reduction (vph)	0	0	44	0	0	56	0	0	0	0	0	1	
Lane Group Flow (vph)	79	3176	72	287	2363	62	362	71	893	263	23	290	
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov		
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases			4			8			2			6	
Actuated Green, G (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0	
Effective Green, g (s)	6.0	28.0	28.0	25.0	47.0	47.0	4.0	17.0	42.0	4.0	17.0	23.0	
Actuated g/C Ratio	0.07	0.31	0.31	0.28	0.52	0.52	0.04	0.19	0.47	0.04	0.19	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	229	1582	492	954	2656	827	153	668	1424	153	668	405	
v/s Ratio Prot	0.02	c0.62		0.08	c0.46		c0.11	0.02	c0.17	0.08	0.01	0.05	
v/s Ratio Perm			0.05			0.04			0.15			0.14	
v/c Ratio	0.34	2.01	0.15	0.30	0.89	0.07	2.37	0.11	0.63	1.72	0.03	0.71	
Uniform Delay, d1	40.1	31.0	22.4	25.6	19.2	10.7	43.0	30.2	18.1	43.0	29.8	30.5	
Progression Factor	1.00	1.08	1.02	0.75	0.65	0.29	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	453.6	0.1	0.4	2.5	0.1	634.4	0.3	2.1	349.6	0.1	10.3	
Delay (s)	40.6	487.0	23.0	19.7	15.0	3.2	677.4	30.5	20.2	392.6	29.9	40.8	
Level of Service	D	F	C	B	B	A	F	C	C	F	C	D	
Approach Delay (s)		460.6			15.0			200.2			200.7		
Approach LOS		F			B			F			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			245.6					HCM Level of Service	F				
HCM Volume to Capacity ratio			1.25										
Actuated Cycle Length (s)			90.0					Sum of lost time (s)	8.0				
Intersection Capacity Utilization			102.1%					ICU Level of Service	G				
Analysis Period (min)			15										
c Critical Lane Group													

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	
Volume (vph)	76	2226	121	364	2397	93	101	131	338	202	207	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	2420	132	396	2605	101	110	142	367	220	225	57
RTOR Reduction (vph)	0	0	66	0	0	46	0	0	243	0	10	0
Lane Group Flow (vph)	83	2420	66	396	2605	55	110	142	124	220	272	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	
Effective Green, g (s)	5.0	33.0	33.0	14.0	42.0	42.0	5.0	18.0	18.0	9.0	22.0	
Actuated g/C Ratio	0.06	0.37	0.37	0.16	0.47	0.47	0.06	0.20	0.20	0.10	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	98	1865	580	534	2373	739	191	373	317	177	441	
v/s Ratio Prot	0.05	c0.48		0.12	c0.51		c0.03	0.08		c0.12	c0.15	
v/s Ratio Perm			0.04			0.03			0.08			
v/c Ratio	0.85	1.30	0.11	0.74	1.10	0.07	0.58	0.38	0.39	1.24	0.62	
Uniform Delay, d1	42.1	28.5	18.8	36.3	24.0	13.3	41.5	31.2	31.2	40.5	30.3	
Progression Factor	0.64	1.05	1.58	0.61	0.38	0.16	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	30.3	135.7	0.2	3.9	47.3	0.1	12.0	2.9	3.6	147.8	6.3	
Delay (s)	57.2	165.7	29.9	25.8	56.3	2.2	53.5	34.1	34.8	188.3	36.6	
Level of Service	E	F	C	C	E	A	D	C	C	F	D	
Approach Delay (s)		155.5			50.7			38.0			103.1	
Approach LOS		F			D			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			93.6				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			85.1%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	301	5085	4990	1583
Volume (vph)	2312	128	329	1970	804	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2513	139	358	2141	874	107
RTOR Reduction (vph)	0	65	0	0	0	1
Lane Group Flow (vph)	2513	74	358	2141	874	106
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	48.0	48.0	48.0	48.0	34.0	34.0
Effective Green, g (s)	48.0	48.0	48.0	48.0	34.0	34.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	2712	844	161	2712	1885	598
v/s Ratio Prot	0.49			0.42	c0.18	
v/s Ratio Perm		0.05	c1.19			0.07
v/c Ratio	0.93	0.09	2.22	0.79	0.46	0.18
Uniform Delay, d1	19.4	10.3	21.0	16.9	21.1	18.7
Progression Factor	1.00	1.00	0.24	0.10	1.00	1.00
Incremental Delay, d2	6.9	0.2	552.4	0.2	0.8	0.7
Delay (s)	26.3	10.5	557.5	1.9	21.9	19.3
Level of Service	C	B	F	A	C	B
Approach Delay (s)	25.5			81.5	21.7	
Approach LOS	C			F	C	

Intersection Summary

HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

PM 2025 AMBIENT+CUMULATIVE+PROJECT W/O IMPROVEMENTS  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.98		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			4972		3433		1583			
Flt Permitted	0.09	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	159	5085			4972		3433		1583			
Volume (vph)	895	2377	0	0	1543	270	747	0	261	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	973	2584	0	0	1677	293	812	0	284	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	1	0	0	0
Lane Group Flow (vph)	973	2584	0	0	1943	0	812	0	283	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4						8					
Permitted Phases	4						2		2			
Actuated Green, G (s)	47.0	47.0			47.0		35.0		35.0			
Effective Green, g (s)	47.0	47.0			47.0		35.0		35.0			
Actuated g/C Ratio	0.52	0.52			0.52		0.39		0.39			
Clearance Time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Grp Cap (vph)	83	2656			2596		1335		616			
v/s Ratio Prot		0.51			0.39							
v/s Ratio Perm	c6.14						c0.24		0.18			
v/c Ratio	11.72	0.97			0.75		0.61		0.46			
Uniform Delay, d1	21.5	20.9			16.9		22.0		20.5			
Progression Factor	0.79	0.79			1.00		1.00		1.00			
Incremental Delay, d2	4827.4	1.9			2.0		2.1		2.5			
Delay (s)	4844.4	18.4			18.9		24.1		22.9			
Level of Service	F	B			B		C		C			
Approach Delay (s)		1338.5			18.9			23.8			0.0	
Approach LOS		F			B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			728.4				HCM Level of Service		F			
HCM Volume to Capacity ratio			6.98									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			116.7%				ICU Level of Service		H			
Analysis Period (min)			15									
c Critical Lane Group												

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Volume (vph)	0	2995	1040	0	1896	394	0	0	0	274	0	651
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3255	1130	0	2061	428	0	0	0	298	0	708
RTOR Reduction (vph)	0	0	417	0	0	200	0	0	0	0	0	3
Lane Group Flow (vph)	0	3255	713	0	2061	228	0	0	0	298	0	705
Turn Type		Perm			Perm					custom		custom
Protected Phases		4			8							
Permitted Phases		4			8					6		6
Actuated Green, G (s)		48.0	48.0		48.0	48.0				34.0		34.0
Effective Green, g (s)		48.0	48.0		48.0	48.0				34.0		34.0
Actuated g/C Ratio		0.53	0.53		0.53	0.53				0.38		0.38
Clearance Time (s)		4.0	4.0		4.0	4.0				4.0		4.0
Lane Grp Cap (vph)		2712	844		2712	844				1297		598
v/s Ratio Prot		c0.64			0.41							
v/s Ratio Perm		0.45			0.14					0.09		c0.45
v/c Ratio		1.20	0.84		0.76	0.27				0.23		1.18
Uniform Delay, d1		21.0	17.8		16.5	11.5				19.1		28.0
Progression Factor		0.43	1.00		0.70	0.12				1.00		1.00
Incremental Delay, d2		90.5	1.0		1.3	0.5				0.4		96.9
Delay (s)		99.5	18.9		13.0	1.9				19.5		124.9
Level of Service		F	B		B	A				B		F
Approach Delay (s)		78.8			11.1			0.0				93.7
Approach LOS		E			B			A				F
<b>Intersection Summary</b>												
HCM Average Control Delay		59.3			HCM Level of Service							E
HCM Volume to Capacity ratio		1.19										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)							8.0
Intersection Capacity Utilization		83.6%			ICU Level of Service							E
Analysis Period (min)		15										
c	Critical Lane Group											

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00		1.00	1.00		1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770		1583	1770		1583	
Volume (vph)	33	2701	18	119	2598	58	205	0	265	175	0	51	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	36	2936	20	129	2824	63	223	0	288	190	0	55	
RTOR Reduction (vph)	0	0	8	0	0	27	0	0	83	0	0	1	
Lane Group Flow (vph)	36	2936	12	129	2824	36	223	0	205	190	0	54	
Turn Type	Prot		NA	NA		Perm	NA		NA	Prot		custom	
Protected Phases	7	4			8					6		7	
Permitted Phases						8						6	
Actuated Green, G (s)	8.0	62.7	0.0	0.0	50.2	50.2	0.0		0.0	18.3		26.3	
Effective Green, g (s)	8.5	63.2	0.0	0.0	50.7	50.7	0.0		0.0	18.8		27.3	
Actuated g/C Ratio	0.09	0.70	0.00	0.00	0.56	0.56	0.00		0.00	0.21		0.30	
Clearance Time (s)	4.5	4.5			4.5	4.5				4.5		4.5	
Lane Grp Cap (vph)	167	3571	0	0	2865	892	0		0	370		551	
v/s Ratio Prot	0.02	c0.58			c0.56					c0.11		0.01	
v/s Ratio Perm						0.02						0.02	
v/c Ratio	0.22	0.82	no cap	no cap	0.99	0.04	no cap		no cap	0.51		0.10	
Uniform Delay, d1	37.7	9.4	Error	Error	19.3	8.8	Error		Error	31.5		22.5	
Progression Factor	1.10	1.35			0.41	0.02				1.00		1.00	
Incremental Delay, d2	0.3	0.2	Error	Error	5.9	0.0	Error		Error	5.0		0.4	
Delay (s)	41.8	12.9	Error	Error	13.9	0.2	Error		Error	36.6		22.9	
Level of Service	D	B	F	F	B	A	F		F	D		C	
Approach Delay (s)		Error			Error			Error				33.5	
Approach LOS		F			F			F				C	
<b>Intersection Summary</b>													
HCM Average Control Delay			Error									HCM Level of Service	F
HCM Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			88.3%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	73	2922	107	264	2174	109	333	65	822	242	21	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	3176	116	287	2363	118	362	71	893	263	23	291
RTOR Reduction (vph)	0	0	44	0	0	60	0	0	2	0	0	1
Lane Group Flow (vph)	79	3176	72	287	2363	58	362	71	891	263	23	290
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov	Prot		pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.0	42.0	42.0	7.0	43.0	43.0	7.0	18.0	25.0	7.0	18.0	24.0
Effective Green, g (s)	6.0	42.0	42.0	7.0	43.0	43.0	7.0	18.0	25.0	7.0	18.0	24.0
Actuated g/C Ratio	0.07	0.47	0.47	0.08	0.48	0.48	0.08	0.20	0.28	0.08	0.20	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	229	2373	739	267	2430	756	267	708	774	267	708	492
v/s Ratio Prot	0.02	c0.62		0.08	c0.46		c0.11	0.02	c0.09	0.08	0.01	0.04
v/s Ratio Perm			0.05			0.04			0.23			0.14
v/c Ratio	0.34	1.34	0.10	1.07	0.97	0.08	1.36	0.10	1.15	0.99	0.03	0.59
Uniform Delay, d1	40.1	24.0	13.4	41.5	22.9	12.7	41.5	29.4	32.5	41.4	29.0	28.7
Progression Factor	1.06	0.68	0.26	0.78	0.61	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	152.5	0.0	59.5	7.6	0.1	182.6	0.3	82.5	51.4	0.1	5.1
Delay (s)	42.8	168.9	3.5	91.9	21.5	9.3	224.1	29.7	115.0	92.8	29.1	33.8
Level of Service	D	F	A	F	C	A	F	C	F	F	C	C
Approach Delay (s)		160.2			28.3			140.2			60.5	
Approach LOS		F			C			F			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			104.4				HCM Level of Service				F	
HCM Volume to Capacity ratio			1.23									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			102.1%				ICU Level of Service			G		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1806	
Volume (vph)	76	2226	121	364	2397	93	101	131	338	202	207	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	2420	132	396	2605	101	110	142	367	220	225	57
RTOR Reduction (vph)	0	0	65	0	0	46	0	0	172	0	10	0
Lane Group Flow (vph)	83	2420	67	396	2605	55	110	142	195	220	272	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	4.0	37.0	37.0	9.0	42.0	42.0	5.0	18.0	18.0	10.0	23.0	
Effective Green, g (s)	4.0	37.0	37.0	9.0	42.0	42.0	5.0	18.0	18.0	10.0	23.0	
Actuated g/C Ratio	0.04	0.41	0.41	0.10	0.47	0.47	0.06	0.20	0.20	0.11	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	79	2091	651	343	2373	739	191	373	317	197	462	
v/s Ratio Prot	0.05	c0.48		0.12	c0.51		0.03	0.08		c0.12	c0.15	
v/s Ratio Perm			0.04			0.03			0.12			
v/c Ratio	1.05	1.16	0.10	1.15	1.10	0.07	0.58	0.38	0.62	1.12	0.59	
Uniform Delay, d1	43.0	26.5	16.3	40.5	24.0	13.3	41.5	31.2	32.8	40.0	29.3	
Progression Factor	0.86	0.78	0.65	0.91	0.70	0.56	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	101.8	75.3	0.2	83.2	47.3	0.1	12.0	2.9	8.6	98.9	5.4	
Delay (s)	138.7	95.8	10.8	119.9	64.1	7.6	53.5	34.1	41.5	138.9	34.7	
Level of Service	F	F	B	F	E	A	D	C	D	F	C	
Approach Delay (s)		92.9			69.3			41.9			80.4	
Approach LOS		F			E			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			76.7				HCM Level of Service			E		
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			85.1%				ICU Level of Service			E		
Analysis Period (min)			15									
c	Critical Lane Group											

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑↑	↘↙↖	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.94	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	4990	1583
Flt Permitted	1.00	1.00	0.06	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	219	5085	4990	1583
Volume (vph)	2312	128	329	1970	804	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2513	139	358	2141	874	107
RTOR Reduction (vph)	0	37	0	0	0	8
Lane Group Flow (vph)	2513	102	358	2141	874	99
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	66.0	66.0	66.0	66.0	16.0	16.0
Effective Green, g (s)	66.0	66.0	66.0	66.0	16.0	16.0
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	3729	1161	161	3729	887	281
v/s Ratio Prot	0.49			0.42	c0.18	
v/s Ratio Perm		0.06	c1.63			0.06
v/c Ratio	0.67	0.09	2.22	0.57	0.99	0.35
Uniform Delay, d1	6.3	3.4	12.0	5.5	36.9	32.5
Progression Factor	1.00	1.00	1.50	0.05	1.00	1.00
Incremental Delay, d2	1.0	0.1	552.4	0.1	26.9	3.4
Delay (s)	7.3	3.6	570.4	0.3	63.8	35.9
Level of Service	A	A	F	A	E	D
Approach Delay (s)	7.1			82.0	60.7	
Approach LOS	A			F	E	
<b>Intersection Summary</b>						
HCM Average Control Delay			46.2		HCM Level of Service	D
HCM Volume to Capacity ratio			1.99			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.3%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

PM 2025 AMBIENT+CUMULATIVE+PROJECT WITH IMPROVEMENT  
 HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Util. Factor	1.00	0.91			0.91		0.97		1.00			
Frt	1.00	1.00			0.98		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	5085			4972		3433		1583			
Flt Permitted	0.08	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	142	5085			4972		3433		1583			
Volume (vph)	895	2377	0	0	1543	270	747	0	261	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	973	2584	0	0	1677	293	812	0	284	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	6	0	0	0
Lane Group Flow (vph)	973	2584	0	0	1943	0	812	0	278	0	0	0
Turn Type	Perm						custom		custom			
Protected Phases	4				8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	63.0	63.0			63.0		19.0		19.0			
Effective Green, g (s)	63.0	63.0			63.0		19.0		19.0			
Actuated g/C Ratio	0.70	0.70			0.70		0.21		0.21			
Clearance Time (s)	4.0	4.0			4.0		4.0		4.0			
Lane Grp Cap (vph)	99	3560			3480		725		334			
v/s Ratio Prot		0.51			0.39							
v/s Ratio Perm	c6.87						c0.24		0.18			
v/c Ratio	9.83	0.73			0.56		1.12		0.83			
Uniform Delay, d1	13.5	8.2			6.6		35.5		34.0			
Progression Factor	0.69	0.21			1.00		1.00		1.00			
Incremental Delay, d2	3974.5	0.1			0.7		71.5		21.1			
Delay (s)	3983.8	1.8			7.3		107.0		55.1			
Level of Service	F	A			A		F		E			
Approach Delay (s)		1091.1			7.3			93.5			0.0	
Approach LOS		F			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay		603.6			HCM Level of Service		F					
HCM Volume to Capacity ratio		7.78										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)		8.0					
Intersection Capacity Utilization		116.7%			ICU Level of Service		H					
Analysis Period (min)		15										
c	Critical Lane Group											

# **Appendix F**

## **Merge/Diverge Analysis**





# KUNZMAN ASSOCIATES, INC.

OVER 30 YEARS OF EXCELLENT SERVICE

October 5, 2009

Ms. Patricia Brenes  
CITY OF RIVERSIDE  
3900 Main Street, 3rd Floor  
Riverside, CA 92522

Dear Ms. Brenes:

## INTRODUCTION

The firm of Kunzman Associates, Inc. is pleased to submit this freeway merge/diverge/weaving analysis as a supplement to the Alessandro Business Center Traffic Impact Analysis (Revised) prepared by Kunzman Associates, Inc. (November 14, 2007). This freeway merge/diverge/weaving analysis is in response to the comment letters from the California Department of Transportation dated August 12, 2009 and August 18, 2009. A copy of the California Department of Transportation letters are provided in Appendix A.

This freeway merge/diverge/weaving analysis presents a merge/diverge/weaving analysis at the I-215 Freeway/Alessandro Boulevard interchange.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided within Appendix B.

## PROJECT DESCRIPTION

The project site is located north of Alessandro Boulevard and west of San Gorgonio Drive in the City of Riverside (see Figure 1). The proposed land use for the approximately 80 acre project site consists of 662,018 square feet of warehousing (see Figure 2).

Ms. Patricia Brenes  
CITY OF RIVERSIDE  
October 5, 2009

## STUDY AREA

The project site is located north of Alessandro Boulevard and west of San Gorgonio Drive in the City of Riverside. The study area includes the following intersections:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW) - #1

I-215 Freeway NB Ramps (NS) at:  
Alessandro Boulevard (EW) - #2

## AREA ROADWAY SYSTEM

Figure 3 identifies the existing roadway conditions for study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

## FREEWAY RAMP MERGE/DIVERGE/WEAVING ANALYSIS

A ramp junction is an area of competing traffic demands. Entering on-ramp vehicles merge into the adjacent traffic lane competing for space with upstream freeway traffic combining into one stream. In a merge area, individual on-ramp vehicles attempt to find gaps in the adjacent freeway lane traffic stream. The action of individual merging vehicles entering the traffic stream introduces turbulence to traffic flow in the vicinity of the ramp gore area. Approaching freeway vehicles move toward the left to avoid this turbulence, or create gaps for entering vehicles. Exiting off-ramp vehicles diverge from upstream traffic separating into two streams. Exiting vehicles must occupy the lane adjacent to the freeway stream or the off-ramp. This has a redistributing effect on other freeway vehicles, as they move left to avoid the turbulence of the immediate diverge area. Weaving occurs when vehicles are merging and diverging at the same ramp junction area.

Ramps have a limited storage capacity. If capacity is exceeded at the merge point, local congestion and queuing occurs, which may ultimately spill back onto the roadway network. The same is true for diverging vehicles. If capacity is exceeded at the diverge point, queuing can back onto the freeway mainline. Both queuing scenarios should be avoided.

### **1. Methodology**

The freeway ramp merge/diverge/weaving analysis was conducted using the Transportation Research Board, 2000 Highway Capacity Manual, 2000 methodology merge/diverge/weaving density using the HCS+ software, Version 5.4 (2008). The analysis is based on the typical weekday AM and PM peak hour traffic volumes.

## 2. Level of Service

Levels of Service in a merge influence area, diverge influence area, or weaving area is defined in terms of density for all cases of stable operation, Level of Service A through Level of Service E. Level of Service F exists when the demand exceeds the capacity of the on-ramp or off-ramp. The Transportation Research Board, 2000 Highway Capacity Manual states that Level of Service F is unacceptable because congestion is likely to occur, therefore Level of Service E should not be exceeded. The California Department of Transportation has defined Level of Service D as the maximum acceptable Level of Service.

### Level of Service A:

Unrestricted operations. Density is low enough to permit smooth merging/diverging/weaving, with virtually no turbulence in the traffic stream. Level of Service A represents a density of passenger cars per mile per lane of less than or equal to 10. The California Department of Transportation has defined Level of Service A as an acceptable Level of Service.

### Level of Service B:

Merging/diverging/weaving maneuvers become noticeable to through drivers and minimum turbulence occurs. Level of Service B represents a density of passenger cars per mile per lane of greater than 10 to 20. The California Department of Transportation has defined Level of Service B as an acceptable Level of Service.

### Level of Service C:

Speed within the influence area begins to decline as turbulence levels become noticeable. Both ramp and freeway vehicles begin to adjust their speed to accomplish smooth transitions. Level of Service C represents a density of passenger cars per mile per lane of greater than 20 to 28. The California Department of Transportation has defined Level of Service C as an acceptable Level of Service.

### Level of Service D:

Turbulence levels in the influence area become intrusive and virtually all vehicles slow to accommodate merging/diverging/weaving. Some ramp queues may form at heavily used on-ramps, but freeway operations remain stable. Level of Service D represents a density of passenger cars per mile per lane of greater than 28 to 35. The California Department of Transportation has defined Level of Service D as the maximum acceptable Level of Service.

### Level of Service E:

Conditions approaching capacity. Speeds reduce significantly and turbulence is felt by virtually all drivers. Flow levels approach capacity and small changes in demand or disruptions within the traffic stream can cause both ramp and freeway

queues to form. Level of Service E represents a density of passenger cars per mile per lane of greater 35. The California Department of Transportation has defined Level of Service E as an unacceptable Level of Service.

Level of Service F:

Demand exceeds the capacity of the on-ramp or off-ramp. The California department of transportation has defined Level of Service E as an unacceptable Level of Service.

### **3. Study Area**

This merge/diverge/weaving analysis analyzes the I-215 Freeway interchange at Alessandro Boulevard in the City of Riverside. A merge analysis has been conducted for the I-215 Freeway SB on-ramp (westbound Alessandro Boulevard) and the I-215 Freeway NB on-ramp at Alessandro Boulevard. A diverge analysis has been conducted for the I-215 Freeway SB off-ramp at Alessandro Boulevard. A weaving analysis has been conducted for the I-215 Freeway SB on-ramp (eastbound Alessandro Boulevard) and the I-215 Freeway NB off-ramp at Alessandro Boulevard.

### **4. Traffic Volume Data**

Traffic volume data is from the Alessandro Business Center Traffic Impact Analysis (Revised) prepared by Kunzman Associates, Inc. (November 14, 2007), 2008 Traffic Volumes on California State Highways by the California Department of Transportation, and 2008 Ramp Volumes on the California State Freeway System by the California Department of Transportation (see Appendix C).

### **5. Analysis**

Table 1 summarizes results of the merge/diverge/weaving analyses conducted at the I-215 Freeway/Alessandro Boulevard interchange. Merge/diverge/weaving analysis worksheets are provided in Appendix D.

- A. For existing traffic conditions, the study area merge/diverge/weaving areas currently operate at Level of Service D or better during the peak hours except for the following diverge area that currently operates at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

- B. For Opening Year (2010) Without Project traffic conditions, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours except for the following diverge and weaving areas that are projected operate at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

- C. For Opening Year (2010) With Project traffic conditions, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours except for the following diverge and weaving areas that are projected to operate at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

As shown in Table 1, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours for Opening Year (2010) With Project traffic conditions, with improvements.

## CONCLUSION

For existing traffic conditions, the study area merge/diverge/weaving areas currently operate at Level of Service D or better during the peak hours except for the following diverge area that currently operates at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

For Opening Year (2010) Without Project traffic conditions, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours except for the following diverge and weaving areas that are projected operate at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

For Opening Year (2010) With Project traffic conditions, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours except for the following diverge and weaving areas that are projected to operate at Level of Service E to F during the peak hours:

I-215 Freeway SB Ramps (NS) at:  
Alessandro Boulevard (EW)

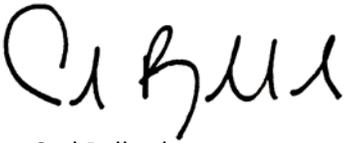
Ms. Patricia Brenes  
CITY OF RIVERSIDE  
October 5, 2009

As shown in Table 1, the study area merge/diverge/weaving areas are projected to operate at Level of Service D or better during the peak hours for Opening Year (2010) With Project traffic conditions, with improvements.

It has been a pleasure to service your needs on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 973-8383.

Sincerely,

KUNZMAN ASSOCIATES, INC.

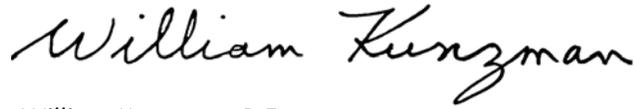


Carl Ballard  
Principal Associate

#3453i



KUNZMAN ASSOCIATES, INC.



William Kunzman, P.E.  
Principal  
Professional Registration  
Expiration Date 3-31-2010

**Table 1**  
**Merge/Diverge/Weaving Analysis<sup>1</sup>**

Ramp	Existing		Opening Year (2010) Without Project		Opening Year (2010) With Project		Opening Year (2010) With Project - Improvements					
	Peak Hour		Peak Hour		Peak Hour		Peak Hour - Extend Lane		Peak hour - Add Lane		Add Mainline Lane and Extend Lane	
	Morning	Evening	Morning	Evening	Morning	Evening	Morning	Evening	Morning	Evening	Peak Hour	
											Morning	Evening
I-215 Freeway SB Ramps (NS) at: Alessandro Boulevard (EW) <sup>2</sup>												
Merge	34.0-D	27.2-C	34.9-D	27.4-C	34.9-D	27.4-C	-	-	-	-	-	-
Diverge	53.8-F <sup>3</sup>	47.6-F <sup>3</sup>	57.5-F <sup>3</sup>	50.3-E <sup>3</sup>	57.6-F <sup>3</sup>	50.4-E <sup>3</sup>	-	-	-	-	34.6-D	28.9-D
Weaving	33.8-D	28.3-D	36.1-E	31.2-D	36.2-E	32.5-D	-	-	27.1-C	24.4-C	-	-
I-215 Freeway NB Ramps (NS) at: Alessandro Boulevard (EW) <sup>2</sup>												
Merge	25.8-C	29.0-D	27.2-C	31.4-D	27.3-C	32.0-D	-	-	-	-	-	-
Weaving	27.3-C	26.5-C	30.8-D	28.7-D	31.3-D	28.9-D	-	-	-	-	-	-

<sup>1</sup>The freeway ramp merge/diverge/weaving analysis was conducted using the Transportation Research Board, 2000 Highway Capacity Manual, 2000 methodology merge and diverge density using the HCS+ software, Version 5.4 (2008).

<sup>2</sup>In locations where an upstream ramp and a downstream ramp are present, both have been analyzed and the most degraded Level of Service has been reported.

<sup>3</sup>Fails capacity check for flow entering the diverge influence area.

Figure 1  
Project Location Map

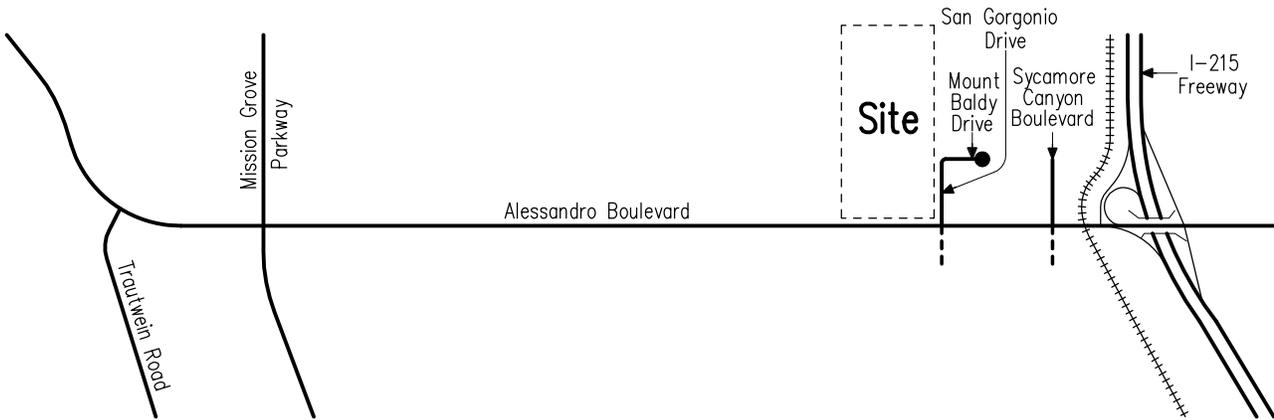


Figure 2  
Site Plan

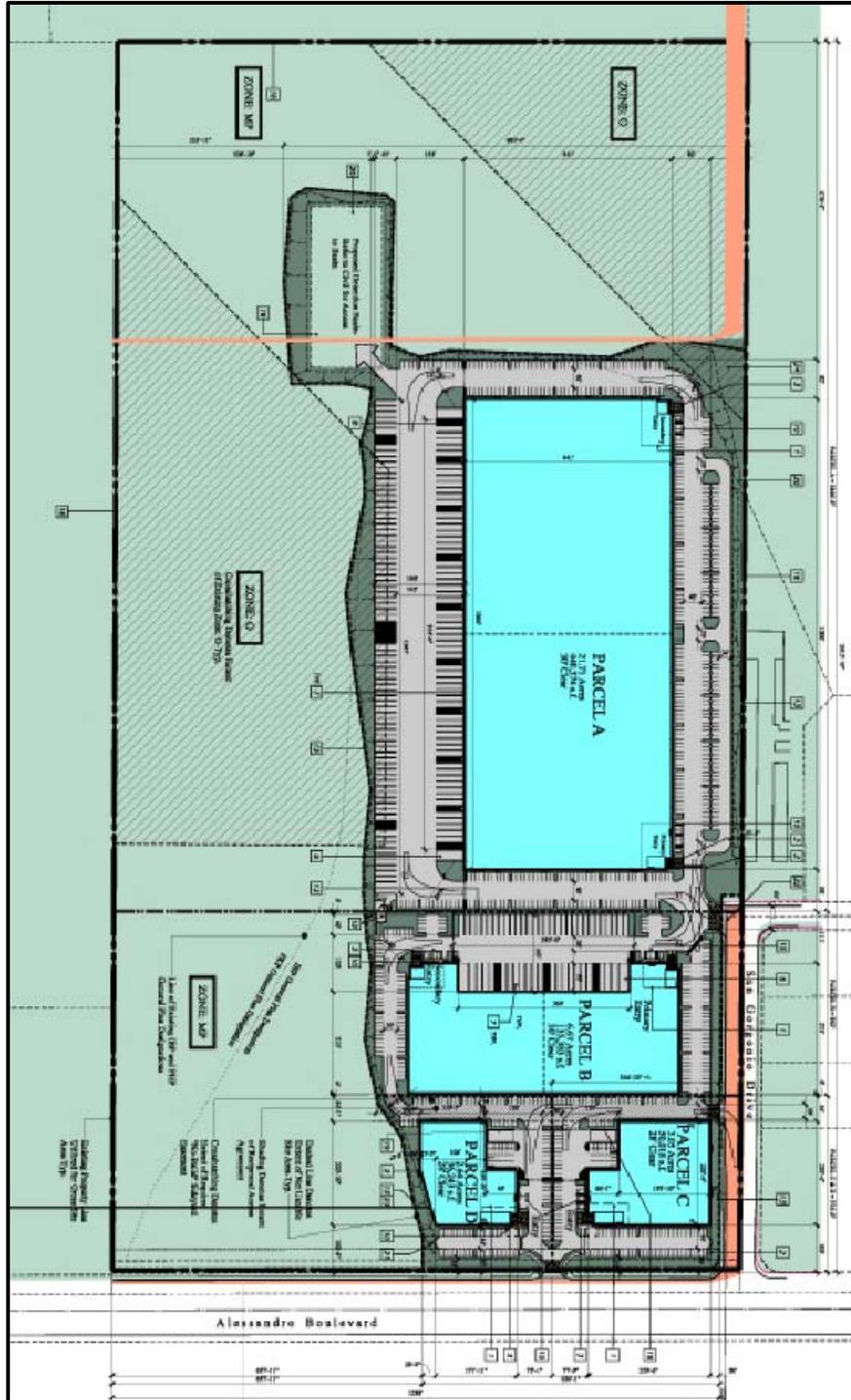
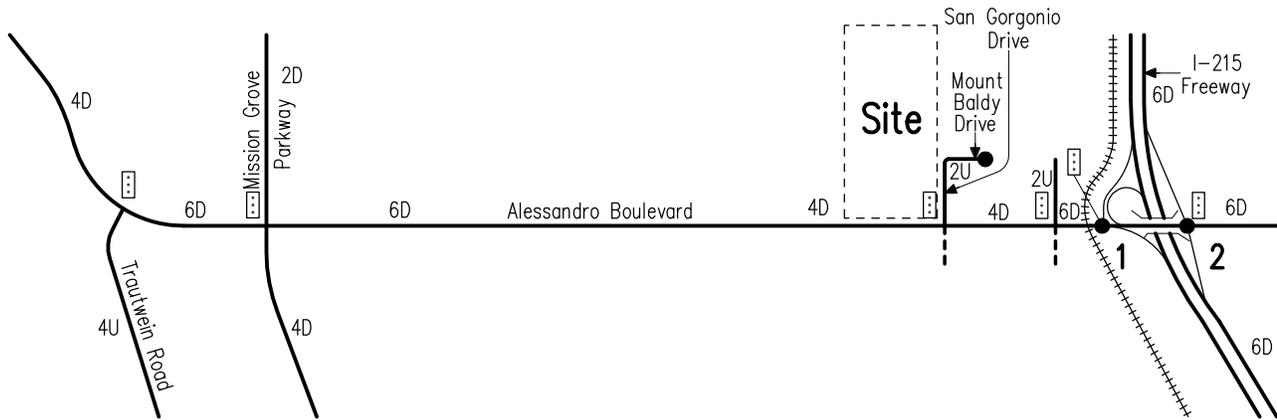


Figure 3  
Existing Through Travel Lanes and Intersection Controls



**Legend**

-  = Traffic Signal
- 4 = Through Travel Lanes
- D = Divided
- U = Undivided
- >> = Free Right Turn



1			
2			

## **Appendices**

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**Appendix A – Comment Letters from the California Department of Transportation (August 12, 2009 and August 18, 2009)**

**Appendix B – Glossary of Transportation Terms**

**Appendix C – Traffic Volume Data from the Alessandro Business Center Traffic Impact Analysis (Revised) prepared by Kunzman Associates, Inc. (November 14, 2007)**

**Appendix D – Merge/Diverge Analysis Worksheets – HCS+**

**APPENDIX A**

**Comment Letters from the California Department of  
Transportation (August 12, 2009 and August 18, 2009)**

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 8

PLANNING

464 WEST 4<sup>th</sup> STREET, 6<sup>th</sup> Floor MS 725

SAN BERNARDINO, CA 92401-1400

PHONE (909) 383-4557

FAX (909) 383-5936

TTY (909) 383-6300

*Flex your power!  
Be energy efficient!*

August 12, 2009

Ms. Patricia Brenes  
City of Riverside  
Planning Division  
3900 Main Street, Third Floor  
Riverside, CA 92522

Alessandro Business Center, Draft Environmental Impact Report SCH No. 2007021005, RIV-215-PM 36.419

Dear Ms. Brenes:

We have completed our review of the Alessandro Business Center Draft Environmental Impact Report (DEIR) dated June 2009 and the associated Traffic Impact Analysis (TIA) dated November 14, 2007. The proposed project is located on an 80.07 acre parcel to the west of Interstate 215 (I-215) at the northwest corner of Alessandro Blvd and San Gorgonio Drive and consists of a 36.91 acre business park development for light industrial, warehouse distribution, and office uses.

As the owner and operator of the State Highway System (SHS), it is our responsibility to coordinate and consult with local jurisdictions when proposed development may impact our facilities. As the responsible agency under the California Environmental Quality Act (CEQA), it is also our responsibility to make recommendations to offset associated impacts with the proposed project. The project may generate traffic volumes and increase storm water runoff that impacts the SHS. Although the project is under the jurisdiction of the city of Riverside, due to potential impacts to State facilities it is also subject to the policies and regulations that govern the SHS.

The DEIR and TIA do not fully discuss impacts to the I-215 mainline and the Alessandro/I-215 ramp termini intersections. The existing LOS at Alessandro/I-215 is at an unacceptable level and the addition of the project will intensify the existing conditions. Table 1 of the TIA indicates the NB intersection at Alessandro/I-215 operates at LOS D in the morning peak hours and at LOS C in the evening peak hours. Table 5 of the TIA indicates that the addition of the proposed project will cause the Alessandro/I-215 NB intersection to operate at LOS F without improvements. With proposed improvements, which include an additional eastbound left turn lane and an additional westbound through lane, the NB intersection will operate at LOS D in the morning peak hours and LOS C in the evening peak hours. The Guide for the Preparation of Traffic Impact Studies (<http://onramp.dot.ca.gov/hq/tpp/files/pdf/TrafficImpactStudy.pdf>) recommends maintaining a target LOS at the transition between LOS C and LOS D on State facilities.

Mitigation measure TRN-15 addresses the impacts to the Alessandro/I-215 NB ramp intersection by

*"Caltrans improves mobility across California"*

contributing a fair share fee of 7.4% towards infrastructural improvements. This mitigation measure also notes "the project is responsible for only paying its "fair share" for the recommended infrastructural improvements because it would not be solely responsible for the impacted intersections. The impacts would also occur because current infrastructure does not adequately support existing traffic volume, and in addition, area wide traffic is expected to increase."

Mitigation measure TRN-15 only includes a percentage of fair share fees and does not fully address the direct impacts associated with the proposed project. A Fair Share Fee, such as the Transportation Uniform Mitigation Fee (TUMF), addresses cumulative impacts to the transportation infrastructure. Although fair share contributions will be made, it will not alleviate the direct impacts associated with the proposed project. In addition, the contribution of funds does not guarantee or provide a time frame in which improvements will be implemented. Currently there are no improvement plans for the Alessandro/I-215 Interchange in which funds will be contributed to.

Section 3.11 Hydrology and Water Quality of the DEIR do not show the extent of potential stormwater drainage system impacts to the I-215. Although the proposed project does not directly abut State facilities, it may impact stormwater drainage facilities within our Right of Way if the proposed project causes the existing facilities to exceed capacity.

Based on the findings of the TIS and DEIR we recommend the implementation of interim improvements to offset the impacts to Alessandro/I-215 ramp termini intersections. To better analyze the degree of impacts and improvements we recommend the following be provided:

**Traffic Operations:**

*Synchro is taken care of*

- Synchro analysis for the Alessandro/I-215 ramp termini intersections.
- Synchro Analysis should included all driveway intersections from project site to the Alessandro/I-215 ramp termini intersections.
- A PHF of 0.92 is recommended to be used in the Synchro analysis.
- Include an electronic version of the Synchro analysis.
- Include Merge/Diverge analysis at the Alessandro/I-215 interchange for the existing and opening year Build and No Build Alternatives.
- Include ramp LOS for existing conditions and with/without improvements.
- Queuing analysis for all ramps at the Alessandro/I-215 Interchange.
- Provide Opening Year analysis that does not combine project traffic, existing traffic, and area wide growth.
- Provide analysis scenarios that include existing conditions, existing + project, existing + project + cumulative development, and existing + project + cumulative + ambient growth.
- Include a preliminary drawing of the recommended geometric improvements with corresponding LOS for the NB on/off ramps at Alessandro Blvd.

Ms. Patricia Brenes  
August 12, 2009  
Page 3

**Stormwater Drainage:**

- Provide a storm water drainage plan that indicates existing and proposed drainage facilities.
- Indicate location and facility type of Unnamed Drainage 2, and all connecting drainage systems.

Thank you for providing us this opportunity to review the Alessandro Business Center DEIR and for your consideration of these and future comments. These recommendations are preliminary and summarize our review of materials provided for our evaluation. If you have questions concerning these comments, or would like to meet to discuss our concerns, please contact me at (909) 383-4557 for assistance.

Sincerely,



DANIEL KOPULSKY  
Office Chief  
Community Planning/IGR-CEQA

c: Carl Ballard, Kunzman Associates  
Manuel Jabson, Traffic Operations D8

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 8

PLANNING

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TTY (909) 383-6300

*Flex your power!  
Be energy efficient!*

August 18, 2009

Ms. Patricia Brenes  
City of Riverside  
Planning Division  
3900 Main Street, Third Floor  
Riverside, CA 92522

Alessandro Business Center, Draft Environmental Impact Report SCH No. 2007021005, RIV-215-PM 36.419

Dear Ms. Brenes:

This letter amends our previous letter dated August 12, 2009 addressing the above noted project. Through further analysis of the Traffic Impact Analysis (TIA) we recommend the following to be provided:

- Include the northbound and southbound ramps in the Merge/Diverge Analysis.
- Figure 5 and 27 of the TIA exhibit inconsistent traffic volumes at the Alessandro/I-215 SB intersection. The WB traffic volumes do not equate to the volumes flowing from the Alessandro/I-215 NB intersection.
- Synchro analysis is recommend to be use to obtain the 50<sup>th</sup> and 95<sup>th</sup> percentile for left-turn queuing worksheets.

These recommendations are preliminary and summarize our review of materials provided for our evaluation. If you have questions concerning these comments, or would like to meet to discuss our concerns, please contact me at (909) 383-4557 for assistance.

Sincerely,

A handwritten signature in black ink that reads "Daniel Kopulsky".

DANIEL KOPULSKY

Office Chief

Community Planning/IGR-CEQA

c: Carl Ballard, Kunzman Associates  
Manuel Jabson, Traffic Operations D8

**APPENDIX B**

**Glossary of Transportation Terms**

## GLOSSARY OF TRANSPORTATION TERMS

### COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

### TERMS

**AVERAGE DAILY TRAFFIC:** The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

**BANDWIDTH:** The number of seconds of green time available for through traffic in a signal progression.

**BOTTLENECK:** A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

**CAPACITY:** The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

**CHANNELIZATION:** The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

**CLEARANCE INTERVAL:** Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

**CORDON:** An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

**CYCLE LENGTH:** The time period in seconds required for one complete signal cycle.

**CUL-DE-SAC STREET:** A local street open at one end only, and with special provisions for turning around.

**DAILY CAPACITY:** The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

**DELAY:** The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

**DEMAND RESPONSIVE SIGNAL:** Same as traffic-actuated signal.

**DENSITY:** The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

**DETECTOR:** A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

**DESIGN SPEED:** A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

**DIRECTIONAL SPLIT:** The percent of traffic in the peak direction at any point in time.

**DIVERSION:** The rerouting of peak hour traffic to avoid congestion.

**FORCED FLOW:** Opposite of free flow.

**FREE FLOW:** Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

**GAP:** Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

**HEADWAY:** Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

**INTERCONNECTED SIGNAL SYSTEM:** A number of intersections that are connected to achieve signal progression.

**LEVEL OF SERVICE:** A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

**LOOP DETECTOR:** A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

**MINIMUM ACCEPTABLE GAP:** Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

**MULTI-MODAL:** More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

**OFFSET:** The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

**PLATOON:** A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

**ORIGIN-DESTINATION SURVEY:** A survey to determine the point of origin and the point of destination for a given vehicle trip.

**PASSENGER CAR EQUIVALENTS:** One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

**PEAK HOUR:** The 60 consecutive minutes with the highest number of vehicles.

**PRETIMED SIGNAL:** A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

**PROGRESSION:** A term used to describe the progressive movement of traffic through several signalized intersections.

**SCREEN-LINE:** An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

**SIGNAL CYCLE:** The time period in seconds required for one complete sequence of signal indications.

**SIGNAL PHASE:** The part of the signal cycle allocated to one or more traffic movements.

**STARTING DELAY:** The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

**TRAFFIC-ACTUATED SIGNAL:** A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

**TRIP:** The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

**TRIP-END:** One end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

**TRIP GENERATION RATE:** The quality of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

**TRUCK:** A vehicle having dual tires on one or more axles, or having more than two axles.

**UNBALANCED FLOW:** Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

**VEHICLE MILES OF TRAVEL:** A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

**APPENDIX C**

**Traffic Volume Data from the Alessandro Business Center  
Traffic Impact Analysis (Revised) prepared by Kunzman  
Associates, Inc. (November 14, 2007)**

**Existing**

Alessandro Business Center
Existing
Morning Peak Hour

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.381
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 10.7
Optimal Cycle: OPTIMIZED Level Of Service: B

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic flow metrics and 12 rows for various adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns for saturation flow metrics and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 10 rows for Vol/Sat, Crit Moves, Green/Cycle, etc.

Note: Queue reported is the number of cars per lane.

Alessandro Business Center
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)
\*\*\*\*\*
Cycle (sec): 60 Critical Vol./Cap.(X): 0.622
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 10.7
Optimal Cycle: OPTIMIZED Level Of Service: B
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns for different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Vol.

Saturation Flow Module: Table with 12 columns for different traffic movements. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for different traffic movements. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Note: Queue reported is the number of cars per lane.
\*\*\*\*\*

Alessandro Business Center
Existing
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)

Cycle (sec): 110 Critical Vol./Cap. (X): 0.877
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 36.7
Optimal Cycle: OPTIMIZED Level Of Service: D

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement, Control, Rights, Min. Green, and Lanes.

Volume Module table with 13 columns representing different traffic flow metrics and 13 rows of adjustment factors.

Saturation Flow Module table with 13 columns for saturation flow and 4 rows for adjustment factors.

Capacity Analysis Module table with 13 columns for capacity metrics and 10 rows of analysis data.

Note: Queue reported is the number of cars per lane.

Alessandro Business Center
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)
\*\*\*\*\*

Cycle (sec): 70 Critical Vol./Cap.(X): 0.912
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 26.1
Optimal Cycle: OPTIMIZED Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 10 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

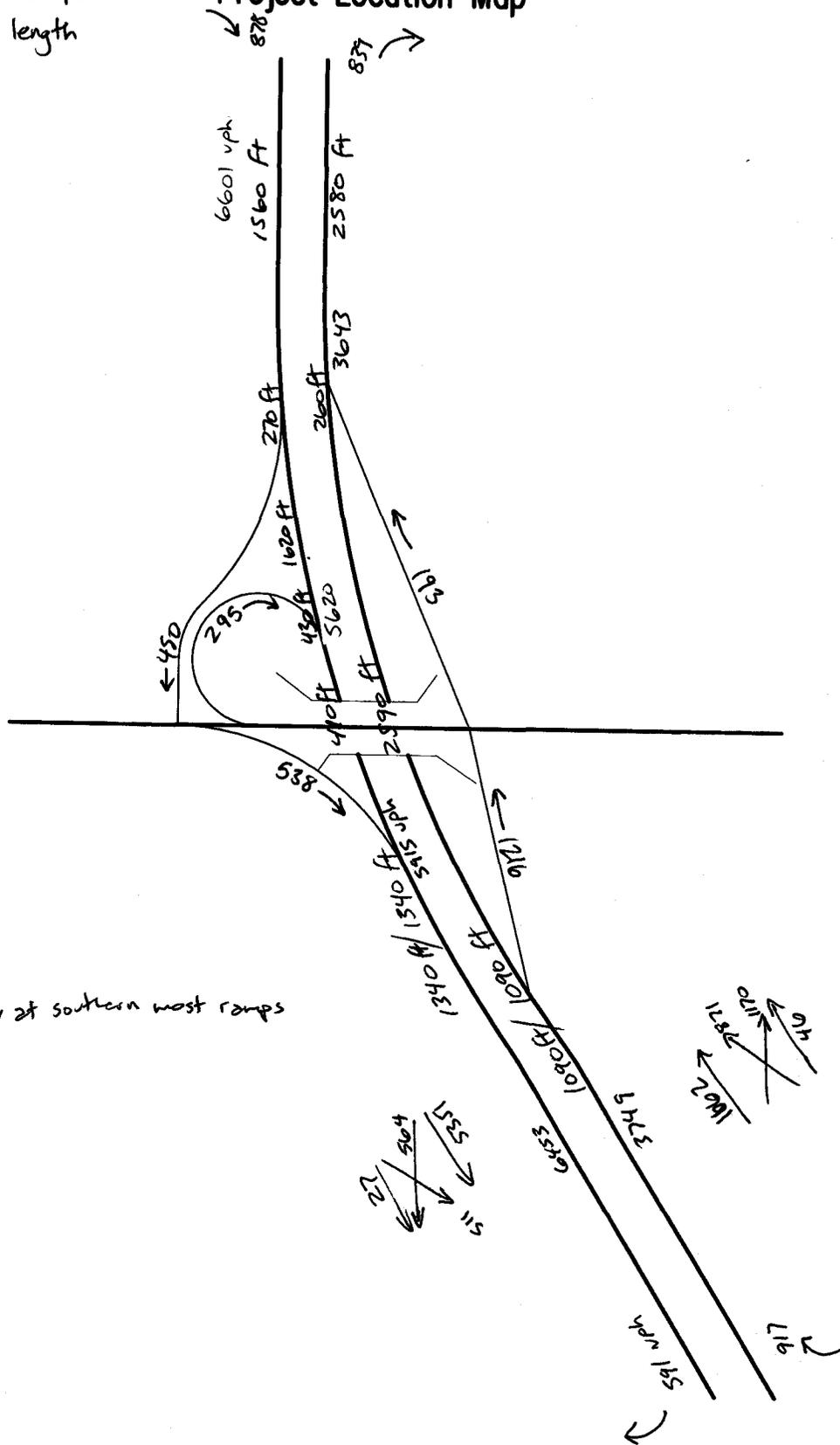
Capacity Analysis Module: Table with 12 columns and 10 rows showing Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, etc.

Note: Queue reported is the number of cars per lane.
\*\*\*\*\*

# Existing AM

- = volume
- = distance b/w ramps
- = merge/diverge length
- = adj. ramp vol.

## Figure 1 Project Location Map



Freeway Mainline  
 3 lanes  
 - 1 auxillary at southern most ramps  
 65 mph





**Opening Year (2010) Without Project**

Alessandro Business Center
Opening Year (2010) Without Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)

\*\*\*\*\*

Cycle (sec): 60 Critical Vol./Cap.(X): 0.719
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 15.2
Optimal Cycle: OPTIMIZED Level Of Service: B

\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Permitted), Rights (Include/Ignore), and Lanes.

Volume Module:

Table with 12 columns representing different volume metrics and 12 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module:

Table with 12 columns representing saturation flow metrics and 4 rows of data including Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module:

Table with 12 columns representing capacity analysis metrics and 10 rows of data including Vol/Sat, Crit Moves, Green/Cycle, etc.

\*\*\*\*\*

Note: Queue reported is the number of cars per lane.

Alessandro Business Center  
 Opening Year (2010) Without Project  
 Evening Peak Hour

Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)

\*\*\*\*\*

Cycle (sec): 80 Critical Vol./Cap. (X): 0.975  
 Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 23.2  
 Optimal Cycle: OPTIMIZED Level Of Service: C

\*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	10	0	10	0	10	10	0	10	10
Lanes:	0	0	0	1	0	1	0	0	3	0	0	3

Volume Module:

Base Vol:	0	0	0	245	0	422	0	1674	773	0	1410	352
Growth Adj:	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Initial Bse:	0	0	0	274	0	473	0	1875	866	0	1579	394
Added Vol:	0	0	0	0	0	152	0	1049	117	0	234	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	274	0	625	0	2924	983	0	1813	394
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	0.92	1.00	0.92	1.00	0.94	0.00	1.00	0.95	0.00
PHF Volume:	0	0	0	298	0	678	0	3120	0	0	1915	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	298	0	678	0	3120	0	0	1915	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Final Vol.:	0	0	0	298	0	678	0	3120	0	0	1915	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.91	1.00	1.00	0.91	1.00
Lanes:	0.00	0.00	0.00	1.31	0.00	1.69	0.00	3.00	1.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1895	0	2461	0	5187	1900	0	5187	1900

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.16	0.00	0.28	0.00	0.60	0.00	0.00	0.37	0.00
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.28	0.00	0.28	0.00	0.62	0.00	0.00	0.62	0.00
Volume/Cap:	0.00	0.00	0.00	0.56	0.00	0.97	0.00	0.97	0.00	0.00	0.60	0.00
Delay/Veh:	0.0	0.0	0.0	24.8	0.0	50.8	0.0	25.4	0.0	0.0	9.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	24.8	0.0	50.8	0.0	25.4	0.0	0.0	9.6	0.0
LOS by Move:	A	A	A	C	A	D	A	C	A	A	A	A
HCM2kAvgQ:	0	0	0	6	0	15	0	35	0	0	11	0

Note: Queue reported is the number of cars per lane.

Alessandro Business Center  
 Opening Year (2010) Without Project  
 Morning Peak Hour

Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)  
 \*\*\*\*\*

Cycle (sec): 120 Critical Vol./Cap.(X): 1.280  
 Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 121.9  
 Optimal Cycle: OPTIMIZED Level Of Service: F  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	10	0	10	0	0	0	10	10	0	0	10	10
Lanes:	2	0	0	0	0	0	1	0	3	0	0	2

Volume Module:

Base Vol:	816	0	400	0	0	0	41	984	0	0	1522	152
Growth Adj:	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Initial Bse:	914	0	448	0	0	0	46	1102	0	0	1705	170
Added Vol:	137	0	0	0	0	0	130	161	0	0	618	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1051	0	448	0	0	0	176	1263	0	0	2323	170
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	1.00	1.00	1.00	0.92	0.92	1.00	1.00	0.90	0.90
PHF Volume:	1126	0	480	0	0	0	192	1380	0	0	2592	190
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1126	0	480	0	0	0	192	1380	0	0	2592	190
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	1126	0	480	0	0	0	192	1380	0	0	2592	190

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.59	1.00	0.85	1.00	1.00	1.00	0.95	0.91	1.00	1.00	0.90	0.90
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	1.00	3.00	0.00	0.00	2.80	0.20
Final Sat.:	2237	0	1615	0	0	0	1805	5187	0	0	4784	351

Capacity Analysis Module:

Vol/Sat:	0.50	0.00	0.30	0.00	0.00	0.00	0.11	0.27	0.00	0.00	0.54	0.54
Crit Moves:	****						****			****		
Green/Cycle:	0.39	0.00	0.39	0.00	0.00	0.00	0.08	0.51	0.00	0.00	0.43	0.43
Volume/Cap:	1.30	0.00	0.77	0.00	0.00	0.00	1.27	0.52	0.00	0.00	1.26	1.26
Delay/Veh:	180.2	0.0	37.8	0.0	0.0	0.0	216.1	19.6	0.0	0.0	157	157.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	180.2	0.0	37.8	0.0	0.0	0.0	216.1	19.6	0.0	0.0	157	157.1
LOS by Move:	F	A	D	A	A	A	F	B	A	A	F	F
HCM2kAvgQ:	40	0	17	0	0	0	14	12	0	0	65	65

\*\*\*\*\*  
 Note: Queue reported is the number of cars per lane.

Alessandro Business Center  
 Opening Year (2010) Without Project  
 Evening Peak Hour

Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)  
 \*\*\*\*\*

Cycle (sec): 120 Critical Vol./Cap. (X): 1.302  
 Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 111.3  
 Optimal Cycle: OPTIMIZED Level Of Service: F  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	10	0	10	0	0	0	10	10	0	0	10	10
Lanes:	2	0	0	0	0	0	1	0	3	0	0	2

Volume Module:

Base Vol:	612	0	233	0	0	0	326	1564	0	0	1195	241
Growth Adj:	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Initial Bse:	685	0	261	0	0	0	365	1752	0	0	1338	270
Added Vol:	42	0	0	0	0	0	459	590	0	0	192	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	727	0	261	0	0	0	824	2342	0	0	1530	270
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	1.00	1.00	1.00	0.96	0.96	1.00	1.00	0.97	0.97
PHF Volume:	748	0	268	0	0	0	857	2434	0	0	1581	279
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	748	0	268	0	0	0	857	2434	0	0	1581	279
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	748	0	268	0	0	0	857	2434	0	0	1581	279

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	1.00	0.85	1.00	1.00	1.00	0.95	0.91	1.00	1.00	0.89	0.89
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	1.00	3.00	0.00	0.00	2.55	0.45
Final Sat.:	2267	0	1615	0	0	0	1805	5187	0	0	4312	761

Capacity Analysis Module:

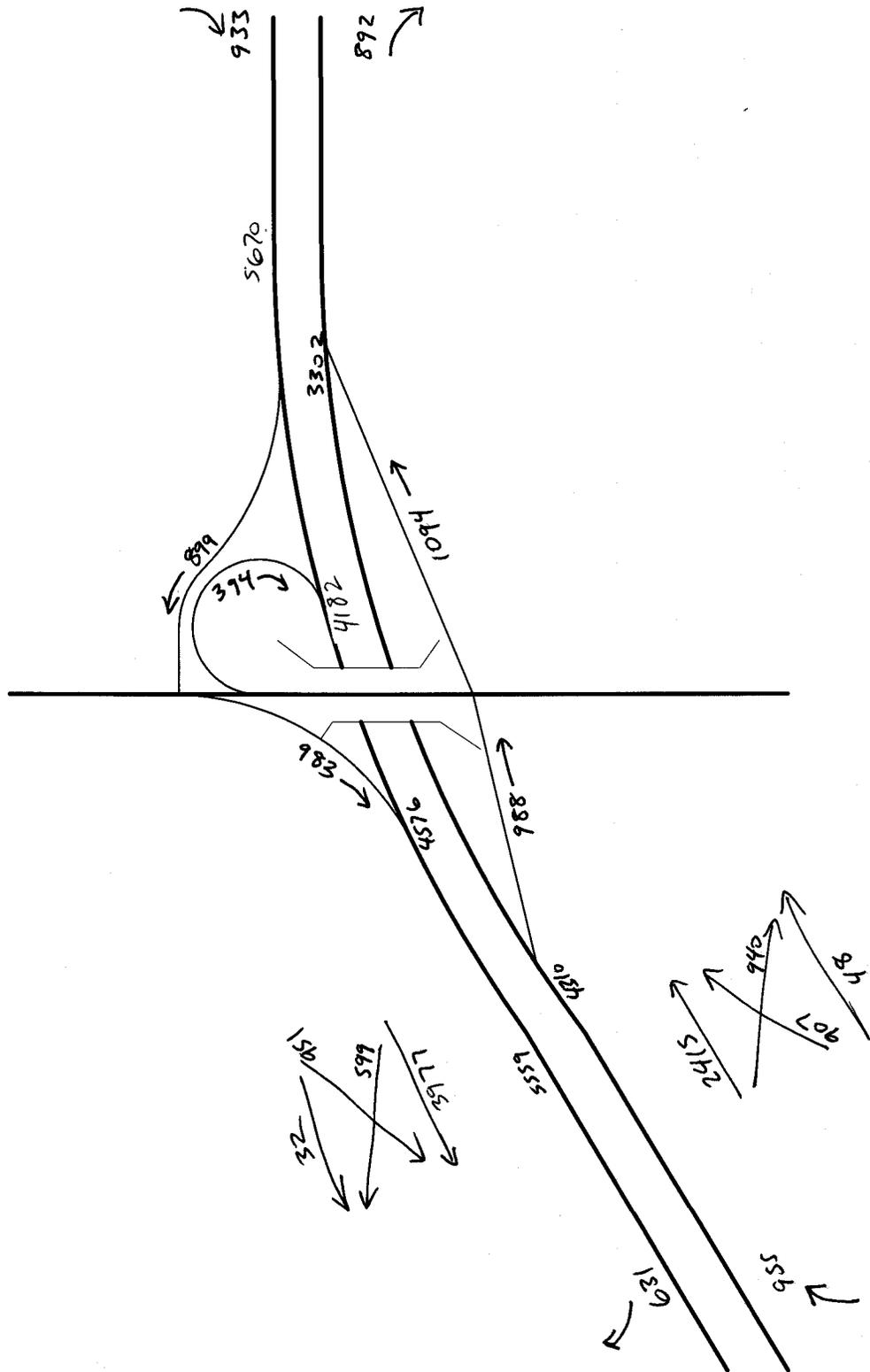
Vol/Sat:	0.33	0.00	0.17	0.00	0.00	0.00	0.47	0.47	0.00	0.00	0.37	0.37
Crit Moves:	****						****				****	
Green/Cycle:	0.25	0.00	0.25	0.00	0.00	0.00	0.37	0.65	0.00	0.00	0.29	0.29
Volume/Cap:	1.35	0.00	0.68	0.00	0.00	0.00	1.29	0.72	0.00	0.00	1.29	1.29
Delay/Veh:	212.6	0.0	45.7	0.0	0.0	0.0	177.4	14.2	0.0	0.0	177	176.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	212.6	0.0	45.7	0.0	0.0	0.0	177.4	14.2	0.0	0.0	177	176.5
LCS by Move:	F	A	D	A	A	A	F	B	A	A	F	F
HCM2kAvgQ:	28	0	10	0	0	0	56	22	0	0	45	45

\*\*\*\*\*  
 Note: Queue reported is the number of cars per lane.



OY w/o Project PM

Figure 1  
Project Location Map



**Opening Year (2010) With Project**

Alessandro Business Center  
 Opening Year (2010) With Project  
 Morning Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)  
 \*\*\*\*\*

Cycle (sec): 60 Critical Vol./Cap.(X): 0.760  
 Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 16.1  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	10	0	10	0	10	10	0	10	10
Lanes:	0	0	0	1	0	1	0	0	3	0	0	3

Volume Module:

Base Vol:	0	0	0	157	0	293	0	891	538	0	202	295
Growth Adj:	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Initial Bse:	0	0	0	176	0	328	0	998	603	0	226	330
Added Vol:	0	0	0	0	0	569	0	316	51	0	854	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	176	0	897	0	1314	654	0	1080	330
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	0.86	1.00	0.86	1.00	0.92	0.00	1.00	0.96	0.00
PHF Volume:	0	0	0	205	0	1044	0	1427	0	0	1122	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	205	0	1044	0	1427	0	0	1122	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Final Vol.:	0	0	0	205	0	1044	0	1427	0	0	1122	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.78	1.00	0.78	1.00	0.91	1.00	1.00	0.91	1.00
Lanes:	0.00	0.00	0.00	1.16	0.00	1.84	0.00	3.00	1.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1726	0	2723	0	5187	1900	0	5187	1900

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.12	0.00	0.38	0.00	0.28	0.00	0.00	0.22	0.00
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.36	0.00	0.00	0.36	0.00
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	0.76	0.00	0.76	0.00	0.00	0.60	0.00
Delay/Veh:	0.0	0.0	0.0	8.4	0.0	14.1	0.0	18.7	0.0	0.0	16.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	8.4	0.0	14.1	0.0	18.7	0.0	0.0	16.1	0.0
LOS by Move:	A	A	A	A	A	B	A	B	A	A	B	A
HCM2kAvgQ:	0	0	0	2	0	10	0	10	0	0	7	0

\*\*\*\*\*  
 Note: Queue reported is the number of cars per lane.

Alessandro Business Center
Opening Year (2010) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*
Intersection #8 I-215 Freeway SB Ramps (NS) at Alessandro Boulevard (EW)
\*\*\*\*\*
Cycle (sec): 95 Critical Vol./Cap.(X): 0.993
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 28.2
Optimal Cycle: OPTIMIZED Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustments like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, etc.

Note: Queue reported is the number of cars per lane.

Alessandro Business Center
Opening Year (2010) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*
Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)
\*\*\*\*\*

Cycle (sec): 120 Critical Vol./Cap.(X): 1.332
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 138.9
Optimal Cycle: OPTIMIZED Level Of Service: F
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Permitted/Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, etc.

Note: Queue reported is the number of cars per lane.

Alessandro Business Center  
 Opening Year (2010) With Project  
 Evening Peak Hour

Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

\*\*\*\*\*

Intersection #9 I-215 Freeway NB Ramps (NS) at Alessandro Boulevard (EW)

\*\*\*\*\*

Cycle (sec): 120 Critical Vol./Cap. (X): 1.360  
 Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 126.4  
 Optimal Cycle: OPTIMIZED Level Of Service: F

\*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R

Control:	Permitted			Permitted			Protected			Permitted						
Rights:	Include			Include			Include			Include						
Min. Green:	10	0	10	0	0	0	10	10	0	0	10	10				
Lanes:	2	0	0	0	0	0	1	0	3	0	0	0	0	2	1	0

Volume Module:

Base Vol:	612	0	233	0	0	0	326	1564	0	0	1195	241
Growth Adj:	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Initial Bse:	685	0	261	0	0	0	365	1752	0	0	1338	270
Added Vol:	62	0	0	0	0	0	530	625	0	0	205	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	747	0	261	0	0	0	895	2377	0	0	1543	270
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	1.00	1.00	1.00	0.96	0.96	1.00	1.00	0.97	0.97
PHF Volume:	769	0	268	0	0	0	930	2471	0	0	1594	279
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	769	0	268	0	0	0	930	2471	0	0	1594	279
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	769	0	268	0	0	0	930	2471	0	0	1594	279

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	1.00	0.85	1.00	1.00	1.00	0.95	0.91	1.00	1.00	0.89	0.89
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	1.00	3.00	0.00	0.00	2.55	0.45
Final Sat.:	2267	0	1615	0	0	0	1805	5187	0	0	4318	755

Capacity Analysis Module:

Vol/Sat:	0.34	0.00	0.17	0.00	0.00	0.00	0.52	0.48	0.00	0.00	0.37	0.37
Crit Moves:	****						****			****		
Green/Cycle:	0.24	0.00	0.24	0.00	0.00	0.00	0.38	0.66	0.00	0.00	0.28	0.28
Volume/Cap:	1.41	0.00	0.69	0.00	0.00	0.00	1.34	0.72	0.00	0.00	1.34	1.34
Delay/Veh:	239.2	0.0	46.6	0.0	0.0	0.0	201.0	14.1	0.0	0.0	203	202.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	239.2	0.0	46.6	0.0	0.0	0.0	201.0	14.1	0.0	0.0	203	202.7
LCS by Move:	F	A	D	A	A	A	F	B	A	A	F	F
HCM2kAvgQ:	30	0	10	0	0	0	64	22	0	0	48	48

\*\*\*\*\*

Note: Queue reported is the number of cars per lane.

Figure 1  
Project Location Map

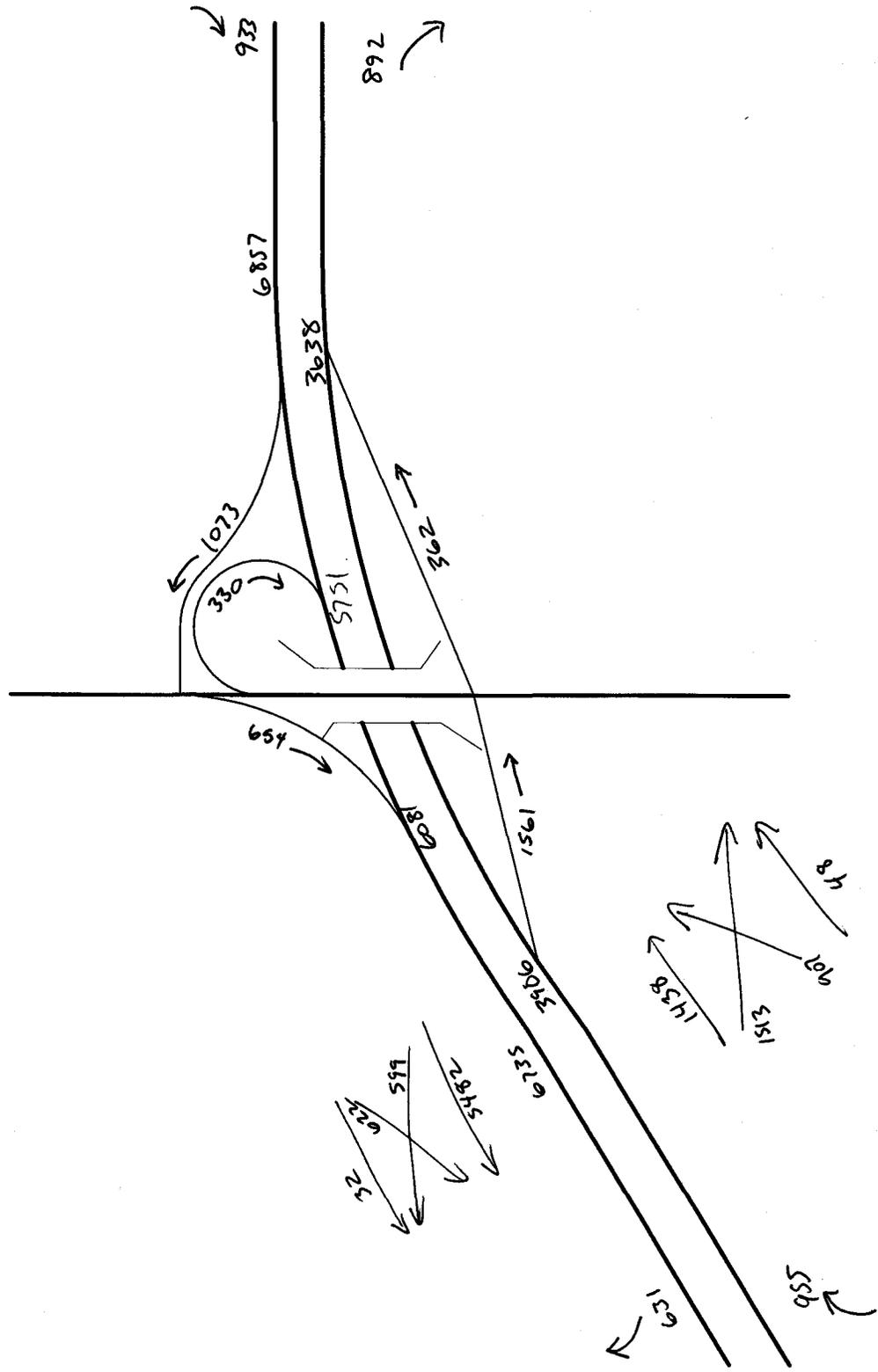
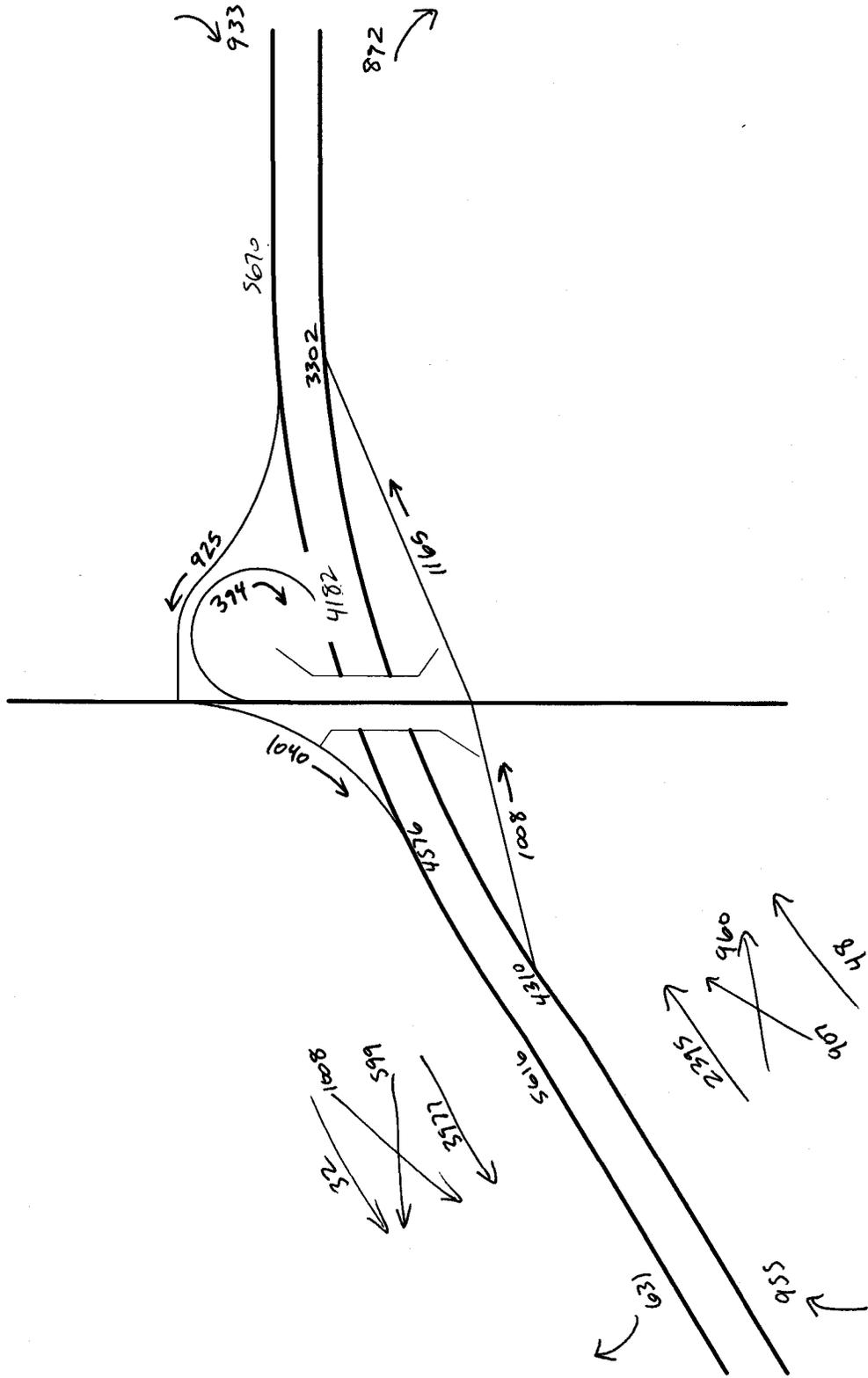


Figure 1  
Project Location Map



**APPENDIX D**

**Merge/Diverge Analysis Worksheets – HCS+**

**Existing**

HCS+: Ramps and Ramp Junctions Release 5.4

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 Kunzman Associates, Inc.  
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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Freeway Data

Type of analysis Diverge  
 Number of lanes in freeway 3  
 Free-flow speed on freeway 70.0 mph  
 Volume on freeway 6601 vph

Off Ramp Data

Side of freeway Right  
 Number of lanes in ramp 1  
 Free-Flow speed on ramp 35.0 mph  
 Volume on ramp 450 vph  
 Length of first accel/decel lane 270 ft  
 Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
 Volume on adjacent ramp 295 vph  
 Position of adjacent ramp Downstream  
 Type of adjacent ramp On  
 Distance to adjacent ramp 1620 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6601	450	295	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1794	122	80	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7354	501	329	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.553 Using Equation 5  
 FD  
 $v = v + (v - v) P = 4291$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	7354	7200	Yes
$v_i F$			
$v = v - v$	6853	7200	No
$FO F R$			
$v$	501	2000	No
R			
$v = v$	3063 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is $v = v > 2700$ pc/h?		Yes	
3 or av34			
Is $v = v > 1.5 v / 2$		No	
3 or av34	12		
If yes, $v = 4654$		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v$	4654	4400	No
12A			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 41.8$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,  $D = 0.473$   
 S  
 Space mean speed in ramp influence area,  $S = 56.8$  mph  
 R  
 Space mean speed in outer lanes,  $S = 70.2$  mph  
 0  
 Space mean speed for all vehicles,  $S = 61.0$  mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

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 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5459	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	667	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	352	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5459	667	352	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1483	181	96	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fhv	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6082	743	392	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.574 Using Equation 5  
 FD  
 $v = v + (v - v) P = 3806$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
v = v	6082	7200	No
Fi F			
v = v - v	5339	7200	No
FO F R			
v	743	2000	No
R			
v v	2276 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34			
If yes, v = 3806		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	3806	4400	No
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 34.6$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D = 0.495	
Space mean speed in ramp influence area,	S = 56.1	mph
Space mean speed in outer lanes,	S = 71.8	mph
Space mean speed for all vehicles,	S = 61.1	mph

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6601	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	450	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	878	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6601	450	878	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1794	122	239	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7354	501	978	pcph

Estimation of V12 Diverge Areas

L = 4840.00 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.809 Using Equation 6  
 FD  
 $v = v + (v - v) P = 6044$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	7354	7200	Yes
$F_i F$			
$v = v - v$	6853	7200	No
$F_O F R$			
$v$	501	2000	No
R			
$v v$	1310 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is $v v > 2700$ pc/h?		No	
3 or av34			
Is $v v > 1.5 v / 2$		No	
3 or av34	12		
If yes, $v = 6044$		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v$	6044	4400	Yes
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 53.8$  pc/mi/ln  
 R 12 D

Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,  $D = 0.473$   
 S  
 Space mean speed in ramp influence area,  $S = 56.8$  mph  
 R  
 Space mean speed in outer lanes,  $S = 75.6$  mph  
 0  
 Space mean speed for all vehicles,  $S = 59.4$  mph

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5459	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	667	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	878	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5459	667	878	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1483	181	239	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6082	743	978	pcph

Estimation of V12 Diverge Areas

L = 6333.46 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.858 Using Equation 6  
 FD  
 $v = v + (v - v) P = 5326$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
v = v	6082	7200	No
Fi F			
v = v - v	5339	7200	No
FO F R			
v	743	2000	No
R			
v v	756 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 5326		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	5326	4400	Yes
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 47.6$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable,	D = 0.495	
Space mean speed in ramp influence area,	S = 56.1	mph
Space mean speed in outer lanes,	S = 76.8	mph
Space mean speed for all vehicles,	S = 58.1	mph

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5620	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	295	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	538	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5620	295	538	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1527	80	146	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fhv	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6261	329	599	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3691$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6590	7200	No
FO			
v	2570 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 3691			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	3691	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.0$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.508  
 S  
 Space mean speed in ramp influence area, S = 55.8 mph  
 R  
 Space mean speed in outer lanes, S = 61.8 mph  
 0  
 Space mean speed for all vehicles, S = 58.0 mph

Driver population factor, fP 1.00  
 Flow rate, vp 4693 392 861 pcph

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4212	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	352	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	773	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4212	352	773	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1145	96	210	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2767$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5085	7200	No
FO			
v	1926 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2767			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2767	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.2$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.383  
 S  
 Space mean speed in ramp influence area, S = 59.3 mph  
 R  
 Space mean speed in outer lanes, S = 64.9 mph  
 0  
 Space mean speed for all vehicles, S = 61.3 mph

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5620	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	295	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	450	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5620	295	450	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1527	80	122	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, FP	1.00	1.00	1.00	
Flow rate, vp	6261	329	501	pcph

Estimation of V12 Merge Areas

L = 1029.38 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3691$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6590	7200	No
FO			
v v	2570 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?			No
3 or av34			
Is v v > 1.5 v /2			No
3 or av34	12		
If yes, v = 3691			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	3691	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.0$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M = 0.508	
Space mean speed in ramp influence area,	S = 55.8	mph
Space mean speed in outer lanes,	S = 61.8	mph
Space mean speed for all vehicles,	S = 58.0	mph

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4212	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	352	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	667	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4212	352	667	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1145	96	181	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4693	392	743	pcph

Estimation of V12 Merge Areas

L = 707.31 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2767$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5085	7200	No
FO			
v v	1926 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2767		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2767	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.2$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.383  
 S  
 Space mean speed in ramp influence area, S = 59.3 mph  
 R  
 Space mean speed in outer lanes, S = 64.9 mph  
 0  
 Space mean speed for all vehicles, S = 61.3 mph

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.17	
Weaving ratio, R	0.48	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	o2	V	w2	
Volume, V	5351	27	564	511	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	1454	7	153	139	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5961	30	628	569	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.95	0.50
Weaving and non-weaving speeds, Si	45.74	55.05
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.07

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	53.25	mph
Weaving segment density, D	33.75	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	8590	pc/h
Capacity as a 15-minute flow rate, c	8380	pc/h
Capacity as a full-hour volume, ch	7710	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1197	2800	a
Average flow rate (pcphpl)	1797	2400	b
Volume ratio, VR	0.17	0.35	c
Weaving ratio, R	0.48	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Unconstrained

\_\_\_\_\_ Weaving Segment Speed, Density, Level of Service and Capacity \_\_\_\_\_

Weaving segment speed, S 52.55 mph  
 Weaving segment density, D 28.28 pc/mi/ln  
 Level of service, LOS D  
 Capacity of base condition, cb 8028 pc/h  
 Capacity as a 15-minute flow rate, c 7832 pc/h  
 Capacity as a full-hour volume, ch 7205 pc/h

Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions

Inputs

Freeway free-flow speed, SFF 70 mph  
 Weaving number of lanes, N 4  
 Weaving segment length, L 1340 ft  
 Terrain type Level  
 Grade %  
 Length mi  
 Weaving type A  
 Volume ratio, VR 0.24  
 Weaving ratio, R 0.43

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	v o1	v o2	v w1	v w2	
Volume, V	4003	30	743	561	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	1088	8	202	152	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fp	1.00	1.00	1.00	1.00	
Flow rate, v	4459	33	827	625	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.91	0.50
Weaving and non-weaving speeds, Si	46.38	54.91
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.33

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1452	2800	a
Average flow rate (pcphpl)	1486	2400	b
Volume ratio, VR	0.24	0.35	c
Weaving ratio, R	0.43	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3643	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	193	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	839	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3643	193	839	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	990	52	228	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4059	215	935	pcph

Estimation of V12 Merge Areas

L = 6803.96 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.644 Using Equation 3  
 FM  
 $v = v(P) = 2614$  pc/h  
 12 F FM

Capacity Checks

v	Actual	Maximum	LOS F?
FO	4274	7200	No
v			
3 or av34	1445 pc/h	(Equation 25-4 or 25-5)	
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2614		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	2614	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.8$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.369  
 S  
 Space mean speed in ramp influence area, S = 59.7 mph  
 R  
 Space mean speed in outer lanes, S = 66.6 mph  
 0  
 Space mean speed for all vehicles, S = 61.8 mph

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Driver population factor, fP 1.00  
 Flow rate, vp 4083 1.00 632 1.00 935 pcph

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Estimation of V12 Merge Areas

L = 6803.96 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.644 Using Equation 3  
 FM  
 $v = v \cdot (P) = 2629$  pc/h  
 12 F FM

Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (ADR)

Capacity Checks

	Actual	Maximum	LOS F?
v	4715	7200	No
FO			
v	1454 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2629			(Equation 25-8)
12A			

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3665	vph

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	2629	4600	No

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	567	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 29.0$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence D

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	839	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Speed Estimation

Intermediate speed variable, M = 0.404  
 S  
 Space mean speed in ramp influence area, S = 58.7 mph  
 R  
 Space mean speed in outer lanes, S = 66.6 mph  
 0  
 Space mean speed for all vehicles, S = 60.9 mph

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3665	567	839	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	996	154	228	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3643	vph

On Ramp Data

Side of freeway	Right
Number of lanes in ramp	1
Free-flow speed on ramp	35.0 mph
Volume on ramp	193 vph
Length of first accel/decel lane	260 ft
Length of second accel/decel lane	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes
Volume on adjacent Ramp	1216 vph
Position of adjacent Ramp	Upstream
Type of adjacent Ramp	Off
Distance to adjacent Ramp	2590 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3643	193	1216	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	990	52	330	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4059	215	1355	pcph

Estimation of V12 Merge Areas

L = 458.28 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2374$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4274	7200	No
FO			
v	1685 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2374			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2374	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 23.9$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.355  
 S  
 Space mean speed in ramp influence area, S = 60.1 mph  
 R  
 Space mean speed in outer lanes, S = 65.7 mph  
 0  
 Space mean speed for all vehicles, S = 62.2 mph

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3665	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	567	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	845	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2590	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3665	567	845	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	996	154	230	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4083	632	941	pcph

Estimation of V12 Merge Areas

L = 552.65 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2388$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4715	7200	No
FO			
v	1695 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2388			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2388	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.1$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.383	
Space mean speed in ramp influence area,	S = 59.3	mph
Space mean speed in outer lanes,	R = 65.7	mph
Space mean speed for all vehicles,	S = 61.4	mph

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Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S 38.26 mph  
 Weaving segment density, D 27.28 pc/mi/ln  
 Level of service, LOS C  
 Capacity of base condition, cb 6966 pc/h  
 Capacity as a 15-minute flow rate, c 6796 pc/h  
 Capacity as a full-hour volume, ch 6252 pc/h

Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions

Inputs

Freeway free-flow speed, SFF 70 mph  
 Weaving number of lanes, N 4  
 Weaving segment length, L 1090 ft  
 Terrain type Level  
     Grade %  
     Length mi  
 Weaving type A  
 Volume ratio, VR 0.54  
 Weaving ratio, R 0.43

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		veh/h
	v	v	v	v	
Volume, V	o1	o2	w1	w2	
Peak-hour factor, PHF	1662	46	1170	871	
Peak 15-min volume, v15	0.92	0.92	0.92	0.92	
Trucks and buses	452	12	318	237	v
Recreational vehicles	5	5	5	5	%
Trucks and buses PCE, ET	0	0	0	0	%
Recreational vehicle PCE, ER	1.5	1.5	1.5	1.5	
Heavy vehicle adjustment, FHV	1.2	1.2	1.2	1.2	
Driver population adjustment, fp	0.976	0.976	0.976	0.976	
Flow rate, v	1.00	1.00	1.00	1.00	
	1851	51	1303	970	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.87	0.50
Weaving and non-weaving speeds, Si	30.52	54.90
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		2.09

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	2273	2800	a
Average flow rate (pcphpl)	1043	2400	b
Volume ratio, VR	0.54	0.35	c
Weaving ratio, R	0.43	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

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Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S 43.53 mph  
 Weaving segment density, D 26.45 pc/mi/ln  
 Level of service, LOS C  
 Capacity of base condition, cb 6966 pc/h  
 Capacity as a 15-minute flow rate, c 6796 pc/h  
 Capacity as a full-hour volume, ch 6252 pc/h

Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions

Inputs

Freeway free-flow speed, SFF 70 mph  
 Weaving number of lanes, N 4  
 Weaving segment length, L 1090 ft  
 Terrain type Level  
 Grade %  
 Length mi  
 Weaving type A  
 Volume ratio, VR 0.41  
 Weaving ratio, R 0.48

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		veh/h
	v	v	v	v	
Volume, V	o1	o2	w1	w2	
Peak-hour factor, PHF	2417	42	875	803	
Peak 15-min volume, v15	0.92	0.92	0.92	0.92	
Trucks and buses	657	11	238	218	v
Recreational vehicles	5	5	5	5	%
Trucks and buses PCE, ET	0	0	0	0	%
Recreational vehicle PCE, ER	1.5	1.5	1.5	1.5	
Heavy vehicle adjustment, fhV	1.2	1.2	1.2	1.2	
Driver population adjustment, fp	0.976	0.976	0.976	0.976	
Flow rate, v	1.00	1.00	1.00	1.00	
	2692	46	974	894	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.56	0.39
Weaving and non-weaving speeds, Si	31.84	58.08
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.74

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1868	2800	a
Average flow rate (pcphpl)	1151	2400	b
Volume ratio, VR	0.41	0.35	c
Weaving ratio, R	0.48	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

**Opening Year (2010) Without Project**

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6857	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	996	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	330	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6857	996	330	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1863	271	90	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7640	1110	368	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.518 Using Equation 5  
 FD  
 $v_{12R} = v_F + (v - v_F) P = 4492$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	7640	7200	Yes
$v_{Fi} = v_F$			
$v_{FO} = v - v_R$	6530	7200	No
$v_R$	1110	2000	No
$v_{3 or av34}$	3148 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 or av34} > 2700$ pc/h?		Yes	
Is $v_{3 or av34} > 1.5 v_{12R} / 2$		No	
If yes, $v_{12A} = 4940$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12A}$	4940	4400	Yes

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12R} - 0.009 L_D = 44.3$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	D = 0.528	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.2	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 59.7	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	899	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	394	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	899	394	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1541	244	107	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6317	1002	439	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.556 Using Equation 5  
 FD  
 $v = v + (v - v) P = 3957$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6317	7200	No
$v = v - v$	5315	7200	No
$v = v$	1002	2000	No
$v = v$	2360 pc/h	(Equation 25-15 or 25-16)	
Is $v > 2700$ pc/h?		No	
Is $v > 1.5 v / 2$		No	
If yes, $v = 3957$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v = v$	3957	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 35.9$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable,	D = 0.518
Space mean speed in ramp influence area,	S = 55.5 mph
Space mean speed in outer lanes,	S = 71.5 mph
Space mean speed for all vehicles,	S = 60.6 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6857	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	996	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6857	996	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1863	271	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	% 0.00	% 0.00	%
Length	0.00	mi 0.00	mi 0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fhv	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7640	1110	1039	pcph

Estimation of V12 Diverge Areas

L = 6399.36 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.821 Using Equation 6  
 FD  
 $v = v + (v - v) P = 6473$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	7640	7200	Yes
Fi F			
$v = v - v$	6530	7200	No
FO F R			
v	1110	2000	No
R			
v v	1167 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 6473		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	6473	4400	Yes
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 57.5$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	D = 0.528	
	S	
Space mean speed in ramp influence area,	S = 55.2	mph
	R	
Space mean speed in outer lanes,	S = 76.1	mph
	0	
Space mean speed for all vehicles,	S = 57.6	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	899	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	899	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1541	244	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6317	1002	1039	pcph

Estimation of V12 Diverge Areas

L = 7414.07 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.873 Using Equation 6  
 FD  
 $v = v + (v - v) P = 5642$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
v = v	6317	7200	No
Fi F			
v = v - v	5315	7200	No
FO F R			
v	1002	2000	No
R			
v v	675 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34 12			
If yes, v = 5642		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	5642	4400	Yes
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 50.3$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable,	D = 0.518	
Space mean speed in ramp influence area,	S = 55.5	mph
Space mean speed in outer lanes,	S = 76.8	mph
Space mean speed for all vehicles,	S = 57.2	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5751	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	330	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	641	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5751	330	641	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1563	90	174	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6407	368	714	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3777$  pc/h  
 12 F FM

Capacity Checks

v	Actual	Maximum	LOS F?
FO	6775	7200	No
v		2630 pc/h	(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34		12	
If yes, v = 3777			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	3777	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.9$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.537  
 S  
 Space mean speed in ramp influence area, S = 55.0 mph  
 R  
 Space mean speed in outer lanes, S = 61.5 mph  
 0  
 Space mean speed for all vehicles, S = 57.3 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4182	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	394	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	983	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4182	394	983	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1136	107	267	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4659	439	1095	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2747$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5098	7200	No
FO			
v	1912 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34		12	
If yes, v = 2747		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2747	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.4$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.385  
 S  
 Space mean speed in ramp influence area, S = 59.2 mph  
 R  
 Space mean speed in outer lanes, S = 64.9 mph  
 0  
 Space mean speed for all vehicles, S = 61.2 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5751	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	330	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	996	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5751	330	996	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1563	90	271	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6407	368	1110	pcph

Estimation of V12 Merge Areas

L = 1068.97 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3777$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6775	7200	No
FO			
v v	2630 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 3777		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	3777	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.9$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.537  
 S  
 Space mean speed in ramp influence area, S = 55.0 mph  
 R  
 Space mean speed in outer lanes, S = 61.5 mph  
 O  
 Space mean speed for all vehicles, S = 57.3 mph

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 Junction: Alessandro Boulevard  
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 Analysis Year: 2010  
 Description: Opening Year Without Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4182	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	394	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	899	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4182	394	899	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1136	107	244	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4659	439	1002	pcph

Estimation of V12 Merge Areas

L = 710.09 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2747$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5098	7200	No
FO			
v v	1912 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2747		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2747	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.4$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.385  
 S  
 Space mean speed in ramp influence area, S = 59.2 mph  
 R  
 Space mean speed in outer lanes, S = 64.9 mph  
 O  
 Space mean speed for all vehicles, S = 61.2 mph

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.18	
Weaving ratio, R	0.50	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	32	5482	609	599	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	9	1490	165	163	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	35	6107	678	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	1.01	0.55
Weaving and non-weaving speeds, Si	44.78	53.73
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.13

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	51.87	mph
Weaving segment density, D	36.09	pc/mi/ln
Level of service, LOS	E	
Capacity of base condition, cb	8500	pc/h
Capacity as a 15-minute flow rate, c	8293	pc/h
Capacity as a full-hour volume, ch	7630	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1345	2800	a
Average flow rate (pcphpl)	1871	2400	b
Volume ratio, VR	0.18	0.35	c
Weaving ratio, R	0.50	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.28	
Weaving ratio, R	0.39	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	32	3977	951	599	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	9	1081	258	163	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fp	1.00	1.00	1.00	1.00	
Flow rate, v	35	4430	1059	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.35	0.34
Weaving and non-weaving speeds, Si	32.90	59.83
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.45

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	48.71	mph
Weaving segment density, D	31.77	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	7768	pc/h
Capacity as a 15-minute flow rate, c	7579	pc/h
Capacity as a full-hour volume, ch	6973	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded See Note	Note
Weaving flow rate, Vw	1726	2800	a
Average flow rate (pcphpl)	1547	2400	b
Volume ratio, VR	0.28	0.35	c
Weaving ratio, R	0.39	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3638	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	346	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	892	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3638	346	892	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	989	94	242	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4053	385	994	pcph

Estimation of V12 Merge Areas

L = 7233.30 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.650 Using Equation 3  
 FM  
 $v = v (P) = 2634$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v FO	4438	7200	No
v v	1419 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2634		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	2634	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.2$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.383	
Space mean speed in ramp influence area,	S = 59.3	mph
Space mean speed in outer lanes,	S = 66.7	mph
Space mean speed for all vehicles,	S = 61.5	mph

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 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3302	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1094	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	892	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3302	1094	892	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	897	297	242	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fp	1.00	1.00	1.00	
Flow rate, vp	3679	1219	994	pcph

Estimation of V12 Merge Areas

L = 7233.30 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.650 Using Equation 3  
 FM  
 $v = v (P) = 2391$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4898	7200	No
FO			
v	1288 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2391			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2391	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.4$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M = 0.447	
	S	
Space mean speed in ramp influence area,	S = 57.5	mph
	R	
Space mean speed in outer lanes,	S = 67.2	mph
	0	
Space mean speed for all vehicles,	S = 59.7	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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 Freeway/Dir of Travel: I-215 NB Freeway  
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Freeway Data

Type of analysis	Merge	
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Free-flow speed on freeway	70.0	mph
Volume on freeway	3638	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	346	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1499	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2590	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3638	346	1499	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	989	94	407	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4053	385	1670	pcph

Estimation of V12 Merge Areas

L = 493.37 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2370$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v FO	4438	7200	No
v v	1683 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2370		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v R12	2370	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.2$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.364	
	S	
Space mean speed in ramp influence area,	S = 59.8	mph
	R	
Space mean speed in outer lanes,	S = 65.7	mph
	0	
Space mean speed for all vehicles,	S = 61.9	mph

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Merge Analysis

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 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3302	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1094	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	988	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2590	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3302	1094	988	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	897	297	268	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3679	1219	1101	pcph

Estimation of V12 Merge Areas

L = 591.81 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2151$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v FO	4898	7200	No
v v	1528 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2151		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v R12	2151	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 29.6$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M = 0.416	
Space mean speed in ramp influence area,	S = 58.3	mph
Space mean speed in outer lanes,	S = 66.3	mph
Space mean speed for all vehicles,	S = 60.6	mph

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2009  
 Description: Existing Conditions

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1090	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.60	
Weaving ratio, R	0.38	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	48	1500	1451	907	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	13	408	394	246	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	53	1671	1616	1010	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	3.24	0.62
Weaving and non-weaving speeds, Si	29.15	52.09
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		2.26

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	35.31	mph
Weaving segment density, D	30.80	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	6966	pc/h
Capacity as a 15-minute flow rate, c	6796	pc/h
Capacity as a full-hour volume, ch	6252	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	2626	2800	a
Average flow rate (pcphpl)	1087	2400	b
Volume ratio, VR	0.60	0.35	c
Weaving ratio, R	0.38	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year Without Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1090	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.43	
Weaving ratio, R	0.49	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	2415	48	940	907	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	656	13	255	246	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2690	53	1047	1010	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.77	0.44
Weaving and non-weaving speeds, Si	30.94	56.61
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.81

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	41.76	mph
Weaving segment density, D	28.74	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	6966	pc/h
Capacity as a 15-minute flow rate, c	6796	pc/h
Capacity as a full-hour volume, ch	6252	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
		Maximum	Note
Weaving flow rate, Vw	2057	2800	a
Average flow rate (pcphpl)	1200	2400	b
Volume ratio, VR	0.43	0.35	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

**Opening Year (2010) With Project**

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6857	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1073	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	330	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6857	1073	330	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1863	292	90	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7640	1195	368	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.514 Using Equation 5  
 FD  
 $v = v + (v - v) P = 4508$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
v = v	7640	7200	Yes
Fi F			
v = v - v	6445	7200	No
FO F R			
v	1195	2000	No
R			
v	3132 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		Yes	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 4940		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	4940	4400	Yes
12A			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 44.3$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	D = 0.536	
Space mean speed in ramp influence area,	S = 55.0	mph
Space mean speed in outer lanes,	S = 70.2	mph
Space mean speed for all vehicles,	S = 59.6	mph

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	925	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	394	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	925	394	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1541	251	107	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6317	1031	439	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.555 Using Equation 5  
 FD  
 $v = v + (v - v) P = 3963$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6317	7200	No
$v = v - v$	5286	7200	No
$v = v$	1031	2000	No
$v = v$	2354 pc/h	(Equation 25-15 or 25-16)	
Is $v > 2700$ pc/h?		No	
Is $v > 1.5 v / 2$		No	
If yes, $v = 3963$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v$	3963	4400	No
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 35.9$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable,	D = 0.521
Space mean speed in ramp influence area,	S = 55.4 mph
Space mean speed in outer lanes,	S = 71.5 mph
Space mean speed for all vehicles,	S = 60.5 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6857	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1073	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6857	1073	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1863	292	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7640	1195	1039	pcph

Estimation of V12 Diverge Areas

L = 6664.53 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.821 Using Equation 6  
 FD  
 $v = v + (v - v) P = 6488$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
v = v	7640	7200	Yes
Fi F			
v = v - v	6445	7200	No
FO F R			
v	1195	2000	No
R			
v	1152 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 6488		(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v	6488	4400	Yes
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 57.6$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	D = 0.536	
Space mean speed in ramp influence area,	S = 55.0	mph
Space mean speed in outer lanes,	S = 76.2	mph
Space mean speed for all vehicles,	S = 57.4	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	925	vph
Length of first accel/decel lane	270	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	925	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1541	251	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6317	1031	1039	pcph

Estimation of V12 Diverge Areas

L = 7532.53 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.873 Using Equation 6  
 FD  
 $v = v + (v - v) P = 5645$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6317	7200	No
$\frac{F_i}{F}$			
$v = v - v$	5286	7200	No
$\frac{F_O}{F}$ R			
v	1031	2000	No
R			
$v = v$	672 pc/h	(Equation 25-15 or 25-16)	
3 or av34			
Is $v = v$	> 2700 pc/h?	No	
3 or av34			
Is $v = v$	> 1.5 v /2	No	
3 or av34	12		
If yes, v	= 5645	(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

v	Actual	Max Desirable	Violation?
12	5645	4400	Yes

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 50.4$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable,	D = 0.521	
Space mean speed in ramp influence area,	S = 55.4	mph
Space mean speed in outer lanes,	S = 76.8	mph
Space mean speed for all vehicles,	S = 57.1	mph

HCS+: Ramps and Ramp Junctions Release 5.4

Driver population factor, fP 1.00  
 Flow rate, vp 7640 1195 1039 pcph

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description:

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6857	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1073	vph
Length of first accel/decel lane	450	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6857	1073	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1863	292	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Estimation of V12 Diverge Areas

L = 6664.53 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.436 Using Equation 8  
 FD  
 $v_{12R} = v_{FR} + (v_{FR} - v_{FD}) P = 4005$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v = v_{FR}$	7640	9600	No
$v_{FR} = v_{FR} - v_{FD}$	6445	9600	No
$v_{FR}$	1195	2000	No
$v_{FR}$	1817 pc/h	(Equation 25-15 or 25-16)	
Is $v_{FR} > 2700$ pc/h?		No	
Is $v_{FR} > 1.5 v_{FR} / 2$		No	
If yes, $v_{FR} = 4005$	12A	(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	4005	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_{12} = 34.6$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,  $D = 0.536$   
 Space mean speed in ramp influence area,  $S_R = 55.0$  mph  
 Space mean speed in outer lanes,  $S_0 = 73.6$  mph  
 Space mean speed for all vehicles,  $S = 62.5$  mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Diverge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR) - Extend Lane

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5670	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	925	vph
Length of first accel/decel lane	450	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	933	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1560	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5670	925	933	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1541	251	254	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6317	1031	1039	pcph

Estimation of V12 Diverge Areas

L = 7532.53 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.436 Using Equation 8  
 FD  
 $v = v + (v - v) P = 3336$  pc/h  
 12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6317	9600	No
$v_i F$			
$v = v - v$	5286	9600	No
$FO F R$			
$v$	1031	2000	No
$R$			
$v$	1490 pc/h	(Equation 25-15 or 25-16)	
$3 \text{ or } av34$			
Is $v$	> 2700 pc/h?	No	
$3 \text{ or } av34$			
Is $v$	> 1.5 v /2	No	
$3 \text{ or } av34$	12		
If yes, $v$	= 3336	(Equation 25-18)	
12A			

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v$	3336	4400	No
12			

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 28.9$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D = 0.521	
Space mean speed in ramp influence area,	S = 55.4	mph
Space mean speed in outer lanes,	S = 74.9	mph
Space mean speed for all vehicles,	S = 63.2	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5751	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	330	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	654	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5751	330	654	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1563	90	178	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6407	368	729	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3777$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6775	7200	No
FO			
v v	2630 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 3777		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	3777	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.9$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.537  
 S  
 Space mean speed in ramp influence area, S = 55.0 mph  
 R  
 Space mean speed in outer lanes, S = 61.5 mph  
 O  
 Space mean speed for all vehicles, S = 57.3 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4182	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	394	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1040	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	410	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4182	394	1040	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1136	107	283	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4659	439	1159	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2747$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5098	7200	No
FO			
v v	1912 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2747		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2747	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.4$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.385	
Space mean speed in ramp influence area,	S = 59.2	mph
Space mean speed in outer lanes,	R = 64.9	mph
Space mean speed for all vehicles,	0 = 61.2	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5751	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	330	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1073	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5751	330	1073	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1563	90	292	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6407	368	1195	pcph

Estimation of V12 Merge Areas

L = 1068.97 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 3777$  pc/h  
 12 F FM

Capacity Checks

v	Actual	Maximum	LOS F?
FO	6775	7200	No
v v	2630 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 3777		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	3777	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.9$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.537  
 S  
 Space mean speed in ramp influence area, S = 55.0 mph  
 R  
 Space mean speed in outer lanes, S = 61.5 mph  
 0  
 Space mean speed for all vehicles, S = 57.3 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4182	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	394	vph
Length of first accel/decel lane	430	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	925	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1620	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4182	394	925	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1136	107	251	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4659	439	1031	pcph

Estimation of V12 Merge Areas

L = 710.09 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.590 Using Equation 1  
 FM  
 $v = v (P) = 2747$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5098	7200	No
FO			
v v	1912 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v	> 2700 pc/h?	No	
3 or av34			
Is v v	> 1.5 v /2	No	
3 or av34	12		
If yes, v	= 2747	(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2747	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.4$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.385	
Space mean speed in ramp influence area,	S = 59.2	mph
Space mean speed in outer lanes,	R = 64.9	mph
Space mean speed for all vehicles,	O = 61.2	mph

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project

Inputs

Freeway free-flow speed, SFF 70 mph  
 Weaving number of lanes, N 4  
 Weaving segment length, L 1340 ft  
 Terrain type Level  
 Grade %  
 Length mi  
 Weaving type A  
 Volume ratio, VR 0.18  
 Weaving ratio, R 0.49

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	32	5482	622	599	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	9	1490	169	163	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	35	6107	692	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	1.02	0.55
Weaving and non-weaving speeds, Si	44.71	53.63
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.14

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S 51.76 mph  
 Weaving segment density, D 36.23 pc/mi/ln  
 Level of service, LOS E  
 Capacity of base condition, cb 8490 pc/h  
 Capacity as a 15-minute flow rate, c 8283 pc/h  
 Capacity as a full-hour volume, ch 7620 pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1359	2800	a
Average flow rate (pcphpl)	1875	2400	b
Volume ratio, VR	0.18	0.35	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.29	
Weaving ratio, R	0.37	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
Volume, V	o1	o2	w1	w2	veh/h
Peak-hour factor, PHF	32	3977	1008	599	
Peak 15-min volume, v15	0.92	0.92	0.92	0.92	
Trucks and buses	9	1081	274	163	v
Recreational vehicles	5	5	5	5	%
Trucks and buses PCE, ET	0	0	0	0	%
Recreational vehicle PCE, ER	1.5	1.5	1.5	1.5	
Heavy vehicle adjustment, fHV	1.2	1.2	1.2	1.2	
Driver population adjustment, fP	0.976	0.976	0.976	0.976	
Flow rate, v	1.00	1.00	1.00	1.00	
	35	4430	1123	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.41	0.35
Weaving and non-weaving speeds, Si	32.62	59.41
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.48

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	48.10	mph
Weaving segment density, D	32.51	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	7713	pc/h
Capacity as a 15-minute flow rate, c	7525	pc/h
Capacity as a full-hour volume, ch	6923	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1790	2800	a
Average flow rate (pcphpl)	1563	2400	b
Volume ratio, VR	0.29	0.35	c
Weaving ratio, R	0.37	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project - Add Lane

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	5	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.18	
Weaving ratio, R	0.49	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	v	v	v	v	
Volume, V	o1	o2	w1	w2	veh/h
Peak-hour factor, PHF	5482	32	622	599	
Peak 15-min volume, v15	0.92	0.92	0.92	0.92	
Trucks and buses	1490	9	169	163	v
Recreational vehicles	5	5	5	5	%
Trucks and buses PCE, ET	0	0	0	0	%
Recreational vehicle PCE, ER	1.5	1.5	1.5	1.5	
Heavy vehicle adjustment, fHV	1.2	1.2	1.2	1.2	
Driver population adjustment, fp	0.976	0.976	0.976	0.976	
Flow rate, v	1.00	1.00	1.00	1.00	
	6107	35	692	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.82	0.41
Weaving and non-weaving speeds, Si	47.95	57.43
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.38

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	55.45	mph
Weaving segment density, D	27.06	pc/mi/ln
Level of service, LOS	C	
Capacity of base condition, cb	10717	pc/h
Capacity as a 15-minute flow rate, c	10456	pc/h
Capacity as a full-hour volume, ch	9620	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1359	2800	a
Average flow rate (pcphpl)	1500	2400	b
Volume ratio, VR	0.18	0.20	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 SB Freeway  
 Weaving Location: Alessandro Blvd. - Cactus Ave.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project - Add Lane

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	5	
Weaving segment length, L	1340	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.29	
Weaving ratio, R	0.37	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	v	v	v	v	
Volume, V	o1	o2	w1	w2	veh/h
Peak-hour factor, PHF	3977	32	1008	599	
Peak 15-min volume, v15	0.92	0.92	0.92	0.92	
Trucks and buses	1081	9	274	163	v
Recreational vehicles	5	5	5	5	%
Trucks and buses PCE, ET	0	0	0	0	%
Recreational vehicle PCE, ER	1.5	1.5	1.5	1.5	
Heavy vehicle adjustment, fHV	1.2	1.2	1.2	1.2	
Driver population adjustment, fp	0.976	0.976	0.976	0.976	
Flow rate, v	1.00	1.00	1.00	1.00	
	4430	35	1123	667	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	1.94	0.26
Weaving and non-weaving speeds, Si	35.43	62.52
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.80

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	51.29	mph
Weaving segment density, D	24.39	pc/mi/ln
Level of service, LOS	C	
Capacity of base condition, cb	10579	pc/h
Capacity as a 15-minute flow rate, c	10321	pc/h
Capacity as a full-hour volume, ch	9495	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1790	2800	a
Average flow rate (pcphpl)	1251	2400	b
Volume ratio, VR	0.29	0.20	c
Weaving ratio, R	0.37	N/A	d
Weaving length (ft)	1340	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3638	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	362	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	892	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3638	362	892	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	989	98	242	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4053	403	994	pcph

Estimation of V12 Merge Areas

L = 7233.30 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.650 Using Equation 3  
 FM  
 $v = v (P) = 2634$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v FO	4456	7200	No
v v	1419 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2634		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v R12	2634	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.3$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.384	
Space mean speed in ramp influence area,	S = 59.2	mph
Space mean speed in outer lanes,	R = 66.7	mph
Space mean speed for all vehicles,	S = 61.4	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (ADR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3302	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1165	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	892	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2580	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3302	1165	892	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	897	317	242	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3679	1298	994	pcph

Estimation of V12 Merge Areas

L = 7233.30 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.650 Using Equation 3  
 FM  
 $v = v (P) = 2391$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4977	7200	No
FO			
v	1288 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2391			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2391	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.0$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.459  
 S  
 Space mean speed in ramp influence area, S = 57.2 mph  
 R  
 Space mean speed in outer lanes, S = 67.2 mph  
 0  
 Space mean speed for all vehicles, S = 59.4 mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3638	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	362	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1561	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2590	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3638	362	1561	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	989	98	424	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	

Driver population factor, FP	1.00	1.00	1.00	
Flow rate, vp	4053	403	1739	pcph

Estimation of V12 Merge Areas

L = 497.22 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2370$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4456	7200	No
FO			
v v	1683 pc/h		(Equation 25-4 or 25-5)
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2370			(Equation 25-8)
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2370	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.3$  pc/mi/ln  
 R R 12 A  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.365	
Space mean speed in ramp influence area,	S	
	S = 59.8	mph
Space mean speed in outer lanes,	R	
	S = 65.7	mph
Space mean speed for all vehicles,	0	
	S = 61.9	mph

HCS+: Ramps and Ramp Junctions Release 5.4

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Merge Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date performed: 10/5/2009  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Junction: Alessandro Boulevard  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project (AUR)

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3302	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1165	vph
Length of first accel/decel lane	260	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1008	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2590	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3302	1165	1008	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	897	317	274	v
Trucks and buses	5	5	5	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fhv	0.976	0.976	0.976	

Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3679	1298	1123	pcph

Estimation of V12 Merge Areas

L = 608.72 (Equation 25-2 or 25-3)  
 EQ  
 P = 0.585 Using Equation 1  
 FM  
 $v = v (P) = 2151$  pc/h  
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	4977	7200	No
FO			
v v	1528 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v v > 2700 pc/h?		No	
3 or av34			
Is v v > 1.5 v /2		No	
3 or av34	12		
If yes, v = 2151		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2151	4600	No
R12			

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.1$  pc/mi/ln  
 R R 12 A

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M = 0.426	
Space mean speed in ramp influence area,	S = 58.1	mph
Space mean speed in outer lanes,	R = 66.3	mph
Space mean speed for all vehicles,	S = 60.4	mph

HCS+: Freeway Weaving Release 5.4

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Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1090	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.62	
Weaving ratio, R	0.37	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	v	v	v	v	
Volume, V	48	1438	1513	907	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	13	391	411	246	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	53	1602	1685	1010	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	3.31	0.64
Weaving and non-weaving speeds, Si	28.91	51.53
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		2.30

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	34.71	mph
Weaving segment density, D	31.33	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	6966	pc/h
Capacity as a 15-minute flow rate, c	6796	pc/h
Capacity as a full-hour volume, ch	6252	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
		Maximum	Note
Weaving flow rate, Vw	2695	2800	a
Average flow rate (pcphpl)	1087	2400	b
Volume ratio, VR	0.62	0.35	c
Weaving ratio, R	0.37	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.4

Giancarlo Ganddini  
 Kunzman Associates, Inc.  
 1111 Town & Country Road  
 Suite 34  
 Orange, CA 92868  
 Phone: (714) 973-8383  
 E-mail: mail@traffic-engineer.com

Fax: (714) 973-8821

Operational Analysis

Analyst: Giancarlo Ganddini  
 Agency/Co.: Kunzman Associates, Inc.  
 Date Performed: 10/5/2009  
 Analysis Time Period: PM Peak Hour  
 Freeway/Dir of Travel: I-215 NB Freeway  
 Weaving Location: Cactus Ave. - Alessandro Blvd.  
 Jurisdiction: City of Riverside  
 Analysis Year: 2010  
 Description: Opening Year With Project

Inputs

Freeway free-flow speed, SFF	70	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1090	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.43	
Weaving ratio, R	0.49	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	v	V	v	
Volume, V	2395	48	960	907	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	651	13	261	246	v
Trucks and buses	5	5	5	5	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.976	0.976	0.976	0.976	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2668	53	1069	1010	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.35	0.0020
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	2.78	0.45
Weaving and non-weaving speeds, Si	30.85	56.44
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.83

Maximum number of lanes, Nw (max) (Exhibit 24-7) 1.40  
 Type of operation is Constrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	41.53	mph
Weaving segment density, D	28.90	pc/mi/ln
Level of service, LOS	D	
Capacity of base condition, cb	6966	pc/h
Capacity as a 15-minute flow rate, c	6796	pc/h
Capacity as a full-hour volume, ch	6252	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	2079	2800	a
Average flow rate (pcphpl)	1200	2400	b
Volume ratio, VR	0.43	0.35	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1090	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

**Appendix G**  
**Timeline of the Completion of the Acquisition**  
**Requirements under the SKR HCP**  
**Prepared by the Riverside County Habitat**  
**Conservation Agency**



**TIMELINE OF THE  
COMPLETION OF THE  
ACQUISITION  
REQUIREMENTS UNDER  
THE SKR HCP**

October 28, 2009

# TIMELINE OF THE COMPLETION OF THE ACQUISITION REQUIREMENTS UNDER THE SKR HCP

## Short –Term SKR HCP

- Submitted to USFWS and CDFG and finally approved by them October, 1990
- Document addressed the following:
  - Established boundaries of the area covered by the permit
  - Established 10 Study Areas to be evaluated as potential SKR reserves
  - Specified a process by which reserves would be identified and boundaries of Study Areas could be modified
  - Defined limitations on the amount, location, and duration of SKR incidental take
- The original HCP Fee Area Boundary and the 10 Study Areas are depicted in the discussion of the Short-Term SKR HCP in Figure 2 of the SKR HCP March 1996 (**Attachment 1**)
- Boundary modifications were submitted to USFWS and CDFG for approval pursuant to the terms of the Short-Term HCP. Figure 3 of the *SKR HCP March 1996* shows the Fee and Study Areas following the boundary modifications summarized below (**Attachment 2**).
  - First set of approvals included:
    - Additions and deletions –Study Areas
    - Additions to the HCP Area
    - Deletion of Alessandro Heights Study Area
  - Second set of approvals included
    - Deletions to Study Areas
  - Subsequent modification requests were addressed in the *SKR HCP March 1996*

## SKR HCP March 1996

- Document addressed the following:
  - Regional system of core reserves consisting of 12,460 acres of SKR occupied habitat
  - At this time most of the land in these reserves was in public ownership
  - To assure SKR persistence the reserves would be expanded to conserve approximately 15,000 acres of occupied habitat. This was intended to occur through the BLM Assembled Land Exchange Agreement.
- Fee area and core reserves map
  - Figure S-1 of *SKR HCP March 1996* (**Attachment 3**)
  - Note that the *SKR HCP March 1996* made modifications to the core reserves by, among other things, doing the following:
    - Removing Santa Rosa Plateau Core Reserve
    - Removing Kabian Park Core Reserve
    - Removing Potrero Core Reserve with the understanding that the RCHCA would continue to work with Lockheed and BLM to effectuate a land trade
    - Removing non-federal lands from the Steele Peak Core Reserve
- Maps of 3 of the individual reserves reflecting ownership
  - Figure E-4 of *SKR HCP March 1996* (**Attachment 4**)

- Figure E-7 of *SKR HCP March 1996* (**Attachment 5**)
- Figure E-13 of *SKR HCP March 1996* (**Attachment 6**)
- Note the following:
  - The maps reflect the Core Reserve Boundary
  - The Core Reserve Boundary includes lands designated as “Private” and, in the case of Sycamore Canyon—March Air Base, “land under negotiation for conservation easements”

#### **1998 Completion of Core Reserve acquisition requirement**

- Letters from USFWS (**Attachment 7**) and CDFG (**Attachment 8**) confirm the following:
  - Core Reserves completed pursuant to the Long-Term SKR HCP (*SKR HCP March 1996*) and acknowledgement of adjusted boundaries for the Lake Mathews Core Reserve (**Attachment 9**) and the Lake Skinner Core Reserve (**Attachment 10**)
    - Note that these two Core Reserve maps are the first to reflect that the parcels not acquired were depicted as “Private Inholdings Not a Part of the Reserve”.
      - These are not parcels that were removed from Reserve Boundaries, rather, because they were not acquired, they were acknowledged as not being a part of a Core Reserve.
      - Lands included in a Core Reserve were required to be owned in fee title or have an acceptable conservation agreement in place
  - Agreement that 1,454 acres of occupied habitat still need to be protected to complete the Core Reserve expansion requirement to reach the ultimate goal of 15,000 acres of conserved SKR occupied habitat.
    - Note that the expansion requirement was intended to be accomplished by utilizing the BLM land exchange parcels in order to trade BLM parcels for appropriate parcels within the HCP Area held in private ownership.
  - While it was intended that the privately held lands within the Core Reserve Boundaries be acquired, because there was neither the public or political will to acquire lands by eminent domain, private lands within Core Reserve Boundaries, unless by willing seller, were not acquired. There was an interest in getting the most value for the dollar, so quality SKR lands were purchased in appropriate and strategic areas.

#### **2003 Completion of the Land Acquisition Portion of the Reserve Expansion Requirement**

- Joint letter from USFWS and CDFG (**Attachment 11**) confirms the following:
  - Completion of the Land acquisition portion of the expansion requirement of the Long-term SKR HCP (*SKR HCP March 1996*) resulting from:
    - Core Reserve expansion requirement of 2,540 acres, of which USFWS and CDFG agreed in 1998 letters that 1,454 acres remained to be protected
    - Potrero site acquisition to yield 2,488 acres of occupied SKR habitat
    - Exchange of March Air Force Base SKR Management Area to Potrero site meaning a loss of 1,300 acres of occupied SKR habitat at March
    - Resulting 1,188 acres are credited toward the remaining 1,454 acres needed to meet the expansion requirement

- Remaining SKR occupied acreage (266 acres) acknowledged as resulting from various other HCP's, acquisitions, and section 7 consultations

#### **2006 Reaffirmation of release of March Air Reserve Base SKR Management Area**

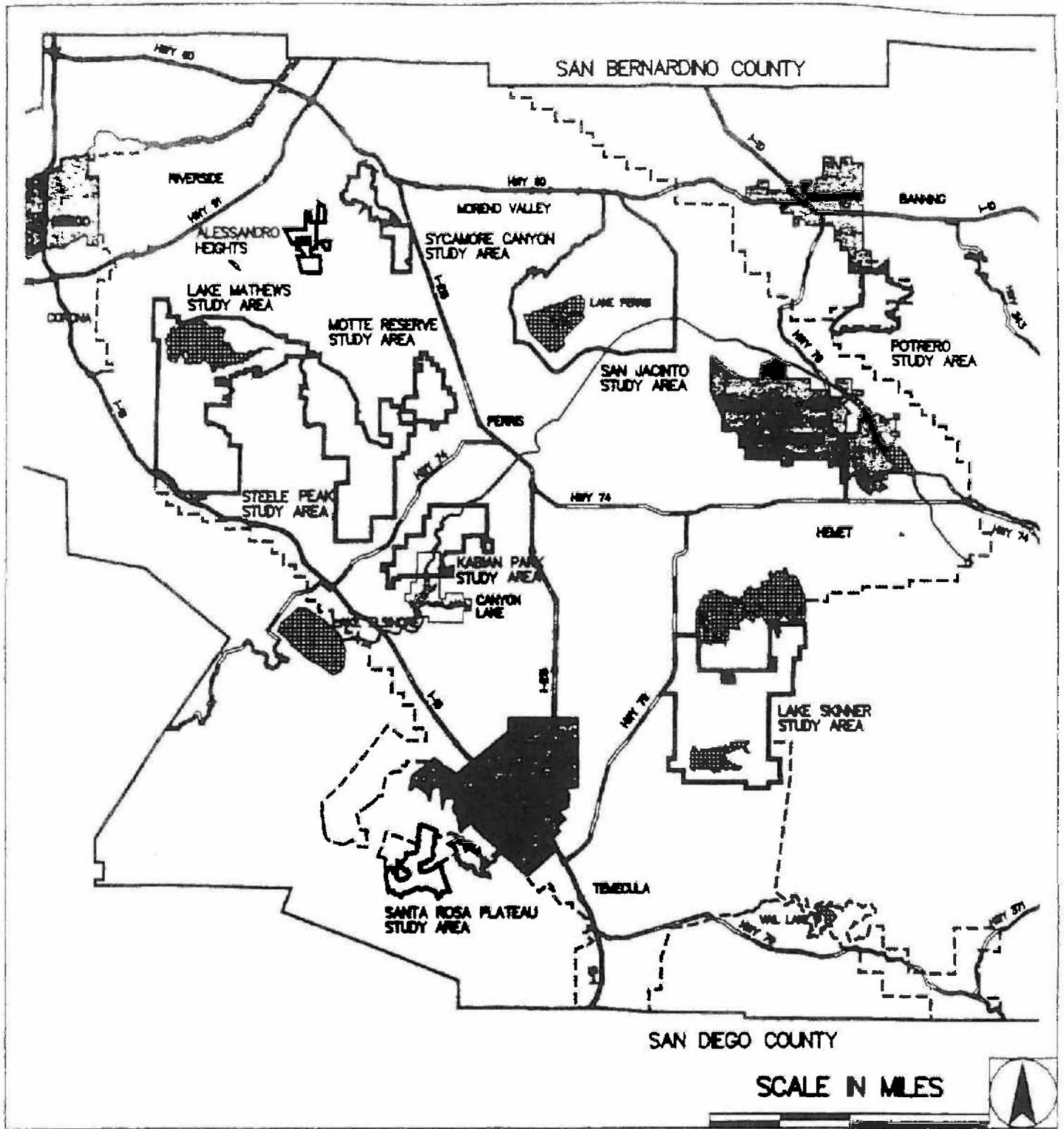
- Joint letter from USFWS and CDFG (**Attachment 12**)

#### **06/2007 Updated Reserve Maps**

- Until the confirmation of the completion of the land acquisition portion of the reserve expansion requirement, the Core Reserve maps were in flux. Following the confirmation of completion, the RCHCA updated the SKR reserve maps as follows:
  - SKR Reserves (**Attachment 13**)
  - Lake Mathews-Estelle Mountain Reserve (**Attachment 14**)
  - Sycamore Canyon Core Reserve (**Attachment 15**)
  - Steele Peak Core Reserve (**Attachment 16**)
  - Motte/Rimrock Core Reserve (**Attachment 17**)
  - San Jacinto/Lake Perris Core Reserve (**Attachment 18**)
  - Potrero ACEC Core Reserve (**Attachment 19**)
  - Southwestern Riverside County Multi-Species Core Reserve (**Attachment 20**)
  - Potrero Core Reserve (**Attachment 21**)
- Consistent with maps of Lake Mathews and Lake Skinner (now Southwestern Riverside County Multi-Species) Core Reserves prepared for the 1998 minor adjustment, all maps define the ownership (note that while the San Jacinto/Lake Perris Core Reserve map defines "ownership" this was corrected in a subsequent map to reflect "management") within the core reserves. There is no private ownership within the boundary of a Core Reserve unless noted as having a conservation easement.

#### **2009 Map Updates**

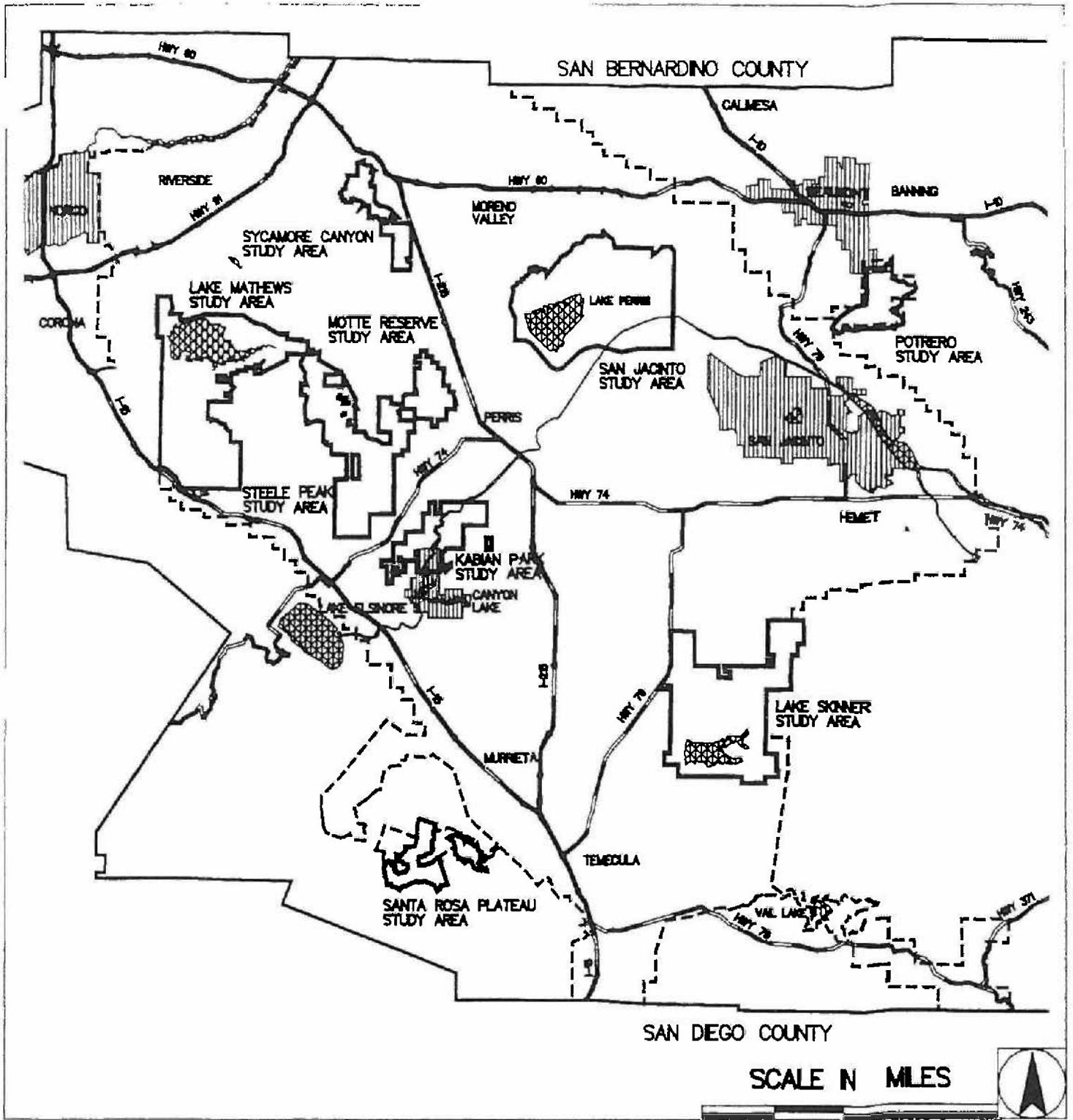
- The following maps were updated:
  - SKR Reserves (**Attachment 22**) to reflect the cities of San Jacinto and Canyon Lake as "Not a Part"
  - Motte/Rimrock Core Reserve (**Attachment 23**) to reflect additional lands as part of the Reserve
  - San Jacinto/Lake Perris Core Reserve (**Attachment 24**) to reflect ownership and management



-  ORIGINAL HCP FEE AREA BOUNDARY
-  ORIGINAL STEPHENS' KANGAROO RAT STUDY AREA
-  RIVERSIDE COUNTY BOUNDARY
-  HIGHWAYS
-  LAKES/RESERVOIRS/OPEN WATER
-  NOT INCLUDED IN HCP FEE AREA

Figure 2

ORIGINAL HCP FEE AREA AND  
STEPHENS' KANGAROO RAT STUDY AREAS



-  CURRENT STEPHENS KANGAROO RAT STUDY AREA BOUNDARIES
-  CURRENT HCP FEE AREA BOUNDARY
-  RIVERSIDE COUNTY BOUNDARY
-  HIGHWAYS
-  LAKES/RESERVOIRS
-  NOT INCLUDED IN HCP FEE AREA

SCALE IN MILES

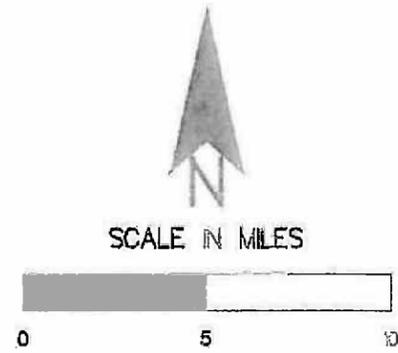
0 3 6 12



Figure 3

CURRENT STEPHENS KANGAROO RAT FEE AREA AND STUDY AREAS

# RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY FEE AREA - CORE RESERVES



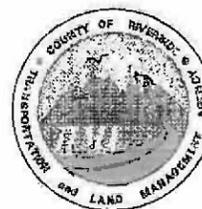
## LEGEND

- HIGHWAYS
- FEE AREA BOUNDARY
- CITY BOUNDARY
- LAKES
- CORE RESERVES AS PER RCHCA
- CITIES

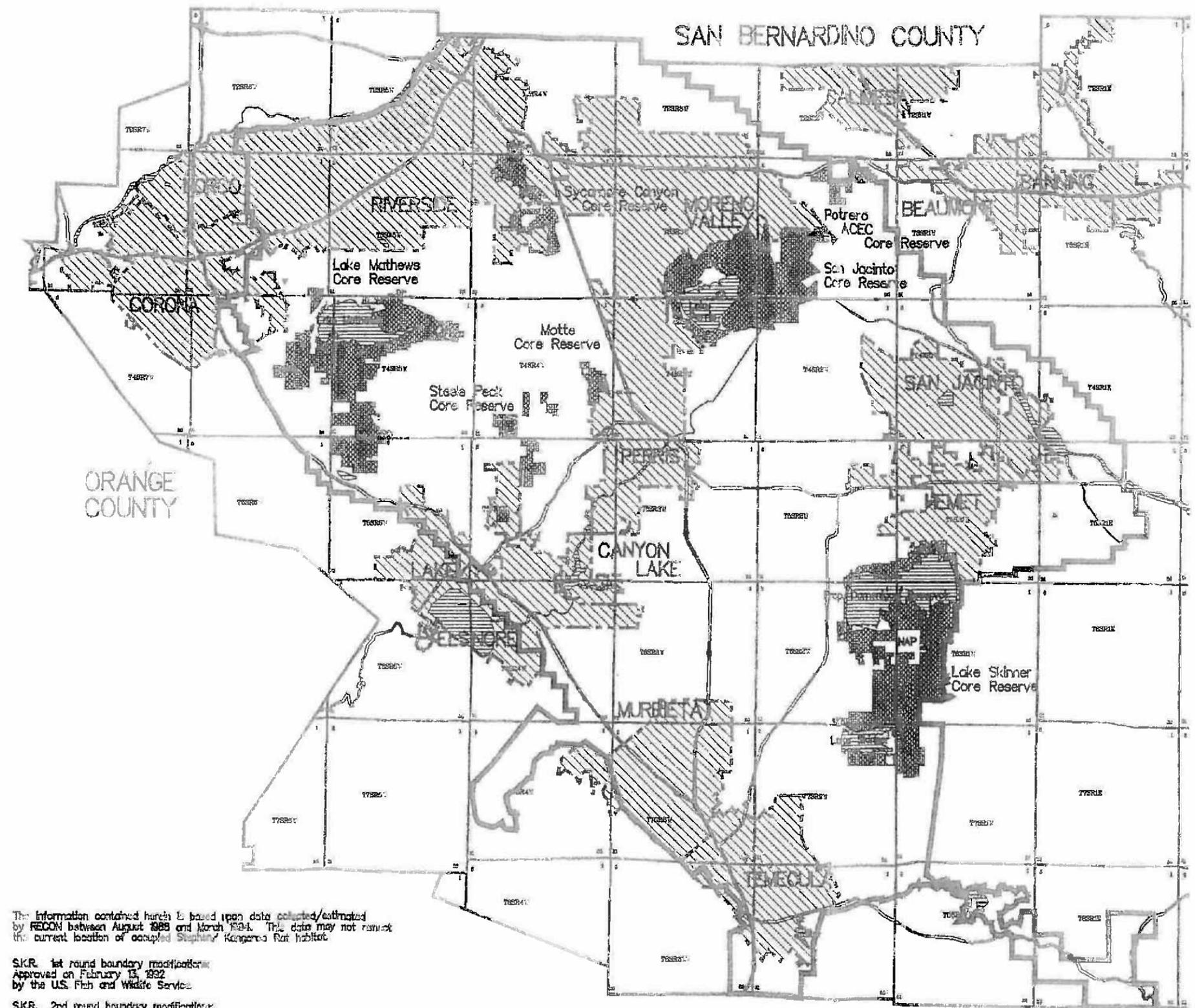
### RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY (RCHCA)

City of Corona \* City of Hemet \* City of Lake Elsinore \*  
City of Moreno Valley \* City of Murrieta \* City of Perris \*  
City of Riverside \* City of Temecula \* County of Riverside

The following Cities are NOT members of RCHCA:  
Beaumont Canyon Lake, Norco, San Jacinto.  
Therefore these lands are not included in the HCP area.



This map was made by the Riverside County Geographic Information System. The map elements were produced by the Administration and the Transportation and Land Management Agency which is comprised of the Administration, Aviation, and Information Resources divisions and the Building & Safety, Planning and Transportation departments. The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to update and modification. The Geographic Information System and other sources should be queried for the most current information.



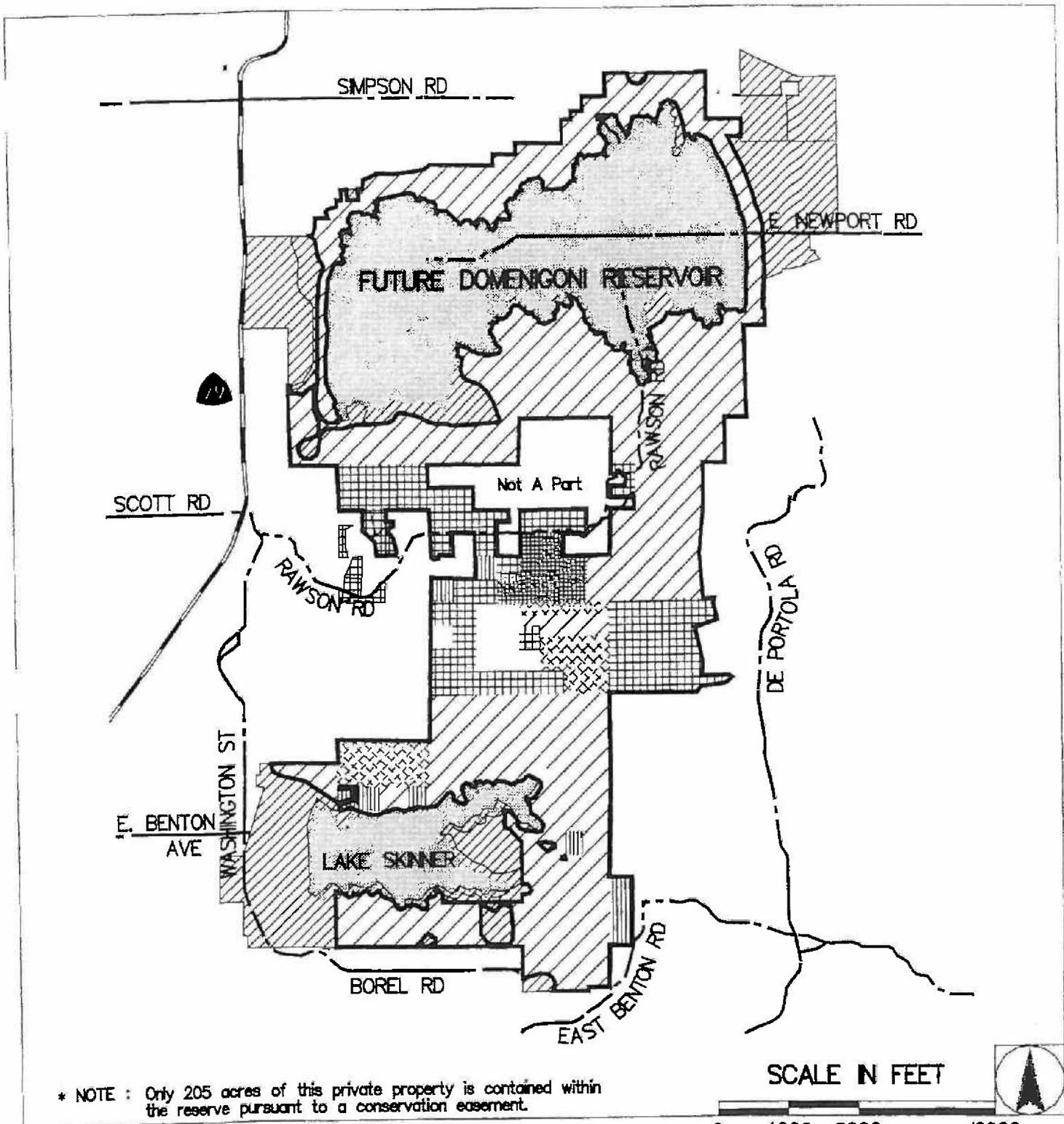
The information contained herein is based upon data collected/estimated by RECON between August 1988 and March 1991. This data may not reflect the current location of occupied Stephens' Kangaroo Rat habitat.

SKR, 1st round boundary modifications.  
Approved on February 13, 1992  
by the U.S. Fish and Wildlife Service.

SKR, 2nd round boundary modifications.  
Approved on March 15, 1993  
by the U.S. Fish and Wildlife Service.

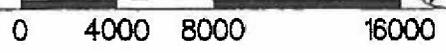
SAN DIEGO COUNTY

Figure S-1

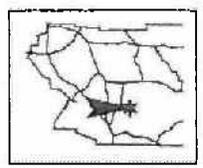


\* NOTE : Only 205 acres of this private property is contained within the reserve pursuant to a conservation easement.

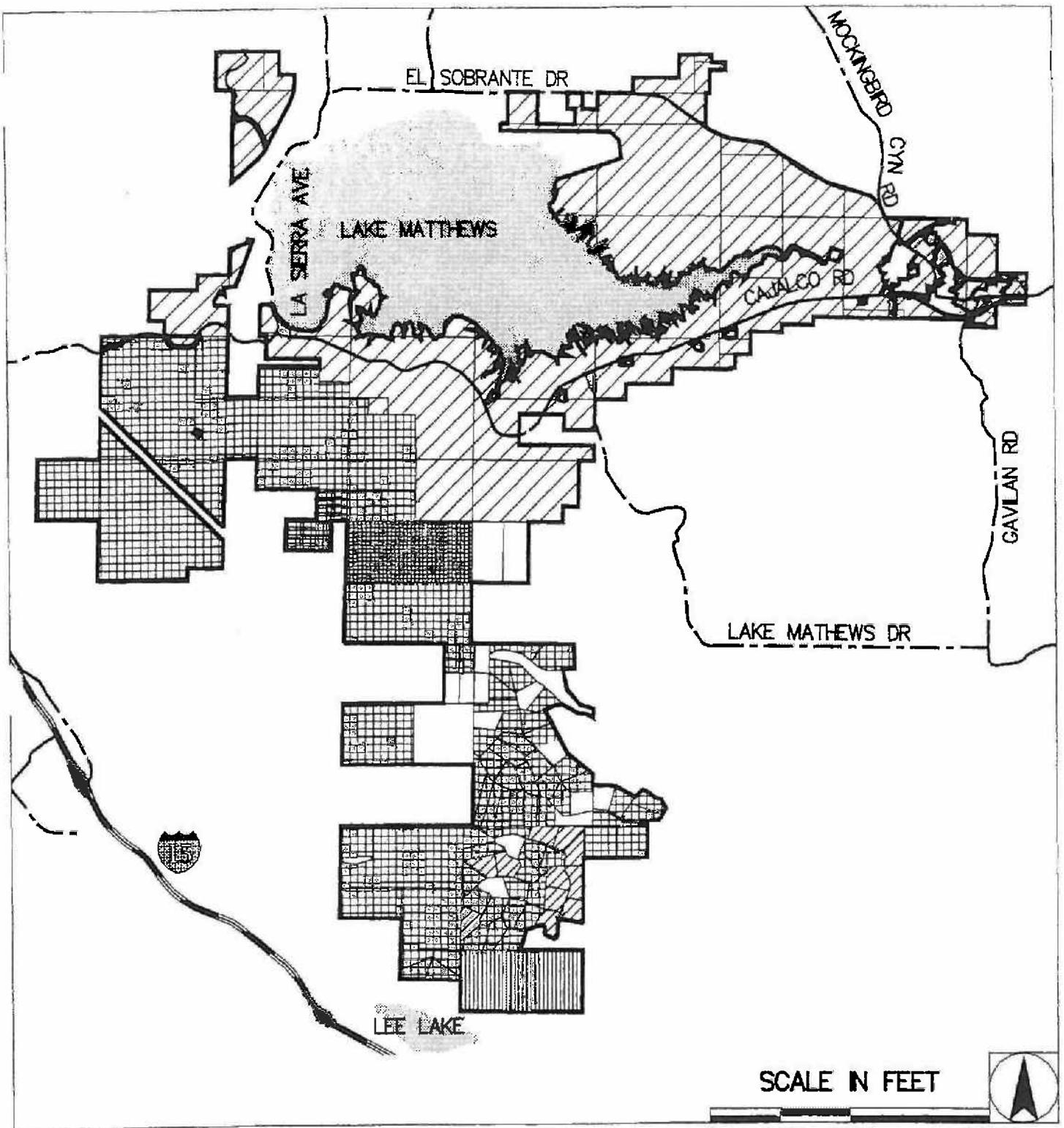
SCALE IN FEET



- |  |                             |
|--|-----------------------------|
| PRIVATE  | MWD OPERATIONS              |
| PRIVATE LAND UNDER CONSERVATION EASEMENTS (FNSTERRA FARMS) * | LAKES/RESERVOIRS/OPEN WATER |
| BLM  | CORE RESERVE BOUNDARY       |
| RCHCA  | HIGHWAYS                    |
| RIVERSIDE COUNTY   | ARTERIAL/MAJOR ROADS        |
| MWD  |                             |



**Figure E-4**  
**LAKE SKINNER-**  
**DOMENIGONI VALLEY CORE RESERVE:**  
**OWNERSHIP**



 RCHCA

 STATE WILDLIFE CONSERVATION BOARD

 MWD

 PRIVATE

 AREA TO BE DEDICATED TO THE RCHCA PURSUANT TO THE TERMS OF THE EL SOBRANTE LANDFILL EXPANSION MEMORANDUM OF AGREEMENT

 LAKES/RESERVOIRS/OPEN WATER

 BLM

 CORE RESERVE BOUNDARY

 HIGHWAYS

 ARTERIAL/MAJOR ROADS

SCALE IN FEET

0 3000 6000 12000

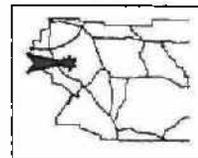
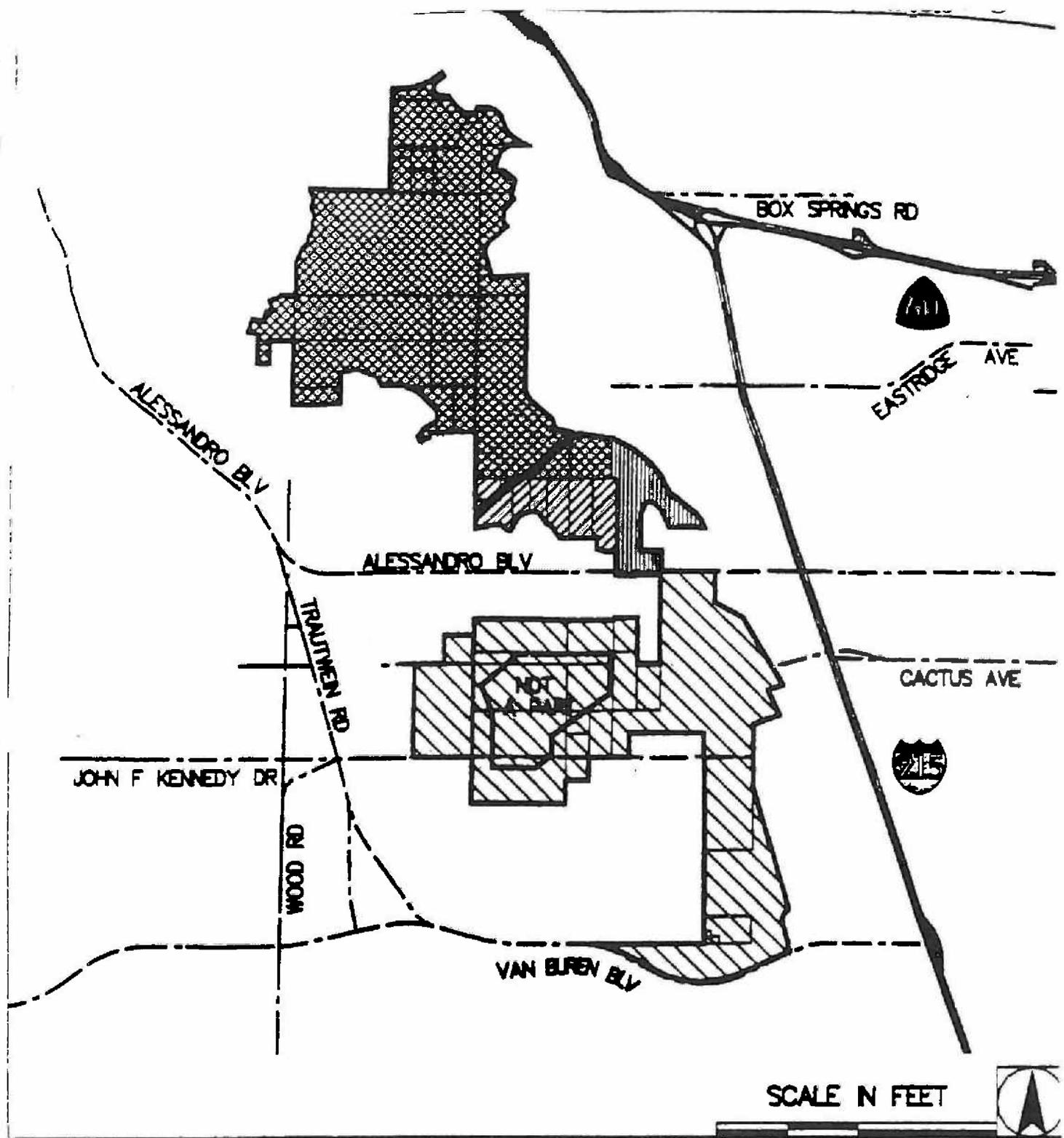


Figure E-7  
LAKE MATHEWS-ESTELLE  
MOUNTAIN CORE RESERVE:  
OWNERSHIP



-  RIVERSIDE CITY
-  MARCH AIR FORCE BASE
-  LAND UNDER NEGOTIATION FOR CONSERVATION EASEMENTS
-  MND
-  STATE
-  CORE RESERVE BOUNDARY

-  HIGHWAYS
-  ARTERIAL/MAJOR ROADS

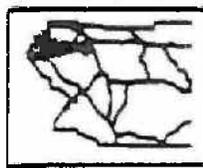


Figure E-13  
 SYCAMORE CANYON-MARCH AIR BASE CORE RESERVE:  
 OWNERSHIP



United States Department of the Interior  
Fish and Wildlife Service  
Ecological Services  
Carlsbad Fish and Wildlife Office  
2730 Loker Avenue West  
Carlsbad, California 92008



Mr. Brian Loew  
Executive Director  
Riverside County Habitat Conservation Agency  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92501

OCT 01 1998

Re: Completion of Core Reserves Pursuant to the Long-term Stephens' Kangaroo Rat Habitat Conservation Plan

Dear Mr. Loew:

This letter is in response to your letter of September 29, 1998, requesting written confirmation that the Core Reserves have been completed pursuant to the Long-term Stephens' Kangaroo Rat Habitat Conservation Plan (HCP). As stated in the subject HCP and its implementing agreement, we must confirm the completion of the reserves. In making this finding, we must consider whether the boundary change affects the amount of occupied habitat within the reserve system and whether the modification provides an overall benefit to the federally endangered Stephens' kangaroo rat.

It is our determination that conditions have been met to consider the Core Reserves complete. The boundary change will result in a net increase of the overall acreage included within the boundaries of the Core Reserves. In addition, this change will not decrease the amount of occupied kangaroo rat habitat within the reserve system. The new boundary for the Lake Mathews Core Reserve will allow for better linkage between the north and south portions of the reserve, and allow for the expansion of this reserve to the south. The decrease in the acreage at the Lake Skinner Core Reserve will not affect the value of the reserve, though the remaining hole in the configuration will hinder, to some degree, maintenance activities within the reserve. In sum, the modifications to the reserve system have fulfilled the requirements needed to consider the Core Reserves complete.

We concur that the assurances now exist for inclusion of the 292-acre El Sobrante Landfill parcel in the Lake Mathews Core Reserve boundary. These assurances are based on the project description in the Final Environmental Impact Report and the approval of this project by the Riverside County Board of Supervisors on September 1, 1998. However, this Board action does not guarantee future inclusion of the parcel if the project is changed or does not proceed. It is our understanding that if the project changes then the boundary of the Core Reserve may need to be modified at that time. Until such time, the parcel is contained within the boundary of the Lake

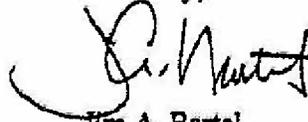
Mr. Brian Loew

2

Mathews Core Reserve and, therefore, is provided with all of the protections of the Long-term Stephens' Kangaroo Rat Habitat Conservation Plan.

It is our understanding based on your letter of September 21, 1998, that 1,454 acres of occupied habitat still need to be protected to complete the Core Reserve expansion requirement. Completion of the Core Reserve expansion will meet the ultimate goal of the Long-term Stephens' Kangaroo Rat Habitat Conservation Plan to conserve 15,000 acres of occupied habitat. We commend the RCHCA on your implementation of the HCP to date and we look forward to working with you on prioritizing the expansion areas in the future. If you have any questions or comments please contact Michelle Shaughnessy of my staff at (760) 431-9440.

Sincerely,



Jim A. Bartel  
Assistant Field Supervisor

1-6-99-HC-1

cc: Curt Taucher (CDFG)  
Michelle Ouellette (Best, Best, and Krieger)



State of California - The Resources Agency

## DEPARTMENT OF FISH AND GAME

<http://www.dfg.ca.gov>

Inland Deserts-Eastern Sierra Region  
330 Golden Shore, Suite 50  
Long Beach, California 90802  
(562) 590-5113  
(562) 590-5871-FAX

PETE WILSON, Governor



October 8, 1998

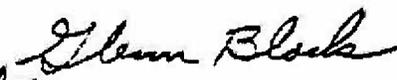
Mr. Brian Loew, Executive Director  
Riverside County Habitat Conservation Agency  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92501

Re: Completion of Core Reserves Pursuant to the Long-Term Stephens  
Kangaroo Rat Habitat Conservation Plan

Dear Mr. Loew:

This letter is in response to your letter of September 29, 1998, requesting confirmation that the Core Reserves have been completed pursuant to the Long-term Stephens' Kangaroo Rat Habitat Conservation Plan (HCP). It is our determination that conditions have been met to consider the Core Reserves complete. The boundary change will result in a net increase of the overall acreage included within the boundaries of the Core Reserves. In addition, this change will not decrease the amount of occupied kangaroo rat habitat within the Core Reserve system.

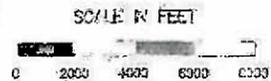
Sincerely,

  
Curt Taucher  
Regional Manager

cc: Ms. Michelle Ouellette  
Best, Best & Krieger

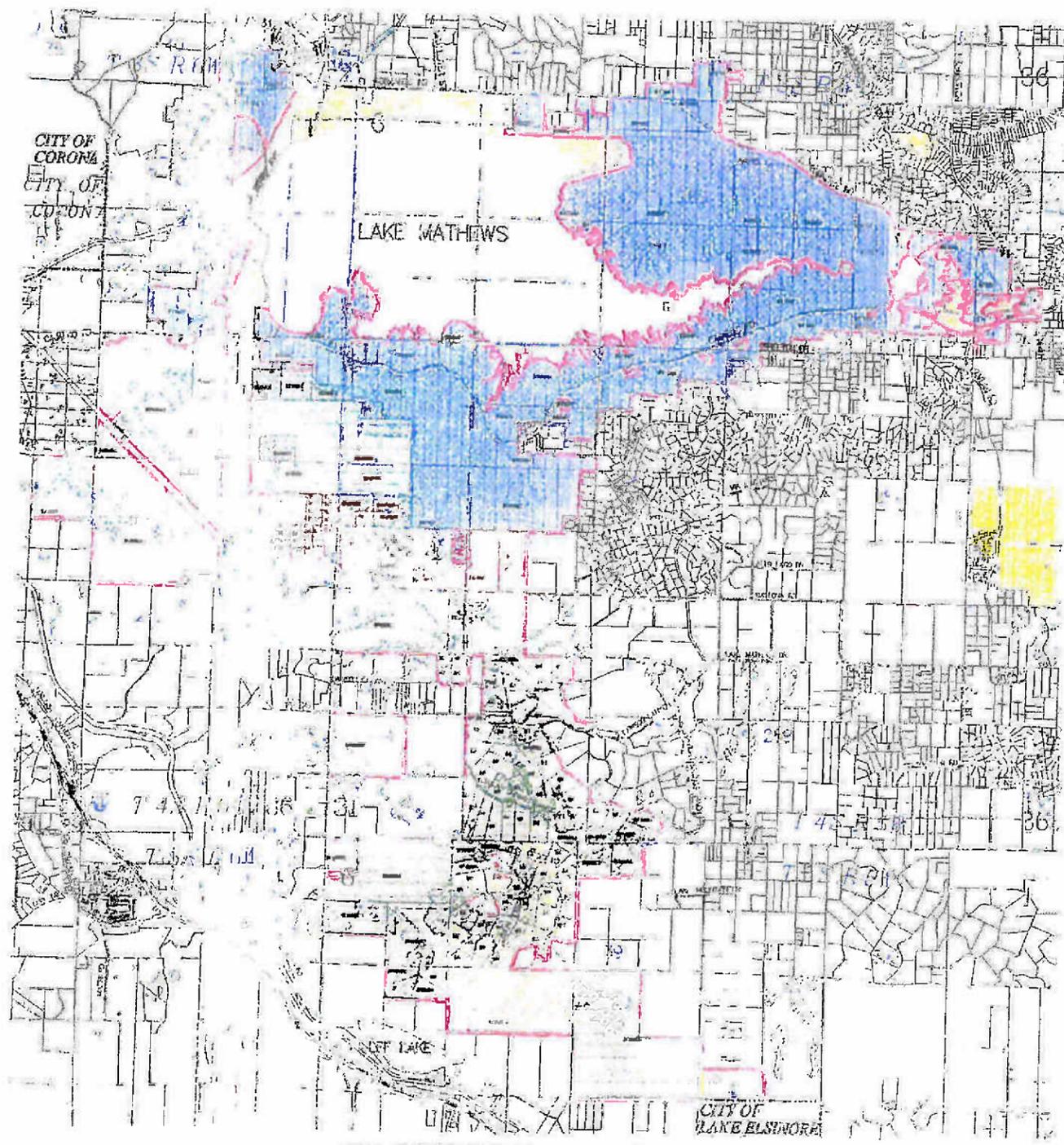
*Conserving California's Wildlife Since 1870.*

# LAKE MATHEWS / ESTELLE MOUNTAIN CORE RESERVE CONFIGURATION PROPOSED PROJECT



## LEGEND

- TOWNSHIP LINES
- SECTION LINES
- RANCHO LINES
- CITY BOUNDARY
- HIGHWAYS
- PARCEL LINES
- ASSESSOR'S LOCK BOUNDARY
- CORE RESERVE BOUNDARY AS PER RCRA
- PRIVATE HOLDERS NOT A PART OF THE RESERVE
- RCHCA LAND
- R-1 LAND
- R-2 LAND
- R-3 LAND
- R-4 LAND
- R-5 LAND
- R-6 LAND
- R-7 LAND
- R-8 LAND
- R-9 LAND
- R-10 LAND
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- R-90 LAND
- R-91 LAND
- R-92 LAND
- R-93 LAND
- R-94 LAND
- R-95 LAND
- R-96 LAND
- R-97 LAND
- R-98 LAND
- R-99 LAND
- R-100 LAND



LAND USE REVISIONS

NO.	DATE	DESCRIPTION
1	10/20/01	100 000000
2	10/20/01	100 000000
3	10/20/01	100 000000
4	10/20/01	100 000000
5	10/20/01	100 000000
6	10/20/01	100 000000
7	10/20/01	100 000000
8	10/20/01	100 000000
9	10/20/01	100 000000
10	10/20/01	100 000000
11	10/20/01	100 000000
12	10/20/01	100 000000
13	10/20/01	100 000000
14	10/20/01	100 000000
15	10/20/01	100 000000
16	10/20/01	100 000000
17	10/20/01	100 000000
18	10/20/01	100 000000
19	10/20/01	100 000000
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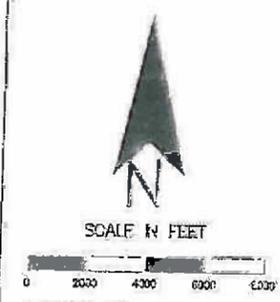
This map was prepared by the Riverside County and Land Management Agency, Information Resources Division, 1140 W. 11th Street, Riverside, CA 92504. The Riverside County's Geographic Information System.



Prepared by COUNTY OF RIVERSIDE GEOGRAPHIC INFORMATION SYSTEM, 2009  
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 City of Murietta • City of Norwalk • City of Orange •  
 City of Riverside • City of Tustin • County of Riverside

The following GISS or GIS numbers of 10/20/01  
 Riverside County's Geographic Information System

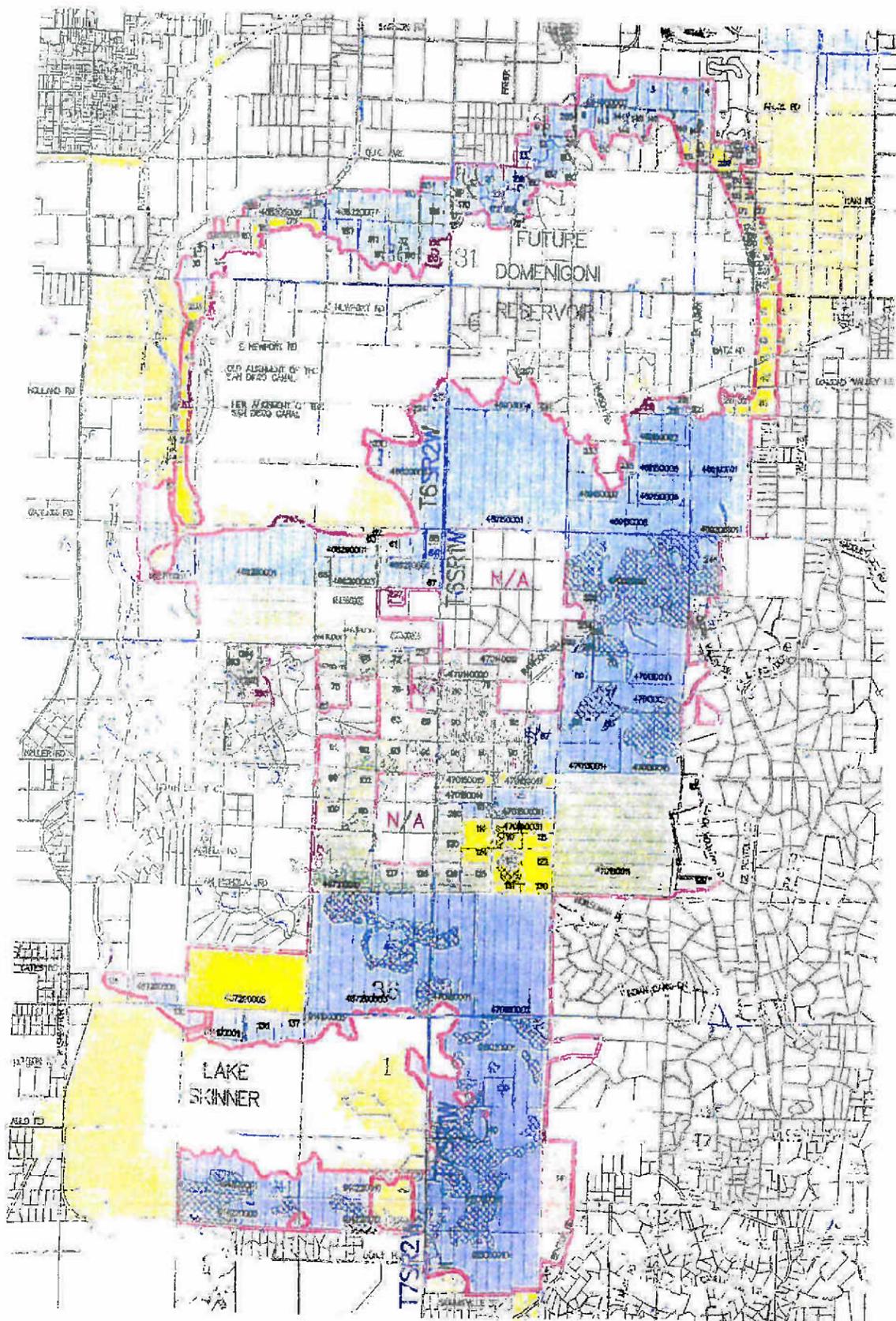
# LAKE SKINNER / DOMENIGONI VALLEY CORE RESERVE CONFIGURATION PROPOSED PROJECT



- LEGEND**
- TOWNSHIP LINES
  - SECTION LINES
  - RANCHO LINES
  - CITY BOUNDARY
  - HIGHWAYS
  - PARCEL LINES
  - ASSESSOR BOOK BOUNDARY
  - CORE RESERVE BOUNDARY AS PER RCSCA
  - PRIVATE HOLDINGS NOT A PART OF THE RESERVE
  - HABITAT MITIGATION BANK LANDS (OWNED BY MWD.)
  - RCSCA LAKE
  - BLM LAND
  - MWD LAND
  - MWD OPERATIONS AND PROJECTS EXCLUDED FROM CORE RESERVE
  - MWD POST-CONSTRUCTION RESERVE AREAS
  - LAKES EXCLUDED FROM CORE RESERVE
  - COUNTY OF RIVERSIDE LAND
  - PRIVATE LAND UNDER CONSERVATION EASEMENTS (FINSTERRA FARMS)  
Only 205 acres of this private property is contained within the reserve pursuant to a conservation easement.
  - RCSCA STEPHENS' KANGAROO RAT CONSERVATION EASEMENTS
  - OCCUPIED STEPHENS' KANGAROO RAT HABITAT "RECON DATA"  
The information contained herein is based upon data collected/estimated by RECON between August 1989 and March 1994. This date may not reflect the current location of occupied Stephens' Kangaroo Rat habitat.

RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY (RCSCA)  
City of Orange • City of Hemet • City of Lake Elsinore •  
City of Menlo Park • City of Mariposa • City of Merced •  
City of Nevada • City of Orland • City of Paradise •  
City of Red Bluff • City of Redwood • City of Redwood City •  
City of Riverside • City of San Jose

The following cities are NOT members of RCSCA:  
Escondido • Gilroy • Manteca • Merced •  
Modesto • Napa • San Francisco •  
Stockton • Vallejo • Yuba City



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Map Date: 10/15/2008

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This map was prepared by the Transportation and Land Management Agency, Information Resources Division. Under the direction of [Name]



◆ HATCHED PARCELS PARTIALLY WITHIN CORE RESERVE



US Fish and Wildlife Service  
Carlsbad Fish and Wildlife Office  
6010 Hidden Valley Road  
Carlsbad, California 92009  
(760) 431-9440  
FAX (760) 431-9618



CA Dept. of Fish & Game  
1416 Ninth Street  
PO Box 944209  
Sacramento, California 95814  
(916) 653-1070  
FAX (916) 653-3673

In Reply Refer To:  
FWS-WRIV-883.2

DEC 29 2003

Ms. Carolyn Syms Luna  
Executive Director  
Riverside County Habitat Conservation Agency  
4080 Lemon Street, 7<sup>th</sup> Floor  
Riverside, California 92501

Mr. Philip A. Rizzo  
Executive Director  
March Joint Powers Authority  
P.O. Box 7480  
Moreno Valley, California 92552

Re: Completion of the Land Acquisition Portion of the Reserve Expansion Requirement of the Long-Term Habitat Conservation Plan for the Stephens' Kangaroo Rat and Exchange of the SKR Management Area of the Former March Air Force Base

Dear Ms. Luna and Mr. Rizzo:

This joint letter is in response to two letters: the first dated November 21, 2002, from the Riverside County Habitat Conservation Agency (RCHCA) to Jim Bartel of the U.S. Fish and Wildlife Service (Service) and Curt Taucher of the California Department of Fish and Game (Department); and the second dated March 5, 2003, from the March Joint Powers Authority (March JPA) to Karen Goebel of the Service and Mr. Taucher. The RCHCA requested in their letter written confirmation from the Service and Department (collectively the "Wildlife Agencies") that, with the acquisition and conservation of the Potrero site, the Stephens' kangaroo rat (SKR) Core Reserves expansion will be complete as required by the Long-term SKR Habitat Conservation Plan (HCP). The March JPA requested in their letter confirmation from the Wildlife Agencies that, with the acquisition and conservation of the Potrero site, the SKR Management Area of the former March Air Force Base can be released for development.

We will first address the March JPA request, which would exchange the current March Air Force Base SKR Management Area for the soon to be acquired Potrero site (Potrero site or Badlands/Potrero SKR population). According to IILB.2 of the Implementation Agreement, "....notwithstanding the foregoing, the [RCHCA] may, with the written consent of the Service

TAKE PRIDE  
IN AMERICA 

and the Department, and without amendment of this Agreement, the Permit or the 2081 Management Authorization, modify through sale, exchange or otherwise, the configuration, size and/or location of the Core Reserves, if in the opinion of the Service and the Department, the revised configurations better address the overall conservation needs of the SKR." As stated in page 9 of the intra-Service biological opinion for the Long-term SKR HCP, the Service characterized the value of the Potrero site as:

"The Badlands/Potrero SKR populations are scattered throughout the eastern edge of the San Jacinto Valley, with the largest contiguous population located in the Potrero Valley (approximately 2,000 acres of occupied habitat). The remaining badlands area has at least an additional 500 acres of occupied habitat. The Potrero Valley represents the northeasterly range of the current distribution of the species. This 2,000 acres of occupied habitat is one of the largest remaining contiguous blocks of occupied habitat occurring at a relatively higher elevation than other populations within western Riverside County. Currently, this population is the least affected by surrounding development, as it is adjacent to large tracts of Federal land managed for natural resources. The Potrero Valley SKR population is unique in that it represents the only population remaining which is naturally protected due to the terrain surrounding the valley, providing a true island of protection from surrounding development, the size of this population should allow for the dynamic natural process of population expansion and contraction with minimal risk of local extirpation. Additionally, this area is connected with the core population in the San Jacinto Core Reserve and may represent a stock population to recolonize the valley should a catastrophe occur. The SKR population at Potrero is extremely important in maintaining genetic diversity and minimizing risk of extinction due to stochastic events (USFWS 1993)."

This assessment remains valid based on updated SKR surveys and habitat assessments that have been completed, including the 1999-2000 survey completed on the property by SJM Biological Consultants and documented in a report dated October 29, 2000. This report indicates 2,488 acres of occupied habitat are present on the Potrero site. The Potrero site also includes 570 acres of potential SKR habitat.

Additionally, the Service's biological and conference opinion dated November 9, 1999, that addressed the disposal and reuse of the March Air Force Base identified the following basis for trade criteria to release the March Air Force Base SKR Management Area for development:

"1. Trade criteria for development of the Management Area should be based upon the amount and biological value of SKR-occupied habitat found on the traded area to the SKR HCP Core Reserve system. Biological value will be defined based upon the amount of SKR occupied habitat on subject property at the time the trade commences."

2. Replacement of biological value could be achieved through any combination of the following measures in accordance with the SKR HCP by the following: . . .[c]reating a new viable reserve, to achieve the same biological objectives for SKR . . .[a]dding property that is deemed to meet biological objectives for SKR or is deemed to assist with the connectivity of the SKR HCP Core Reserve system . . .
3. Trade of SKR Management Area that affects the function and value of the Sycamore Canyon Core Reserve should be completed in a reasonable number of transactions and an attempt will be made to limit the transactions to a maximum of 3.
4. The deed restrictions will state that any trade shall be approved by the Service before releasing the land for development . . .
5. Trade of habitat shall be consistent with the section 10a permit between the Riverside County Habitat Conservation Agency (RCHCA) and Service for the HCP . . .”

The Wildlife Agencies concur that the trade of the March Air Force Base SKR Management Area for the new location of a Core Reserve at the Potrero site will better address the “overall conservation needs of the SKR” and complies with the objectives set forth for the trade criteria referenced above.

With respect to whether the Potrero acquisition will complete the habitat acquisition portion of the Core Reserve expansion requirement of the Long-term SKR HCP, Section III.B.4. of the Implementation Agreement provides that the RCHCA in conjunction with the Bureau of Land Management shall “conserve such additional lands as may be necessary to increase the occupied SKR habitat conserved pursuant to the HCP by 2,540 acres, as more particularly set forth in Sections 5.C.1.j and 5.E.2 of the [SKR] HCP.” In further expounding upon the expansion requirement, Section 5.E.2 of the Long-term SKR HCP provides,

“Additionally, the following general principles of conservation biology will be used in evaluating potential habitat acquisitions:

1. Large blocks of habitat, containing large populations of the target species, are superior to small blocks of habitat containing small populations;
2. Blocks of habitat that are close together are superior to blocks far apart;
3. Habitat that occurs in less fragmented, contiguous blocks is preferable to habitat that is fragmented;
4. Habitat patches that minimize edge-to-area ratios are superior to those that do not;

5. Interconnected blocks of habitat are preferable to isolated blocks, and corridors or linkages function better when the habitat within them is represented by protected, preferred habitat for the target species, and;
6. Blocks of habitat not penetrated by roads, and those having access control mechanisms, are better than blocks of habitat having extensive road networks or unlimited access."

Of the 2,540 acres required to expand the Core Reserves, the Service and Department agreed in 1998 "that 1,454 acres of occupied habitat still needs to be protected to complete the Core Reserve expansion requirement" (Service letter dated October 1, 1998). Accordingly, we are of the opinion that the Potrero site, if acquired, provides for the necessary increase of occupied habitat and meets the aforementioned criteria delineated in the Long-term SKR HCP for the expansion of the Core Reserves. Based upon the updated SKR surveys and habitat assessments referenced above (2,488 acres of occupied habitat), the trade of the March Air Force Base SKR Management Area for the establishment of a Core Reserve on the Potrero site (1,300 acres of occupied SKR habitat) will result in a net increase of 1,188 acres that may be credited towards the remaining 1,454 acres needed to meet the expansion requirement.

Other actions have assisted in completing the expansion requirement. For example, the North Peak Development and associated HCP resulted in the onsite conservation of 240 acres of SKR occupied habitat, 14.2 acres of occupied habitat on the 20.1-acre parcel at Estelle Mountain, and 36.5 acres of occupied habitat on the 80.0-acre parcel at Steele Peak. The North Peak HCP specifically highlights the fact that the SKR habitat included in this HCP is not isolated and such habitat builds upon two existing SKR Core Reserves (Lake Mathews/Estelle Mountain and Steele Peak). In addition, other HCPs and section 7 consultations have resulted in conservation of SKR habitat, but most of those conservation parcels are isolated and do not contribute to the reserve design contemplated in the SKR HCP.

As a result of the exchange of the March Air Force Base SKR Management Area to the Potrero site, the Department will be assuming responsibility to manage the exchange lands. The March Joint Powers Authority shall, within 180 days of the close of escrow unless otherwise agreed to by the Department, cause the management endowment of \$1.5 million (plus any accrued but unspent interest) to be transferred to the Department. The Department shall place the funds into a special deposit account. The interest on the account shall be available to the Department for management of the Potrero site and for increasing the principal in the account. The principal amount of the account shall not be expended by the Department.

In summary, the exchange of the SKR Core Reserves (Potrero site for the March Air Force Base SKR Management Area) combined with the aforementioned lands conserved through the Northpeak HCP and with other lands will complete the land acquisition portion of the expansion requirement of the Long-term SKR HCP. As before, we commend the RCHCA on the implementation of the Long-term SKR HCP. If you have any questions, please contact Ms. Karen Goebel (Service) at (760) 431-9440 or Ms. Dee Suddeth (Department) at (619) 468-9231.

Sincerely,



Jim A. Bartel  
Field Supervisor



Ron Rempel  
Deputy Director

cc:

Karin Watts-Bazan, Counsel, County of Riverside  
Richard Lashbrook, Planning Dept, County of Riverside  
Michelle Ouellette, Best Best and Krieger, LLP



U.S. Fish and Wildlife Service  
Carlsbad Fish and Wildlife Office  
6010 Hidden Valley Road  
Carlsbad, California 92011  
(760) 431-9440  
FAX (760) 431-5902 + 9618



California Department of Fish & Game  
Los Alamitos Administrative Office  
4665 Lampson Avenue, Suite J  
Los Alamitos, California 90720  
(562) 596-4212  
FAX (562) 799-3629

In Reply Refer To:  
FWS/CDFG (WRIV-3259.5)

MAY 22 2006

Mr. John E. Brown  
General Counsel for March Joint Powers Authority  
of Best Best & Krieger LLP  
3750 University Avenue  
P.O. Box 1028  
Riverside, California 92502-1028

RECEIVED  
Endangered Species Program Dept.

AUG 04 2006

Subject: March Joint Powers Authority/SKR Management Area

Dear Mr. Brown:

This letter responds to your letter of March 31, 2006, in which you requested concurrence from the U.S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) that incidental take for the Stephens' kangaroo rat (SKR) was authorized within the Management Area under the State and Federal Endangered Species Acts.

The Long-term Habitat Conservation Plan (Long-term HCP) for the SKR dated March 1996 endorsed a land trade strategy involved with the realignment of the March Air Force Base (MAFB) whereby the SKR Management Area and Open Space Areas would be released for private development with the securing of "a far greater amount of SKR habitat in the vicinity of reserves such as Lake Mathews, Lake Skinner, or the Potrero ACEC (Long-term HCP, page 133)." According to the Long-term HCP (page 134), any such tradeout for development would be subject to section 7 consultation with the Air Force. Furthermore, if "the SKR Management Area is made available for development or otherwise cease [sic] to be dedicated to [SKR], the RCHCA [Riverside County Habitat Conservation Agency] will amend this HCP to incorporate mitigation provisions defined in the USFWS Biological Opinion [with the Air Force] (page 134)."

Not only did we reiterate in the biological opinion with the Air Force dated November 9, 1999, the potential tradeout of the Sycamore Canyon-MAFB Core Reserve (page 21), we identified trade criteria to release reserve lands for development (page 5 and 6). In addition, we noted that the Service would work with the March Joint Powers Agency (MJPA) "to formalize the trade criteria through an amendment to the SKR HCP, through an individual [section] 10(a) permit, or covered in the Western Riverside Multiple Species Habitat Conservation Plan [MSHCP] now being prepared by Riverside County" (page 22). As described in section III.B.2 of the Implementing Agreement (IA) for Long-term HCP, the RCHCA "may, with written consent of the Service and the Department [of Fish and Game], and without amendment of the



Mr. John E. Brown (WRIV-3259.5)

2

the Service and the Department [of Fish and Game], and without amendment of the [implementing] Agreement, the [section (10)(1)(B)] Permit or the 2081 Management Authorization, modify through sale, exchange or otherwise, the configuration, size and/or location of the Core Reserves, if in the opinion the Service and the Department, the revised configurations better address the overall conservation needs of SKR."

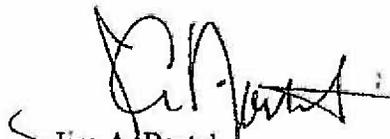
In response to separate requests from the RCHCA dated November 21, 2002, and the MIPA dated March 5, 2003, the Service and Department, the Wildlife Agencies, concurred in a letter dated December 29, 2003, that the trade of the former MAFB, now March Air Reserve Base (MARB), SKR Management Area for recently purchased lands in the Potrero Valley better addressed the "overall conservation needs of the SKR." This trade or exchange also complied with the trade criteria for core reserves detailed in our biological opinion with the Air Force. As a result, the Wildlife Agencies authorized, pursuant to section III.B.2 of the IA for Long-term HCP, the exchange of the MARB SKR Management Area for the Potrero Valley site, with the Department assuming management responsibility for this new core reserve. The core reserve trade of the former SKR Management Area for the recently purchased lands in the Potrero Valley was described in detail and accounted for in the Environmental Baseline section of our biological opinion for the Western Riverside County MSHCP (pages 303-305).

Pursuant to sections III.B.2 and VI.A.2 of the IA and chapter 5.F.5.a of the Long-term HCP, the Wildlife Agencies are to process core reserve modifications as "administrative amendments" (also called "minor adjustments") to the Long-term HCP, which "take effect upon receipt of written approval" from the Wildlife Agencies. Thus with the Wildlife Agencies' approval of the core reserve exchange on December 29, 2003, the former MARB SKR Management Area was no longer a core reserve under the Long-term HCP and was subject to authorized "incidental take of SKR in unlimited amounts outside of core reserves" within the boundary of the Long-term HCP (page 159).

To further formalize this administrative amendment to the Long-term HCP pursuant to section VI.A.2 of the IA, this joint letter reaffirms written approval by the Wildlife Agencies of the core reserve exchange and authorization of incidental take of SKR within the former MARB SKR Management Area.

If you have any questions regarding this letter, please contact Jim Bartel at 760/431-9440, extension 211.

Sincerely,



Jim A. Bartel  
Field Supervisor  
Carlsbad Fish and Wildlife Office



Curt Taucher  
Regional Manager  
California Department of Fish and Game



# Riverside County Habitat Conservation Agency

City of Corona • City of Hemet • City of Lake Elsinore • City of Escondido • City of Menlo Park • City of Murietta • City of Perris • City of Artes • City of Riverside • City of Temequila • County of Riverside • City of CA

## LAKE MATHEWS-ESTELLE MOUNTAIN RESERVE

MAJOR ROADS  
 CITY  
 CORE RESERVE BOUNDARY  
 PARCEL LINES  
 WATERBODIES EXCLUDED FROM CORE RESERVE  
**OWNERSHIP**  
 RCHCA  
 BLM  
 COUNTY OF RIVERSIDE  
 MWD  
 STATE OF CALIFORNIA

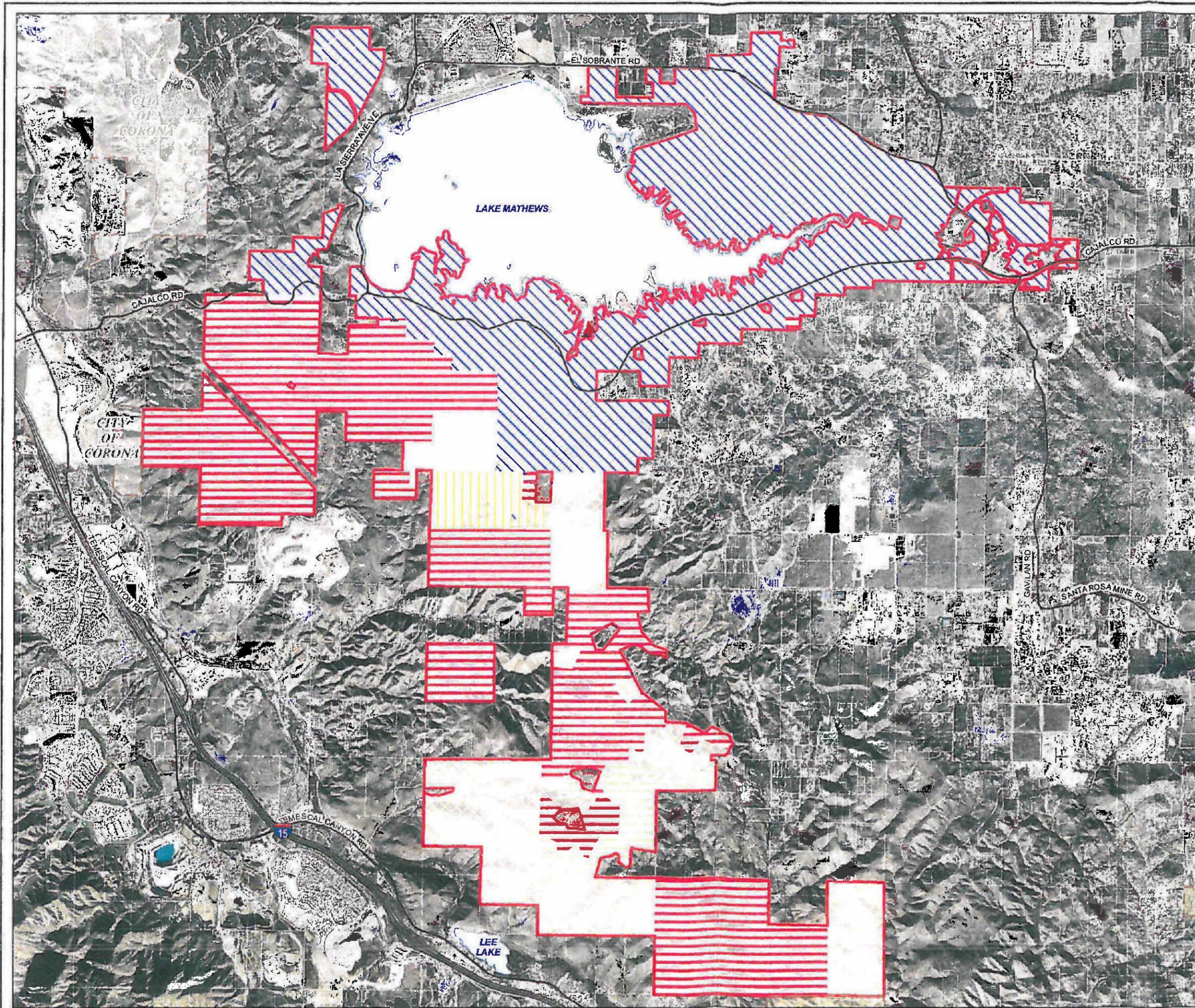


Date: October 2, 2007

Map Source: County of Riverside, TLMA/GIS. Map Created By: Rebecca Korinek, Christina Lindsay  
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Coordinate System: NAD83 State Plane VI FIPS406 (Feet)

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# Riverside County Habitat Conservation Agency



City of Corona • City of Hemet • City of Lake Elsinore • City of Lodi • City of Moreno Valley • City of Murrieta • City of Perris • City of Riverside • City of Temecula • County of Riverside • City of Co...

## SYCAMORE CANYON CORE RESERVE

**MAJOR ROADS**  
 MAJOR ROADS

**CITY**  
 CITY

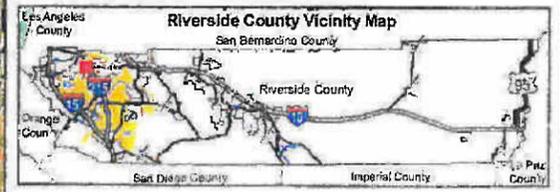
**CORE RESERVE BOUNDARY**  
 CORE RESERVE BOUNDARY

**PARCEL LINES**  
 PARCEL LINES

**OWNERSHIP**

STATE OF CALIFORNIA  
 STATE OF CALIFORNIA

CITY OF RIVERSIDE  
 CITY OF RIVERSIDE



Date: October 2, 2007

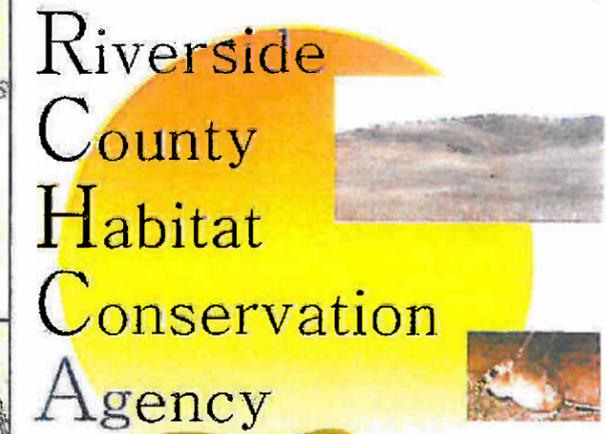
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Coordinate System: NAD83 State Plane VI FIPS0406 (Feet)

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# Riverside County Habitat Conservation Agency

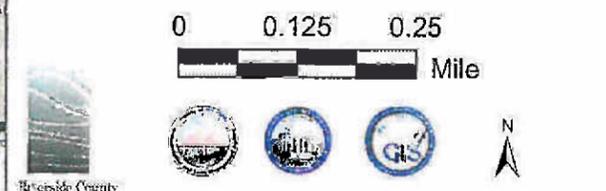


City of Corona • City of Hemet • City of Lake Elsinore • City of Moreno Valley • City of Murrieta • City of Perris • City of Riverside • City of Temecula • County of Riverside • City of CA

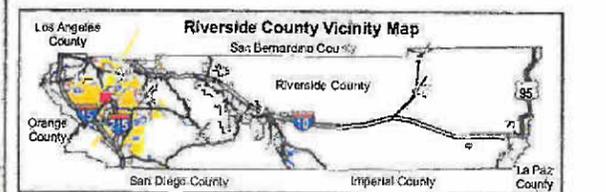
## MOTTE / RIMROCK CORE RESERVE

MAJOR ROADS  
 CITY  
 CORE RESERVE BOUNDARY  
 PARCEL LINES  
**OWNERSHIP**  
 BLM  
 REGENTS OF UNIVERSITY OF CALIFORNIA

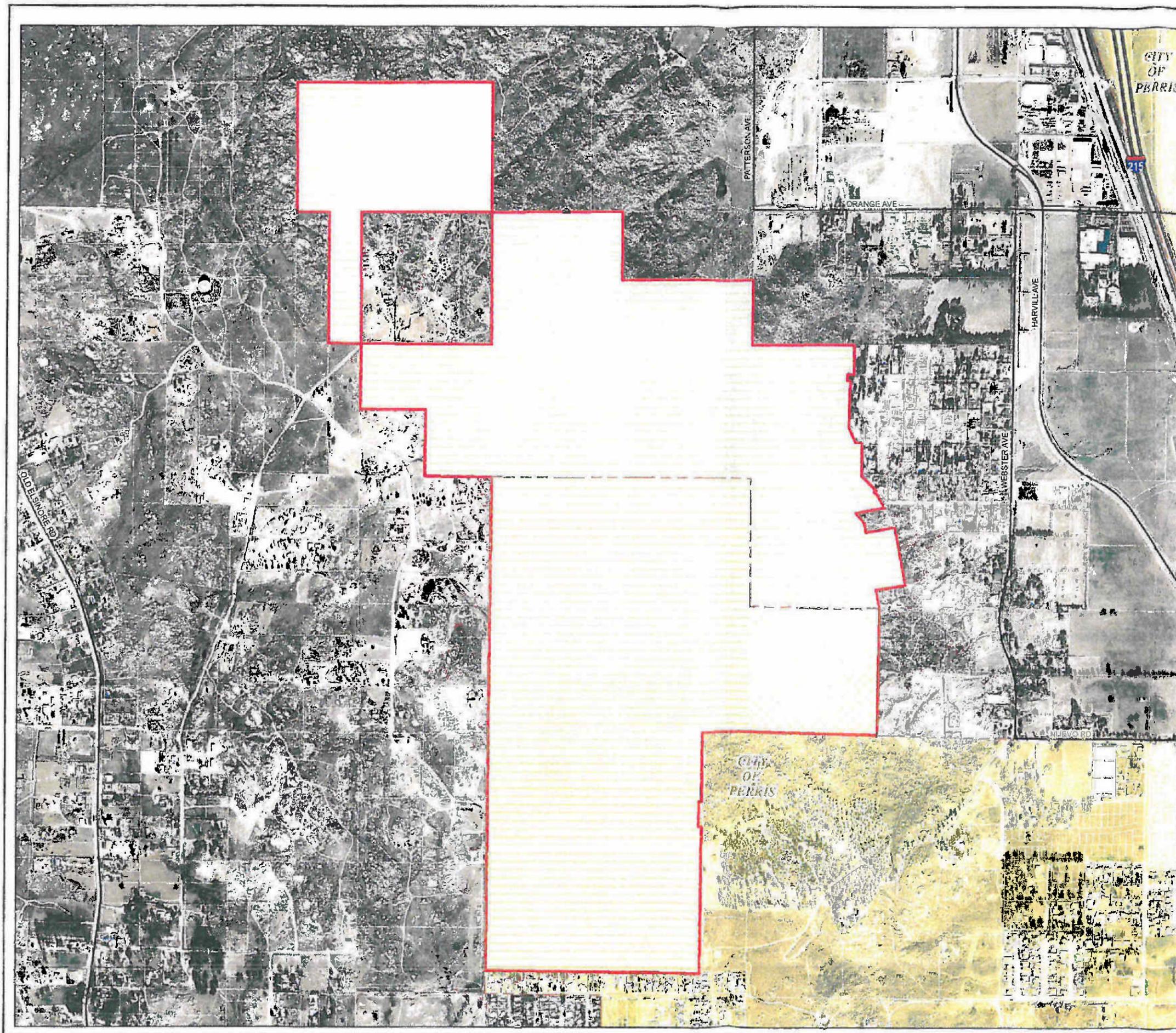
0 0.125 0.25  
 Mile



Riverside County Vicinity Map



Date: October 2, 2007  
 Map Source: County of Riverside, TLMA/GIS; Map Created By: Rebecca Korinek, Christina Lindsay  
 U:\Projects\Christina\ROHCA\Motte\_Rimrock\MotteRimrock\_11x17.mxd  
 Coordinate System: NAD83 State Plane VI FIPS6406 (Feet)  
 Disclaimer: Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

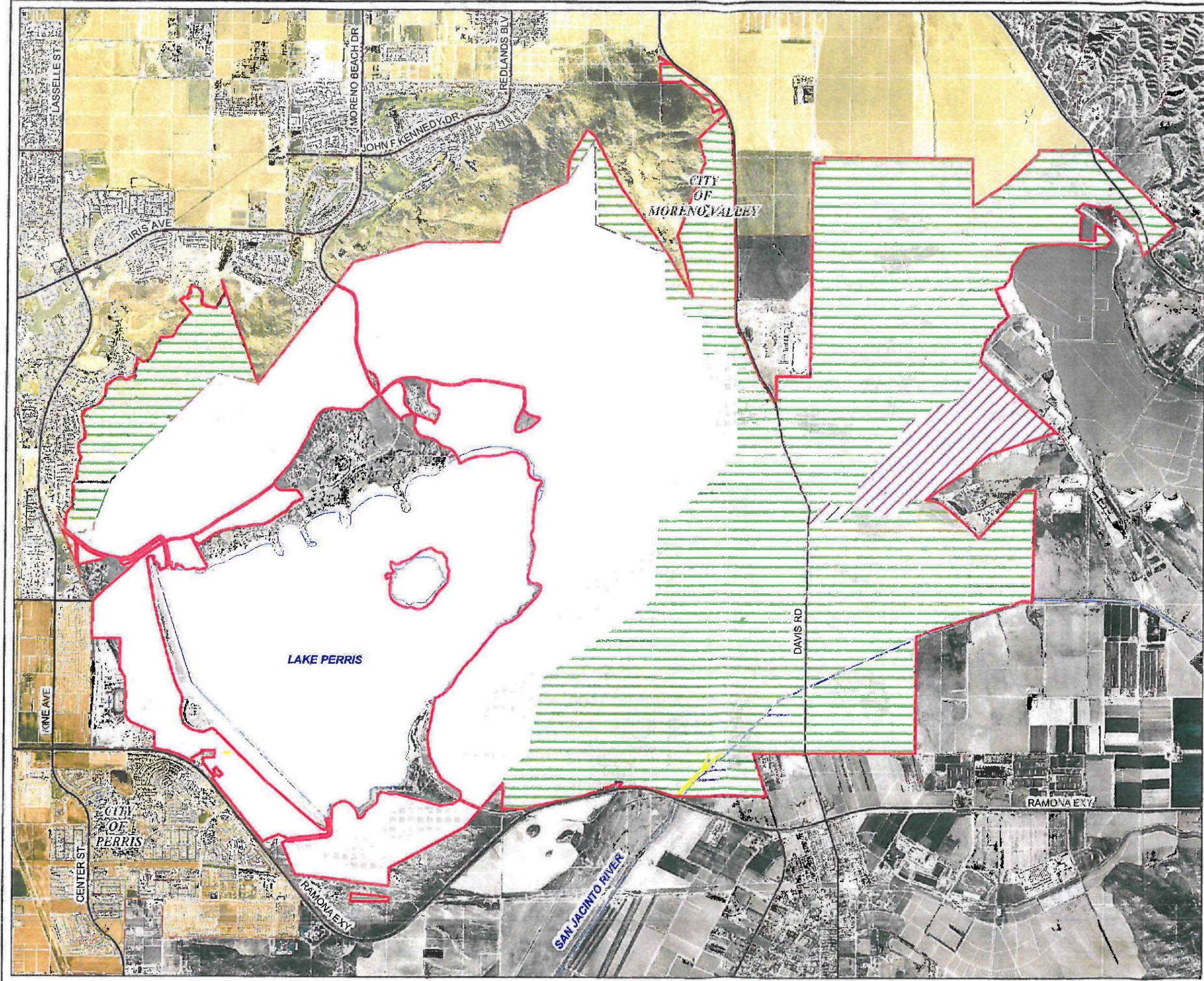


# Riverside County Habitat Conservation Agency



City of Corona • City of Hemet • City of Lake Elsinore • City of San Jacinto • City of Moreno Valley • City of Murietta • City of Perris • City of Perris • City of Riverside • City of Temecula • County of Riverside • City of Co...

## SAN JACINTO/ LAKE PERRIS CORE RESERVE



MAJOR ROADS

CITY

CORE RESERVE BOUNDARY

PARCEL LINES

WATERBODIES EXCLUDED FROM CORE RESERVE

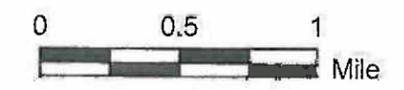
**OWNERSHIP**

COUNTY OF RIVERSIDE LAND

STATE OF CALIFORNIA

CDFG CONSERVATION EASEMENT

STATE PARK



Riverside County

Los Angeles County

San Bernardino County

Orange County

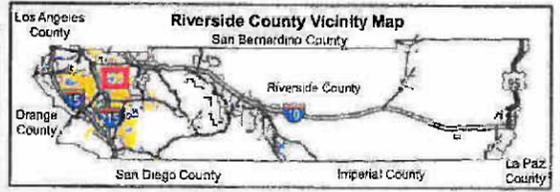
San Diego County

Imperial County

La Paz County

GIS

N



Date: October 2, 2007

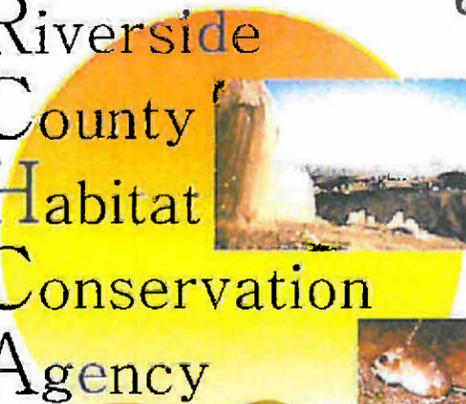
Map Source: County of Riverside, TLMA/GIS. Map Created By: Rebecca Korinek, Christina Lindsay

U:\Projects\Christina\RC\HCA\San\_Jacinto\_Lake\_Perris\SJ\_LP\_11x17.mxd

Coordinate System: NAD83 State Plane VI FIPS406 (Feet)

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# Riverside County Habitat Conservation Agency



City of Corona • City of Hemet • City of Lake Elsinore • City of Lodi • City of Moreno Valley • City of Murrieta • City of Perris • City of Riverside • City of Temecula • County of Riverside • City of Co...

## POTRERO ACEC CORE RESERVE

-  MAJOR ROADS
-  CITY
-  CORE RESERVE BOUNDARY
-  PARCEL LINES
-  BLM

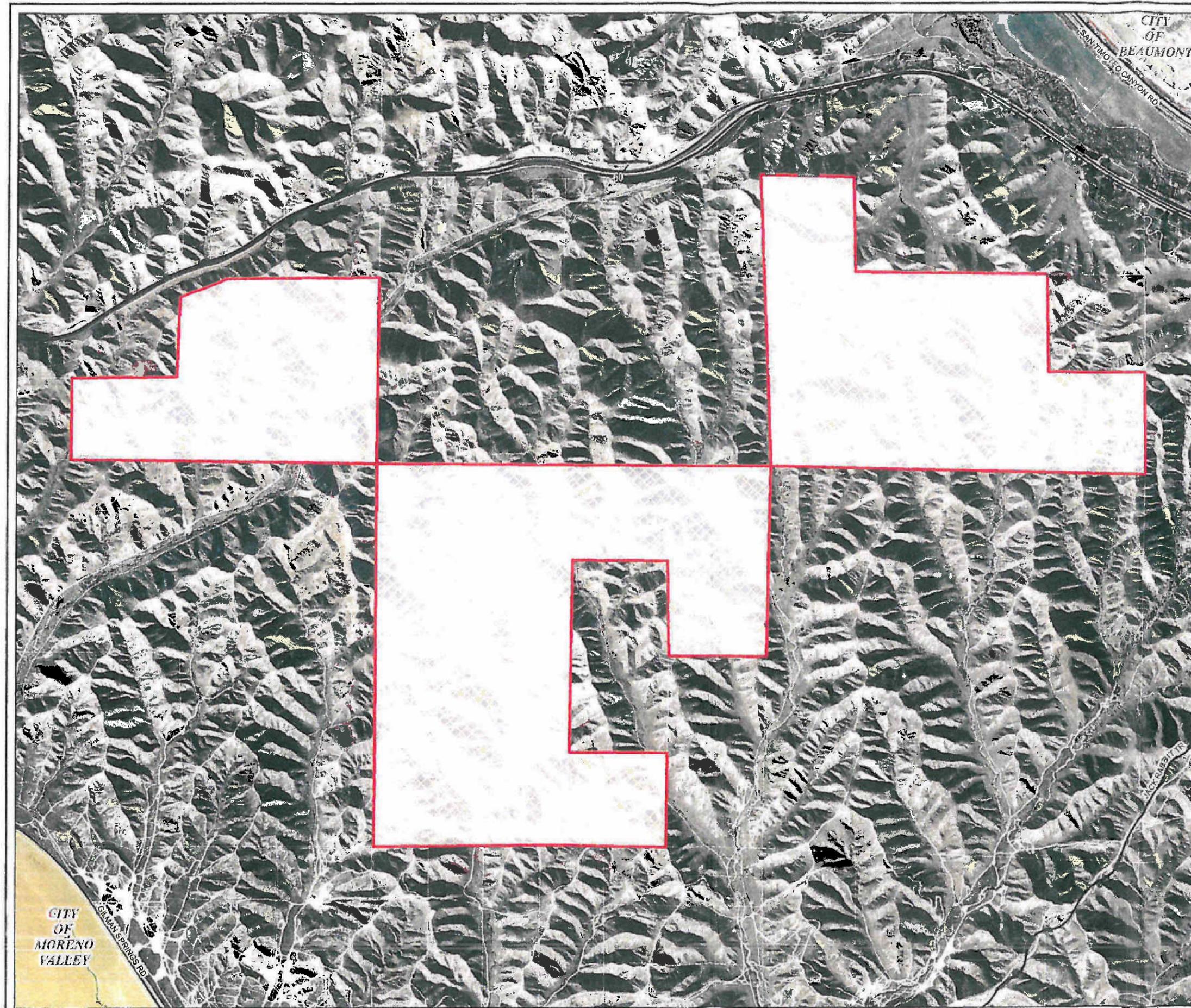


Date: October 2, 2007

Map Source: County of Riverside, TLMA/GIS. Map Created By: Rebecca Korinek, Christina Lindsay  
 U:\Projects\Christina\RDHCA\Potrero\_ACEC\_Potrero\Potrero\_ACEC\_11x17.mxd

Coordinate System: NAD83 State Plane VI FIPS0466 (Feet)

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# Riverside County Habitat Conservation Agency



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## SOUTHWESTERN RIVERSIDE COUNTY MULTI-SPECIES CORE RESERVE

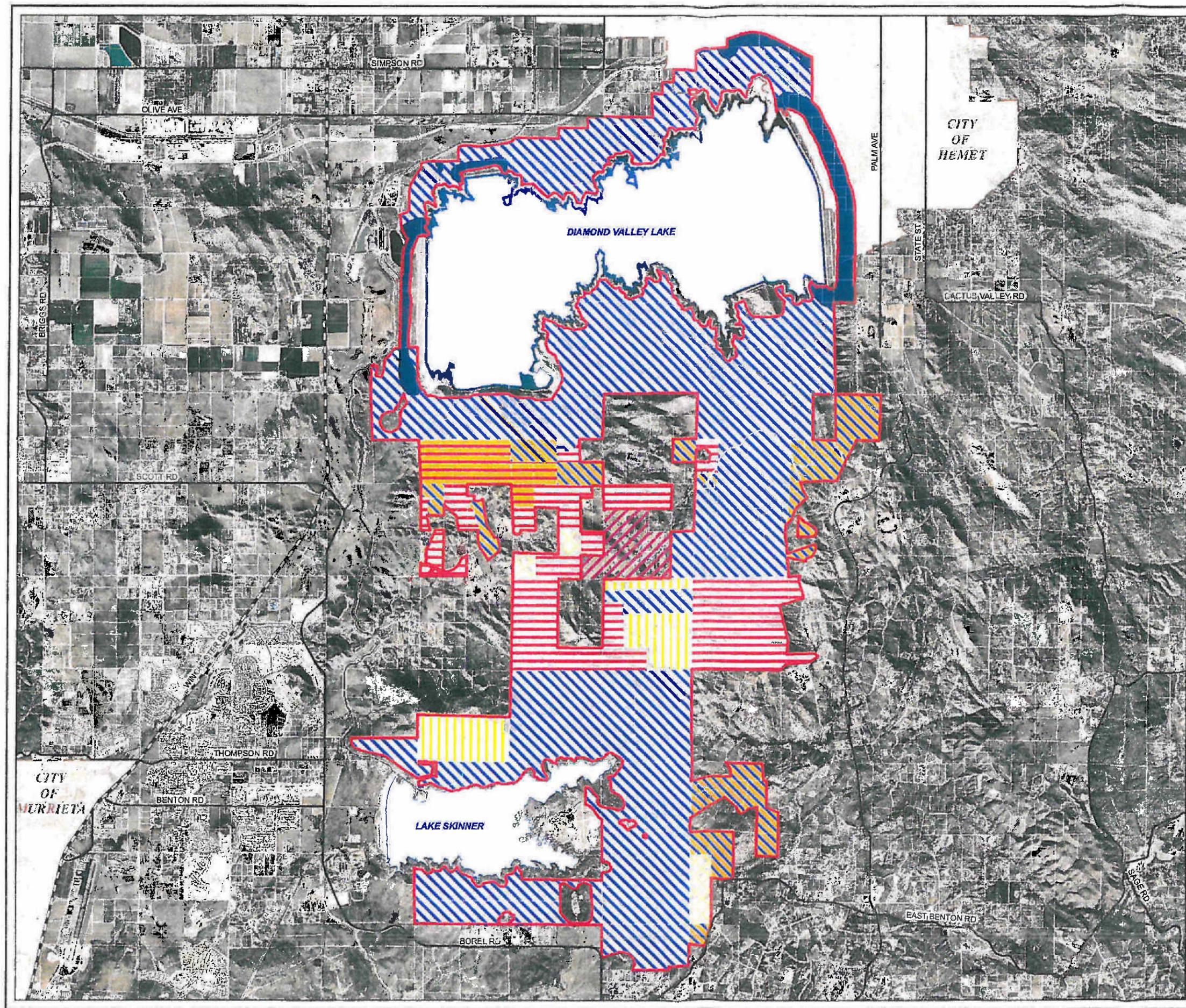
**MAJOR ROADS**  
**CITY**  
**CORE RESERVE BOUNDARY**  
**PARCEL LINES**  
**WATERBODIES EXCLUDED FROM CORE RESERVE**

**OWNERSHIP**  
 RCHCA LAND  
 BLM  
 RIVERSIDE COUNTY REGIONAL PARK & OPEN SPACE DISTRICT  
 MWD  
 MWD POST-CONSTRUCTION RESERVE AREAS  
 FINISTERRA FARMS CONTAINS 205 ACRE CONSERVATION EASEMENT  
 MITIGATION BANK PARCELS



Date: October 2, 2007  
Map Source: County of Riverside, T1.MA/GIS. Map Created By: Rebecca Kori-ek, Christina Lindsey  
U:\Projects\Christina\CHCA\SouthWest\_RC\_MS\Lake\_Skinner\_Domenigoni\_Vly\Skin\_DomVly\_11x17\_031507.mxd  
Coordinate System: NAD83 State Plane VI FIPSC406 (Feet)

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# Riverside County Habitat Conservation Agency



City of Corona • City of Hemet • City of Lake Elsinore • City of Moreno Valley • City of Murrieta • City of Perris • City of Riverside • City of Temecula • County of Riverside • City of Co...

## POTRERO CORE RESERVE

MAJOR ROADS  
 CITY  
 CORE RESERVE BOUNDARY  
 PARCEL LINES  
 WATERBODIES EXCLUDED FROM CORE RESERVE  
 STATE OF CALIFORNIA



Date: October 2, 2007

Map Source: County of Riverside, TLMA/GIS. Map Created By: Rebecca Korinek, Christina Lindsay  
U:\Projects\Christina\CHCA\Potero\_ACEC\_Potero\Potero\_11x17.mxd

Coordinate System: NAD83 State Plane VI FIPS0106 (Feet)

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# RCHCA

RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY



## SKR RESERVES

1. LAKE MATHEWS / ESTELLE MOUNTAIN
2. SYCAMORE CANYON
3. STEELE PEAK
4. MOTTE / RIMROCK
5. SAN JACINTO/LAKE PERRIS
6. POTRERO ACEC
7. SOUTHWEST RIVERSIDE COUNTY MULTI-SPECIES RESERVE
8. POTRERO RESERVE

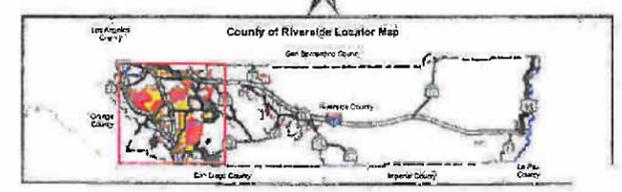
	SKR PLAN AREA
	CORE RESERVE BOUNDARY
	CITIES
	RIVERSIDE COUNTY
	WATERBODIES EXCLUDED FROM CORE RESERVE
	CALIFORNIA STATE HIGHWAY
	INTERSTATE HIGHWAY
	MAJOR ROADS

Riverside County

California

0 1 2 4 6 8 Miles

N

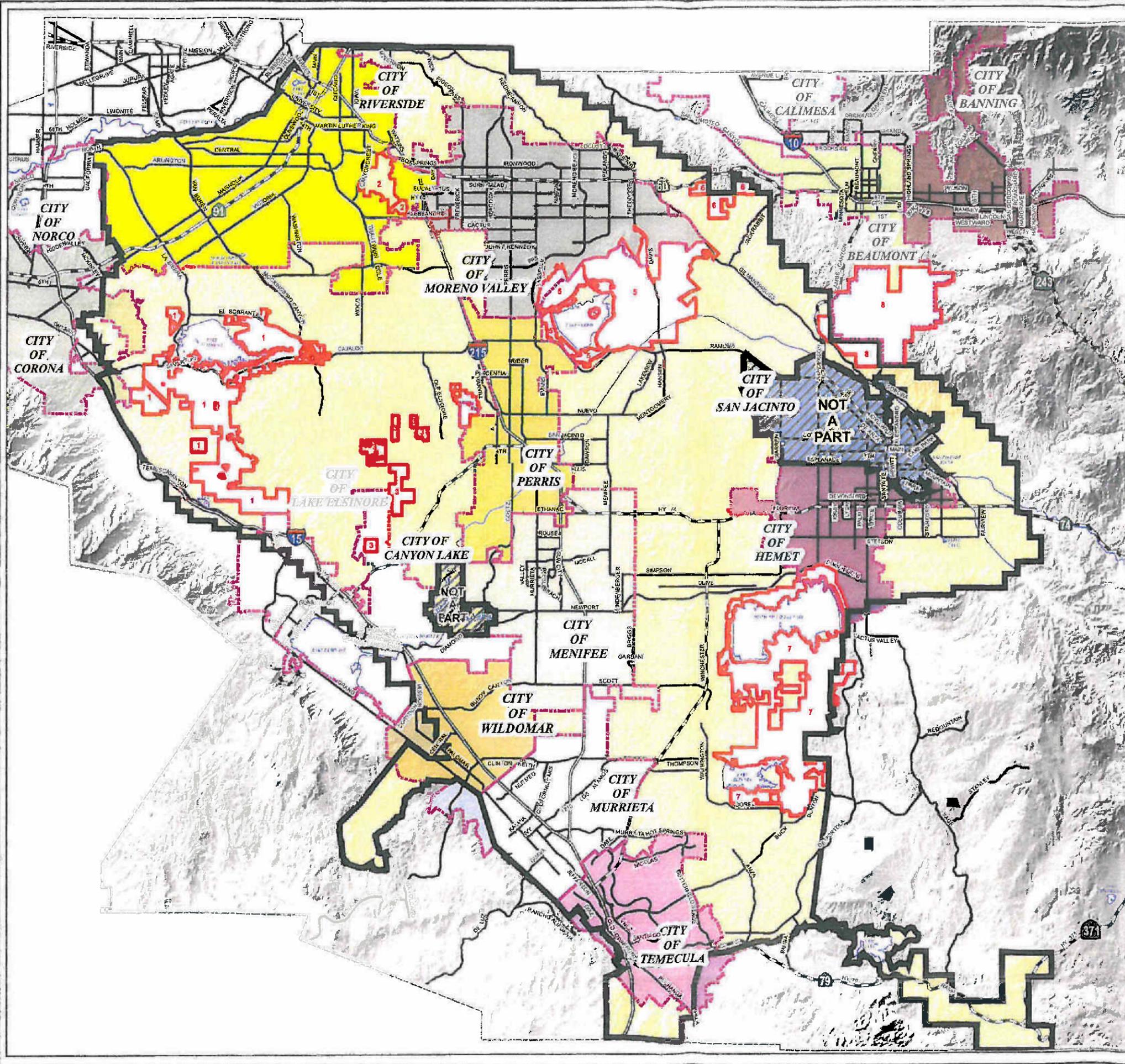


Date: September 30, 2003

Map System: County of Riverside, UTM/CRS  
 Map Created By: Christina Lindsey  
 Legend:\management\workspace\Lindsay\ARCH\KACR03\_PlanArea\GISR\_Plan Area (A3)SKRPlanArea, Updated.mxd

Coordinate System: NAD83 State Plane VI FIPS406 (Feet)

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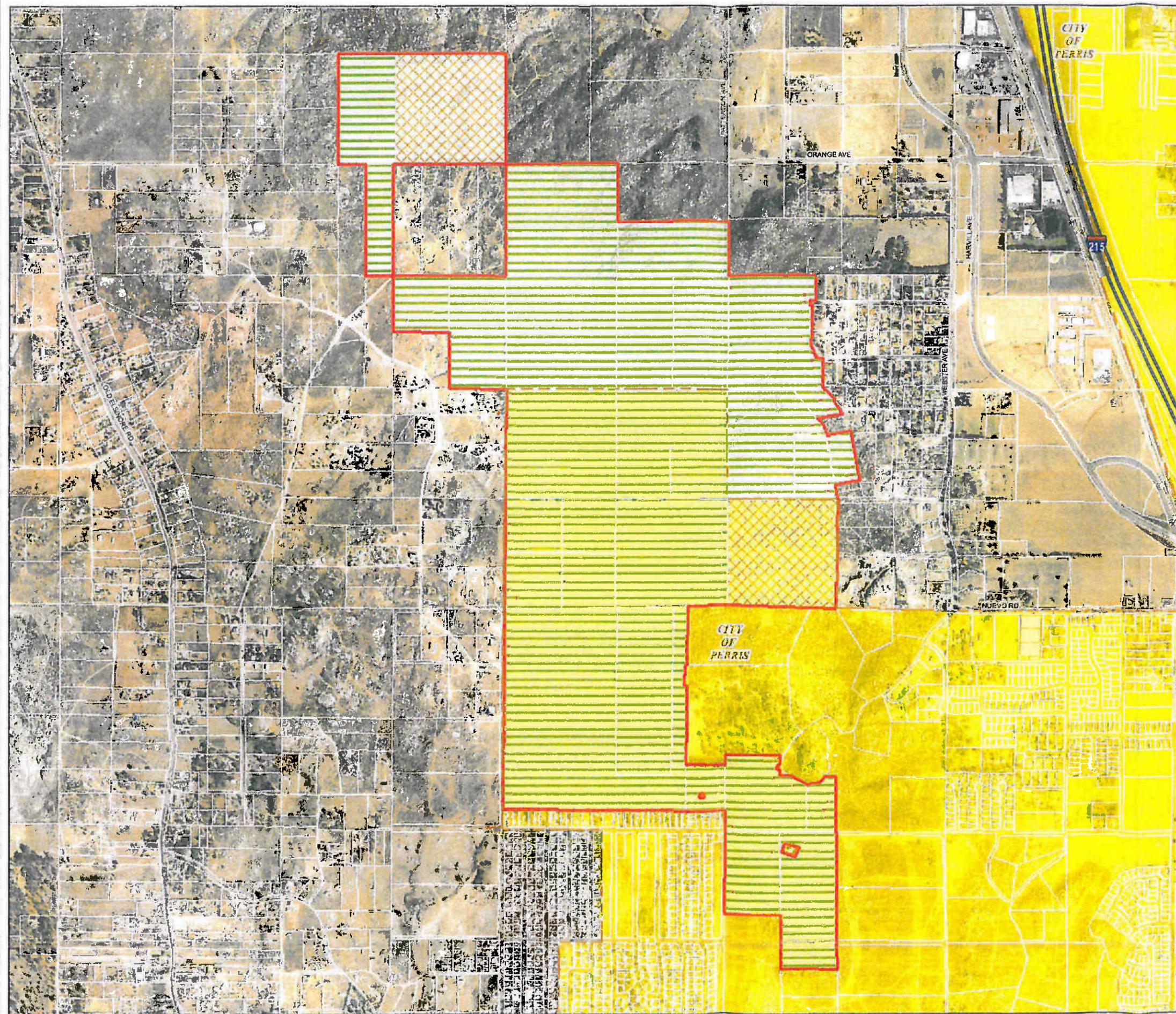


# RCHCA

RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY



## MOTTE / RIMROCK CORE RESERVE



Major Roads  
 City  
 Core Reserve Boundary  
 Parcel Lines  
**Ownership**  
 BLM  
 Regents of University of California

0 0.15 0.3 Mile  

 N



Date: September 30, 2009

Map Source: County of Riverside, TLMA/GIS. Map Created By: Christina Lindsay  
 \agency\lindsay\workspace\Lindsay\RCHCA\Motte\_Rimrock\mxd's  
 MotteRimrock\_11x17.mxd

Coordinate System: NAD83 State Plane VI FIPS0406 (Feet)

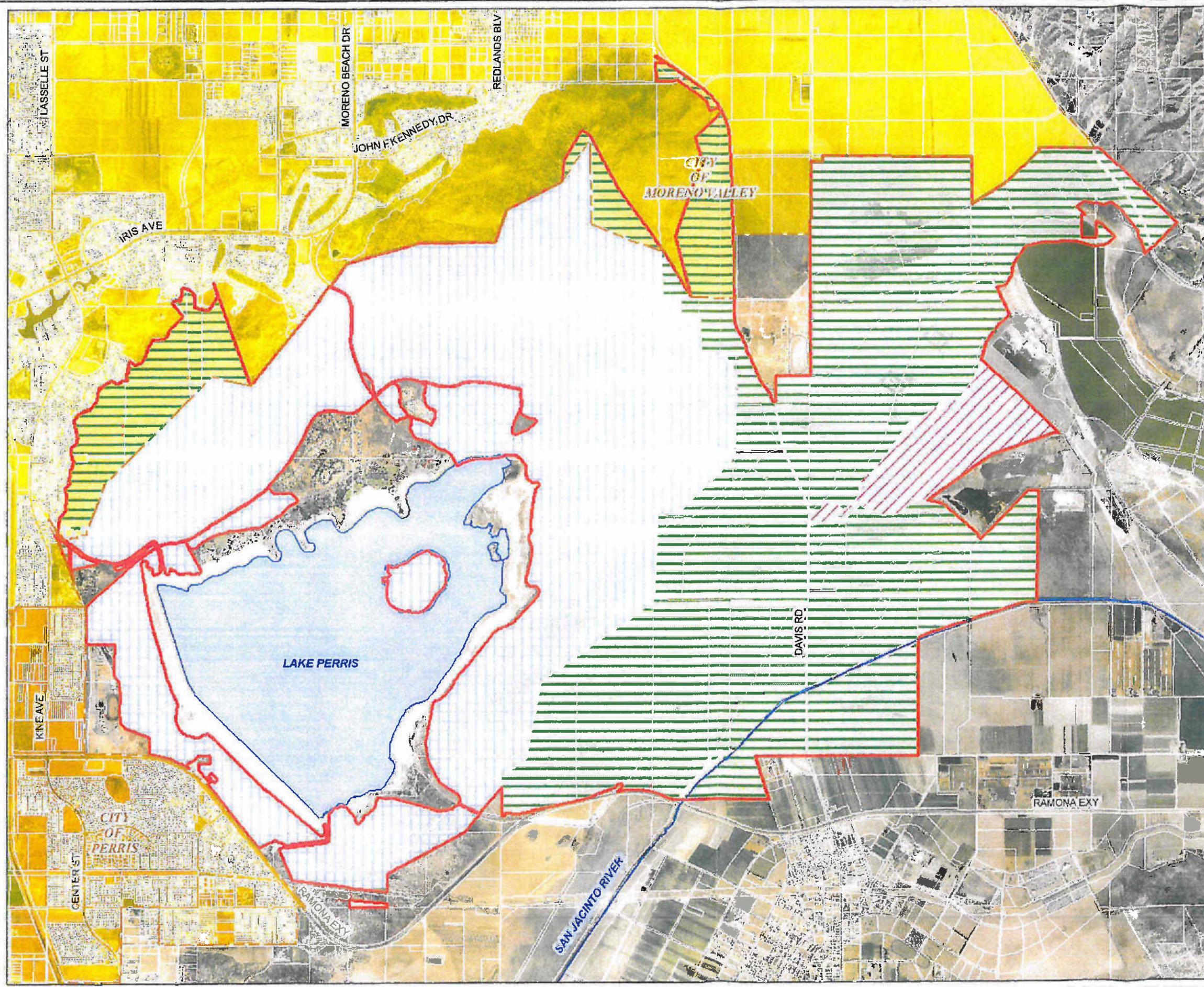
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# RCHCA

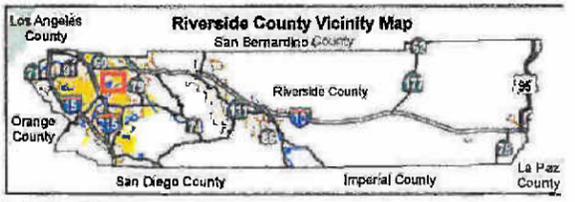
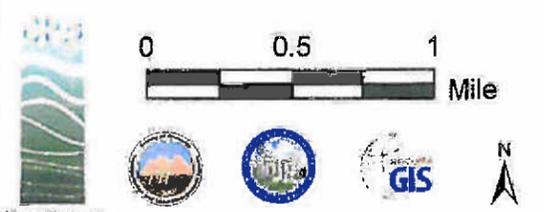
RIVERSIDE COUNTY HABITAT CONSERVATION AGENCY



## SAN JACINTO/ LAKE PERRIS CORE RESERVE



- Major Roads
- City
- Core Reserve Boundary
- Parcel Lines
- Waterbodies Excluded From Core Reserve
- Owned by State of California Managed by CDFG
- Owned by State of California Managed by State Parks
- CDFG Conservation Easement



Date: Sept 1, 2009

Map Source: County of Riverside, TLMA/GIS. Map Created By: Christina Lindsay  
 Agency:\imgis\workspace\Lindsay\RCHCA\San\_Jacinto\_Lake\_Perris\mxd  
 SJ\_LP\_11x17\_original.mxd

Coordinate System: NAD83 State Plane VI FIPS0406 (Feet)

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