

**RESPONSE TO
COMMENTS
FOR:**

**THE PINNACLE AT
SERRANO HIGHLANDS**

DRAFT



prepared for:

CITY OF LAKE FOREST

Contact:
Ron Santos
Senior Planner

prepared by:

**THE PLANNING
CENTER | DC&E**

Contact:
Konstanza Dobрева
Senior Planner

JUNE 2012

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FOR:**

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prepared for:

CITY OF LAKE FOREST

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JUNE 2012

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1. Introduction

1.1 INTRODUCTION

This document contains responses to the comments that the City of Lake Forest received on the Subsequent Mitigated Negative Declaration (MND) for the Pinnacle at Serrano Highlands project during the public review period, which began March 21, 2012, and closed April 20, 2012. This document has been prepared in accordance with California Environmental Quality Act (CEQA) as amended (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.) and represents the independent judgment of the Lead Agency. This document and the circulated Subsequent MND together comprise the Final Subsequent MND.

1.2 FORMAT OF THE RESPONSE TO COMMENTS

This document is organized as follows:

Section 1, Introduction. This section describes CEQA requirements and content of this Final Subsequent MND.

Section 2, Response to Comments. This section provides a list of agencies and interested persons commenting on the Subsequent MND; copies of comment letters received during the public review period, and individual responses to written comments. To facilitate review of the responses, each comment letter has been reproduced and assigned a number (A1 through A6 for letters received from agencies and organizations, and R1 through R3 for letters received from residents). Individual comments have been numbered for each letter and the letter is followed by responses with references to the corresponding comment number.

Section 3, Revisions to the Subsequent MND. This section contains revisions to the Subsequent MND text and figures as a result of the comments received by agencies and interested persons as described in Section 2, and/or typographical errors and omissions discovered subsequent to release of the Subsequent MND for public review.

The responses to comments contain material and revisions that will be added to the text of the Final Subsequent MND. The City of Lake Forest staff has reviewed this material and determined that none of this material constitutes the type of significant new information that requires recirculation of the Subsequent MND for further public comment under CEQA Guidelines Section 15073.5. None of this new material indicates that the project will result in a significant new environmental impact not previously disclosed in the Pinnacle at Serrano Highlands Subsequent MND. Additionally, none of this material indicates that there would be a substantial increase in the severity of a previously identified environmental impact that will not be mitigated, or that there would be any of the other circumstances requiring recirculation described in Section 15073.5.

1.3 CEQA REQUIREMENTS REGARDING COMMENTS AND RESPONSES

CEQA and the State CEQA Guidelines do not require that lead agencies prepare formal written responses to comments on a Mitigated Negative Declaration. Nevertheless, the City of Lake Forest, in the interest of full disclosure, has prepared formal written responses to comments on the Subsequent



1. Introduction

MND. Because CEQA and the State CEQA Guidelines do not outline a procedure for responding to comments on Mitigated Negative Declarations, the City of Lake Forest implements the procedures for responding to comments on environmental impact reports in this situation. Thus, in accordance with CEQA, Public Resources Code Section 21092.5, copies of the written responses to public agencies will be forwarded to those agencies at least 10 days prior to the City Council's consideration of the Subsequent MND. The responses will be forwarded with copies of this Final Subsequent MND, as permitted by CEQA, and will conform to the legal standards established for response to comments on draft environmental impact reports.

2. Response to Comments

2. Response to Comments

This section provides all written responses received on the Subsequent MND and the City's responses to each comment.

Comment letters and specific comments are given letters and numbers for reference purposes. Where sections of the Subsequent MND are excerpted in this document, the sections are shown indented. Changes to the Subsequent MND text are shown in underlined text for additions and ~~strikeout~~ for deletions.

The following is a list of agencies and persons that submitted comments on the Subsequent MND during the public review period.

Number Reference	Commenting Person/Agency	Date of Comment	Page No.
Agencies & Organizations			
A1	City of Irvine	April 6, 2012	2-5
A2	Department of Fish and Game	April 25, 2012*	2-9
A3	Department of Toxic Substances Control (DTSC)	April 16, 2012	2-19
A4	Department of Transportation (Caltrans)	April 19, 2012	2-25
A5	Governor's Office of Planning and Research (OPR)	April 20, 2012	2-33
A6	Orange County Public Works	April 30, 2012*	2-37
Residents			
R1	Patricia Farina	April 19, 2012	2-41
R2	Steve Hayden	March 28, 2012	2-44
R3	Jeff Moller	March 31, 2012	2-47

*Comment letter received after close of the public review period.




2. Response to Comments

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2. Response to Comments

LETTER A1 – David R. Law, AICP, Senior Planner, City of Irvine (1 page)

	Community Development	www.cityofirvine.org
	City of Irvine, One Civic Center Plaza, P.O. Box 19575, Irvine, California 92623-9575	(949) 724-6000

April 6, 2012

Mr. Ron Santos
Senior Planner
City of Lake Forest
Development Services Department
25550 Commercentre Drive, Suite 100
Lake Forest, CA 92630

RECEIVED
APR 09 2012
CITY OF LAKE FOREST
DEVELOPMENT SERVICES DEPT

Subject: Notice of Intent to adopt a Mitigated Negative Declaration (MND) and Initial Study for The Pinnacle at Serrano Highlands


Dear Mr. Santos:

Thank you for the opportunity to comment on the Notice of Intent to adopt a MND and Initial Study for The Pinnacle at Serrano Highlands. City of Irvine staff has reviewed the submittal and has the following comment:

Traffic Study

1. Revise the analysis to assume a single northbound left-turn lane on Bake Parkway at Trabuco Road/Irvine Boulevard. The current analysis assumes two lanes in both the existing and 2015 analysis.


If you have any questions, please contact me at (949) 724-6314 or by email at dlaw@cityofirvine.org.

Sincerely,

DAVID R. LAW, AICP
Senior Planner

cc: Bill Jacobs, Principal Planner
Karen Urman, Senior Transportation Analyst

A1-1

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2. Response to Comments

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2. Response to Comments

A1. Response to Comments from David R. Law, AICP, Senior Planner, City of Irvine, dated April 6, 2012.

A1-1 The analysis has been revised to assume a single northbound left turn lane at the intersection of Bake Parkway and Trabuco Road/Irvine Boulevard. The updated analysis is dated April 16, 2012. It should be noted that this intersection geometric change did not change any Level of Service letter grade or any Intersection Capacity Utilization value. The revised portions of the traffic analysis can be found in Appendix A of this document. Traffic impacts remain less than significant as reported in the circulated Subsequent MND.





2. Response to Comments

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2. Response to Comments

LETTER A2 – Stephen M. Juarez, Environmental Program Manager, Department of Fish and Game (5 pages)

	<p>State of California -The Natural Resources Agency DEPARTMENT OF FISH AND GAME South Coast Region 3883 Ruffin Road San Diego, CA 92123 (858) 467-4201 http://www.dfg.ca.gov</p>	<p>EDMUND G. BROWN JR., Governor CHARLTON H. BONHAM, Director</p>	
<p>April 25, 2012</p>		<p>RECEIVED 04-25-12 City of Lake Forest</p>	
<p>Mr. Ron Santos, Senior Planner City of Lake Forest Planning Division 25550 Commercentre Drive, Suite 100 Lake Forest, CA 92630 Email rsantos@lakeforestca.gov Phone (949) 461-3449</p>			
<p>Subject: Comments on the Mitigated Negative Declaration for Tentative Tract Map No. 15594/ Site Development Permit 2008-11, The Pinnacle at Serrano Highlands, SCH No. 2012031071</p>			
<p>Mr. Santos:</p>			
<p>The California Department of Fish and Game (Department), has reviewed the Mitigated Negative Declaration (MND), dated March 2012, for the above referenced project located in the City of Lake Forest (City), Orange County, California. The following statements and comments have been prepared pursuant to the Department's authority as Trustee Agency with jurisdiction over natural resources affected by the project (California Environmental Quality Act [CEQA] Guidelines §15386) and pursuant to our authority as a Responsible Agency under CEQA Guidelines Section 15381 over those aspects of the proposed project that come under the purview of the California Endangered Species Act (Fish and Game Code §2050 <i>et seq.</i>), Fish and Game Code Section 1600 <i>et seq.</i>, and other sections of the Fish and Game Code. The Department also administers the Natural Community Conservation Planning program (NCCP). The City is a signatory to the approved Central/Coastal Orange County Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP).</p>			
<p>The "Serrano Highlands" property is located at the northern terminus of Peachwood Street in the City of Lake Forest, Orange County, California. The site is located within the planning area of the NCCP/HCP. Some portions of the property have utility easements in place held by NCCP-participating landowners. The balance of the land is owned by a non-participating landowner, and is currently undeveloped except for the northerly terminus of Peachwood Street. The proposed use of the property is residential development with 85 residential units, and current adjacent uses include existing residential, agriculture, municipal water district, undeveloped open space, and an office campus.</p>			
<p>The proposed project was analyzed in the Program EIR (PEIR) for the Lake Forest Opportunities Study Area (OSA), certified July 2008 (SCH No. 2004071039). The adoption of the OSA and PEIR changed the site's General Plan designation from Open Space to Low Density Residential and Medium Density Residential. Pursuant to CEQA the OSA PEIR analysis is incorporated into the analysis of the effects of the proposed project, and applicable mitigation measures identified in OSA PEIR are incorporated.</p>			
<p><i>Conserving California's Wildlife Since 1870</i></p>			



2. Response to Comments

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The project site was analyzed in the OSA PEIR as an 18-acre site. However, the current project site is now 24.6 acres because the previous OSA PEIR did not address the 6.6 acres of open space along the northern property boundary that were not owned by the Applicant and were subject to an easement. The 6.6 acres of open space are now owned by the Applicant and are included in the 24.6-acre site, but they would remain undeveloped as open space within a fuel modification zone. Additionally, the MND states the project would permanently remove a total 0.38 acre of habitat subject to the Department's streambed jurisdiction under Fish and Game Code section 1600 *et seq.*

The MND indicates that proposed project would directly impact two sensitive animal species: the coastal California 'gnatcatcher' (*Poliophtila californica californica*) (Endangered Species Act-listed as threatened, state species of special concern), and the coastal cactus wren (*Campylorynchus brunneicapillus*). No special-status plant species were observed on site during the June 2011 surveys.

The Department offers the following comments and recommendations to assist the City in avoiding or minimizing potential project impacts on biological resources.

1. Project Description

Based on the information provided in the MND, the full extent of project impacts is unclear. Page 72 of the MND indicates there is a total of 21.82 acres of impacts by project development (21.0 acres) and thinning for fuel modification (0.82 acre), and 2.78 acres would remain undisturbed. Appendix B1, B2, and B3 of the MND indicate that the project area is 23.79 acres, including the grading of 19.31 acres and fuel modification on an additional 4.48 acres. Figure 11 indicates that a temporary fuel modification and weed abatement (75-130 feet) zone will be maintained on the adjacent parcel (APN-104-132-36 & 104-132-65). Fuel modifications are expected to result in substantial adverse effects to the remaining habitat both within the project site and potentially extending onto the adjacent parcel. Fuel modifications typically result in substantial degradation of wildlife habitat values associated with coastal sage scrub and native grasslands, even if trees or specific shrubs are retained.

A2-1

To resolve the above issues, the Department recommends that the final environmental document rectify the above inconsistencies, and identify all (on-site and off-site) impacts from fuel modification as permanent impacts. The proposed permanent habitat removal and/or alteration (e.g., fuel modification) should be mitigated consistent with the requirements of the Central-Coastal NCCP/HCP. Most typically this is performed by payment of an in-lieu fee to the Nature Reserve of Orange County (NROC) at a 2:1 (mitigation-to-impact) ratio.

2. Central/Coastal NCCP/HCP

According to the MND (Table 3.4-1), the habitats within the project disturbance limits consists of the following: coastal sage scrub (CSS), 14.56 acres; sagebrush-grassland ecotone habitat, 0.42 acre; southern cactus scrub, 0.59 acre; mulefat scrub, 0.46 acre; ruderal, 0.74 acre; commercial, 1.06 acres; ornamental, 0.45 acre; and disturbed, 3.54 acres. Page 70 of the MND indicates that 14.56 acres of CSS would be removed by project grading and fuel modification, and the Applicant would utilize the Central-Coastal NCCP/HCP in-lieu fee program for the 14.56 acres of CSS removal/modification to reduce significant adverse impacts on candidate, sensitive, or special status species identified in regional plans administered by the Department and the United States Fish and Wildlife Service (USFWS). The in-lieu fee program allows non-

A2-2

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participating landowners to pay a one-time mitigation fee to offset incidental take of CSS habitat types supporting a listed or unlisted CSS "identified species." Section 6.6.2 of the NCCP/HCP states "The CSS species that are covered by the mitigation fee option are the San Diego woodrat (*Neotoma lepida intermedia*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), coastal western whiptail lizard (*Aspidoscelis tigris multiscutatus*), orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*), coastal cactus wren (*Campylorhynchus brunneicapillus*), coastal California gnatcatcher (*Polioptila californica californica*), southern California rufous crowned sparrow (*Aimophila ruficeps canescens*) and red diamond rattlesnake (*Crotalus ruber ruber*)."

The MND notes that the coastal cactus wren occurs on site (MND, page 71), and the Department believes that both the cactus scrub and the sagebrush-grassland ecotone habitat are likely to support CSS identified species on site. Sagebrush-grassland ecotone is described in the Orange County Habitat Classification System as open shrub grassland with less than 15 % shrub cover. These on-site shrubs, although perhaps sparse compared to more typical CSS vegetation, are closely associated with the nearby CSS habitat, and are therefore expected to support foraging by the NCCP/HCP CSS identified species, all of which were assessed as having a high to moderate potential to occur on the property (Appendix B, page 16).

The Central-Coastal NCCP/HCP considers Scrub Habitats to encompass several closely associated habitats and sub-habitat types (refer to Section 2.2 of the NCCP/HCP), all of which require mitigation when NCCP identified species occupy the particular habitat. In order to be consistent with the requirements of the Central-Coastal NCCP/HCP, mitigation measure BR-MM-2 should be expanded to require payment of an in-lieu fee to NROC for impacts to all on-site Scrub habitat types, which for the proposed project would also include southern cactus scrub and sagebrush-grassland ecotone habitat, as well as CSS. This would mitigate for significant adverse effects of habitat loss/modification on identified CSS-associated species covered by the NCCP/HCP, including the California gnatcatcher, coastal cactus wren, and other potentially occurring species identified in the MND.

A2-2
cont'd.



3. Wildlife Connectivity

The Department recognizes that payment of in-lieu fees as discussed above provides acceptable mitigation for CSS-associated species covered by the NCCP/HCP, and is consistent with requirements intended to produce a fully functioning reserve system for the NCCP/HCP. While additional measures are therefore not deemed to be required, where feasible, the Department supports efforts that will maintain the ability for wildlife (e.g., bobcat, etc) to move through the property to nearby remaining open spaces.

On July 6, 2010, the USFWS issued a Biological Opinion (BO) analyzing the effects of the extension of Alton Parkway and Baker Ranch Community Development that is in the vicinity of the proposed project and subject to OSA PEIR. Supported in part by work performed by Lyren et al (2006), the BO analysis concluded "Bobcat and coyote movements were tracked with radio collars between November 2006 and May 2007... [T]wo of the bobcats moved from NCCP/HCP Habitat Reserve lands north of Borrego wash, south across Bake Parkway to Serrano Creek during the study period. Serrano Creek is a perennial water source that is currently accessible to predators in the action area" (USFWS, 2010).

It is unclear if the project design is intended to accommodate the existing wildlife movement. BR-MM-9 is offered as mitigation for fragmentation of habitat and wildlife movement corridors.

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However, this measure refers to BR-MM-8, which requires restoration of the proposed project's wetland impacts consistent with U.S. Army Corps of Engineers (ACOE) goals. BR-MM-9 also describes BR-MM-8 as being satisfactory by designation of several acres to be conserved by the homeowners association as open space, but BR-MM-8 does not require on-site open space to be established. Rather, BR-MM-8 would potentially allow off-site wetland establishment or purchase of credits from an established wetland bank. Therefore, it is unclear how either BR-MM-8 or BR-MM-9 would provide for wildlife movement on site. If it is the intention for the project to allow for continued wildlife movement (i.e., for bobcats), the Department requests that more specific information be provided. If open space is established on site and under the oversight of the homeowners association, the MND should clarify if such an area may be required to be maintained for fire-fuel concerns, which could reduce the habitat suitability for potential use by wildlife. Additionally, the final environmental document should identify the timing to establish a corridor, and any implementation and/or long-term management requirements, or performance standards, for on-site open space. To the extent feasible, the Department recommends consideration of the following:

- i) Design wildlife movement corridor outside of existing fuel modification zones to accommodate medium sized mammals, particularly focal meso-predators such as bobcat.
- ii) Prohibit Home Owner Association (HOA) residents from using broadcast and second-generation rodenticides known to have adverse effects on avian and mammalian species within the project's open space areas. The purpose is to reduce significant secondary wildlife poisoning by non-target wildlife. Particularly, prohibitions of pesticides with active ingredients: brodifacoum; bromadiolone; or difethialone in areas accessible to wildlife should be established in the homeowner association Covenants, Conditions, & Restrictions (CC&R), and made known to homeowners through their purchase agreements and educational materials.
- iii) Ensure wildlife movement areas are separate from fuel modification zones B & C (as identified by Orange County Fire Authority), and are identified with appropriate signage and HOA supplied educational materials to homeowners. CC&R should be recorded to prohibit future development or alteration of areas set aside for wildlife movement.

4. Wetlands

Figure 13 displays one drainage and one isolated wetland subject to potential ACOE jurisdiction. As part of policy adopted by the Fish and Game Commission, the Department has found the USFWS wetland definition and classification system to be the most biologically valid of those definitions and classification systems presently utilized in California. The USFWS definition utilizes hydric soils, saturation or inundation, and vegetative criteria, and requires the presence of at least one of these criteria (rather than all three) in order to classify an area as a wetland. The USFWS wetland classification publication also describes the upper (landward) and lower (waterward) limits of wetlands. These limits are described as follows:

"The upland limit of wetland is designated as (1) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover; (2) the boundary between soil that is predominantly hydric and soil that is predominantly non-hydric; or (3) in the case of wetlands without vegetation or soil, the boundary between land that is flooded or saturated at some time each year and land that is not."

A2-3
cont'd.

A2-4

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The Department therefore recommends all areas supporting hydrophytic cover be mapped in order to assess the potential impacts to wetlands from the proposed project.

A2-4
cont'd.

5. Notification for Streambed Alteration Agreement

The diversion of the intermittent stream on the property will require notification for a Lake or Streambed Alteration Agreement (LSA) pursuant to section 1600 *et seq.* of the Fish and Game Code prior to commencing work. The law requires any person, state or local governmental agency, or public utility to notify the Department before beginning an activity that could substantially modify a river, stream, or lake (a notification package can be obtained online by visiting the Department's website at <http://www.dfg.ca.gov/1600/1600.html>). Based on this notification and other information, the Department will determine whether a LSA with the applicant is required prior to conducting the proposed activities. The Department's issuance of an LSA is considered a project that is subject to CEQA. To minimize potential additional requirements by the Department pursuant to Section 1600 *et seq.*, the City's final environmental document should fully identify the potential impacts to any drainage or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments.

A2-5

The Department appreciates the opportunity to comment on the proposed project. Please contact Department staff for additional questions or coordination regarding the project, Mr. Matthew Chirdon at 858-467-4284.

Sincerely,



Stephen M. Juarez
Environmental Program Manager
South Coast Region

REFERENCES:

Lyren, L. M, G. M. Turschak, E. S. Ambat, C. D. Haas, J. A. Tracey, E. E. Boydston, S. A. Hathaway, R. N. Fisher, and K. R. Crooks. 2006. Carnivore activity and movement in a Southern California protected area, the North/Central Irvine Ranch. Prepared by U.S. Geological Survey, Western Ecological Research Center and Colorado State University for The Nature Conservancy, Newport Beach, California. 3pp.

United States Fish and Wildlife Service (USFWS) 2010. Formal Section 7 Consultation for Alton Parkway Extension and Baker Ranch Community Development Project, Orange County, California. July 6, 2010. 25 pp.

cc: Jonathan Snyder, USFWS, Carlsbad
Cara Allen, CDFG, San Diego
State Clearinghouse, Sacramento



2. Response to Comments

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2. Response to Comments

A2. Response to Comments Stephen M. Juarez, Environmental Program Manager, Department of Fish and Game, dated April 25, 2012.

A2-1 The project site is 24.6 acres. The Pinnacle at Serrano Highlands was Site 6 of seven sites analyzed in the OSA PEIR. The site was identified as an 18-acre site in the OSA PEIR; however, the site is now 24.6 acres. The OSA PEIR did not address the 6.6 acres of open space along the northern property boundary because they were not owned by the applicant and were not developable due to an easement. The 6.6 acres of open space are now owned by the applicant and have been included in 24.6-acre site, but they will remain undeveloped as open space within a fuel modification zone.

The commenter correctly observes that there is an inconsistency between the biological studies in Appendix B1, B2 and B3 and the Subsequent MND related to the total impact area. This apparent discrepancy results because the biological studies surveyed a much larger area beyond the project. For the purposes of each of the studies in Appendix B1, B2 and B3, the analysis was based on a study area of 33.85 acres surveyed. The biological studies surveyed 9.25 acres more than the applicant owns to account for fuel modification thinning. At the time of the surveys, the exact limits of the fuel modification zones were not known. As a result, a larger area was surveyed to ensure that any potential impacts would be adequately characterized and mitigated.

The information in Section 3.4, *Biological Resources* is accurate. A total of 21.82 acres would be impacted by project development or thinning for fuel modification and 2.78 acres would remain undisturbed. Approximately 13.7 acres belonging to 7 different plant communities would be converted as a result of grading and approximately 0.82 acres would be impacted by vegetation thinning in the fuel modification zone. Subsequent MND Table 3.4-2 summarizes these impacts. As show in Table 3.4-2, fuel modification thinning is considered a permanent impact and included in the 21.82 acres of impact. There are no impacts to adjacent parcels.

Subsequent MND Figure 12 has been revised to show the project's boundary in relation to the grading footprint and the fuel modification zone limit. The 2.78 acres outside of the grading footprint and the fuel modification zone limit would remain undisturbed and is not considered impacted. The revised Figure 12 is included in Section 3, *Revisions to the Subsequent MND*.

The in lieu fee payment to Nature Reserve of Orange County (NROC) is structured on a 1:1 mitigation-to-impact ratio (i.e., per acre, basis). The mitigation fee was established with consideration of typical 2:1 ratios, such that the fee is already in excess of the cost of typical per acre enhancement activities. It is not to be multiplied by two again at the time of impact assessment.

A2-2 The CDFG believes that both cactus scrub and the sagebrush-grassland ecotone habitat are likely to support CSS identified species onsite. This habitat type is classified based on shrub cover of 5 percent to 20 percent. For purposes of assessing the amount of CSS that would be impacted and preserved under the NCCP/HCP, this habitat was counted as grassland, and not primary scrub habitat utilized by the California gnatcatcher. NCCP/HCP does not require payment of in lieu



2. Response to Comments

fees for the habitat types that CDFG identified. As such, the City is not currently required to impose mitigation obligations for those habitat types. Further, the City does not have before it evidence that those plant types would actually support endangered, threatened or special-status species.

Mitigation Measure BR MM-2 has been modified to include an assessment to verify the extent of coastal sage scrub habitat and precise area of impact immediately prior to the vegetation clearing in order to assess the appropriate mitigation fee, as follows:

BR MM-2 (OSA PEIR MMRP Mitigation Measure 3.4-2). Loss of Coastal Sage Scrub Habitat and Plant and Animal Species Protected by the NCCP/HCP. Prior to recordation of a subdivision map or issuance of a grading permit, whichever comes first, the Applicant shall retain a qualified, permitted biologist to confirm the presence and quantity of coastal sage scrub habitat located on the project site. If coastal sage scrub habitat is found to be located on the project site, the Applicant shall submit proof to the Director of Development Services that in-lieu fees have been paid to the County of Orange Central/Coastal Natural Communities Conservation Plan (NCCP) Reserve. **The extent of coastal sage scrub habitat and precise area of impact shall also be verified immediately prior to the vegetation clearing in order to assess the appropriate mitigation fee.** (Note: the presence and quantity of coastal sage scrub has been identified in this Initial Study/Supplemental Mitigated Negative Declaration and in the Serrano Highlands Biological Resources Analysis and the Sensitive Plant Survey Results for Serrano Highlands, LSA Associates, Inc., both dated July 2005. **This information shall be verified immediately prior to grading or clearing activities.**)

A2-3 While wildlife currently occurs on the property, the property does not represent a significant movement "corridor" because of the existing adjacent development. East/west movement through the open space across the northern end of the project area, will still occur, both within and beyond the fuel modification area. Typical wildlife species for which such movement opportunities would be beneficial include the coyote and bobcat, which have become highly adapted to residential development. There is no need or purpose in designating a corridor with special management provisions or performance standards across the property.

Mitigation Measure BR MM-9 erroneously cross referenced Mitigation Measure BR MM-8. Page 81, Section 3.4 Biological Resources, Mitigation Measure BR MM-9 is revised as follows:

BR MM-9 (OSA PEIR MMRP Biological Resources Mitigation Measure MM 3.4-5) Mitigation for Fragmentation of Habitat and Wildlife Movement Corridors. In order to minimize the fragmentation of habitat and wildlife movement corridors the City shall require the applicant to include, to the extent feasible, specific design features to maintain connectivity between remaining open spaces. (Note that the project applicant has satisfied BR ~~MM-8-9~~ through designation of several acres to be conserved by the project homeowner's association as natural open space.)

2. Response to Comments

The CDFG suggestion on prohibition of rodenticides with secondary effects has been added as a condition of approval for the project.

A2-4 The USFWS *classification system* cited in the comment is just that, a classification system, not a method for delineating wetlands. It was published in 1979. Subsequently, the Corps of Engineers adopted the 1987 Wetland Delineation Manual. Due to interagency disagreements, this was followed by an attempt to develop a Unified Federal Method for delineations by all federal agencies. However, all federal agencies ultimately adopted the 1987 Corps Wetland Delineation Manual, which is now augmented by Regional Supplements (Arid West supplement was finalized in 2008). A Jurisdictional Delineation Report was prepared for the project site (LSA, August 2011) in accordance with *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (2008) and is included as Appendix B4 to the circulated Subsequent MND. No wetlands were found on the property, as shown in Figure 13. No revisions to the Subsequent MND are necessary.

A2-5 A condition of approval has been added to require Notification for Streambed Alteration. The Subsequent MND already documents impacts to drainage resources as suggested. Impacts to sensitive natural communities and riparian habitats from development of OSA Site 6 were identified as less than significant in the OSA PEIR after implementation of OSA PEIR MM 3.4-2 (BR MM-2 herein) which is incorporated into the proposed project. No new impacts to biological resources compared to impacts identified in the OSA PEIR would result from development of the proposed project. Thus no further analysis is required.






2. Response to Comments

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2. Response to Comments

LETTER A3- Al Shami, Project Manager, DTSC (3 pages)

 Matthew Rodriguez Secretary for Environmental Protection	 Department of Toxic Substances Control Deborah O. Raphael, Director 5796 Corporate Avenue Cypress, California 90630	 Edmund G. Brown Jr. Governor RECEIVED APR 19 2012 CITY OF LAKE FOREST DEVELOPMENT SERVICES DEPT
<p>April 16, 2012</p>		
<p>Mr. Ron Santos City of Lake Forest Planning Division North and east of the Peachwood/Tamarisk intersection, Lake Forest, CA 92630</p>		
<p>DRAFT MITIGATED NEGATIVE DECLARATION (ND) FOR PINNACLE AT SERRANO HIGHLANDS (SCH# 2012031071)</p>		
<p>Dear Mr. Santos:</p>		
<p>The Department of Toxic Substances Control (DTSC) has received your submitted document for the above-mentioned project. As stated in your document: "Approval is sought by the project applicant for a tentative tract map and site development permit to subdivide 24.6 gross acres of undeveloped land into 85 numbered lots for single-family residential use, one numbered lot for private park purposes, 22 lettered lots designated for open space or common access driveways, and 3 lettered lots for private streets and sidewalks. The Pinnacle at Serrano Highlands residential project proposes 85 single-family homes, 2 pocket parks, a 1.5-acre linear park following an existing utility easement, and an open space buffer along the site's northern boundary".</p>		
<p>Based on the review of the submitted document DTSC has the following comments:</p>		
<p>1) The document states that the ND would identify any known or potentially contaminated sites within the proposed project area.</p>	<p>A3-1</p>	
<p>2) The ND 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 hazardous materials or wastes were stored at the site, an environmental assessment should be conducted to determine if a release has occurred. If so, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. It may be necessary to determine if an expedited response action is required to reduce existing or potential threats to public health or the environment. If no immediate threat exists, the final remedy should be implemented in compliance with state laws, regulations and policies.</p>	<p>A3-2</p>	



2. Response to Comments

Mr. Ron Santos
April 16, 2012
Page 2

- | | | |
|----|---|------|
| 3) | The project construction may require soil excavation and soil filling in certain areas. Appropriate sampling is required prior to disposal of the excavated soil. If the soil is contaminated, properly dispose of it rather than placing it in another location. Land Disposal Restrictions (LDRs) may be applicable to these soils. Also, if the project proposes to import soil to backfill the areas excavated, proper sampling should be conducted to make sure that the imported soil is free of contamination. | A3-3 |
| 4) | Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. A study of the site overseen by the appropriate government agency might have to be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment. | A3-4 |
| 5) | If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the ND should identify how any required investigation and/or remediation will be conducted, and the appropriate government agency to provide regulatory oversight. | A3-5 |
| 6) | If weed abatement occurred, onsite soils may contain herbicide residue. If so, proper investigation and remedial actions, if necessary, should be conducted at the site prior to construction of the project. | A3-6 |
| 7) | If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If it is determined that hazardous wastes will be generated, the facility should also obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA. | A3-7 |
| 8) | If buildings, other structures, or associated uses; asphalt or concrete-paved surface areas are being planned to be demolished, an investigation should be conducted for the presence of other related hazardous chemicals, lead-based paints or products; mercury, and asbestos containing materials (ACMs). If other hazardous chemicals, lead-based | A3-8 |

2. Response to Comments

Mr. Ron Santos
April 16, 2012
Page 3

paints or products, mercury or ACMs are identified, proper precautions should be taken during demolition activities. Additionally, the contaminants should be remediated in compliance with California environmental regulations and policies.

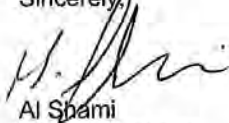
A3-8
cont'd.

- 9) DTSC can provide guidance for cleanup oversight through an Environmental Oversight Agreement (EOA) for government agencies that are not responsible parties, 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, or contact Ms. Maryam Tasnif-Abbasi, DTSC's Voluntary Cleanup Coordinator, at (714) 484-5489.

A3-9

If you have any questions regarding this letter, please contact me at ashami@dtsc.ca.gov, or by phone at (714) 484-5472.

Sincerely,



Al Shami
Project Manager
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

CEQA Tracking Center
Department of Toxic Substances Control
Office of Environmental Planning and Analysis
P.O. Box 806
Sacramento, California 95812
nritter@dtsc.ca.gov

CEQA # 3500



2. Response to Comments

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2. Response to Comments

A3. Response to Comments from Al Shami, Project Manager, DTSC, dated April 16, 2012.

- A3-1 Section 5.8 *Hazards and Hazardous Substances*, page 96 of the Subsequent MND states that no documented hazardous materials sites of any of the types specified in Government Code Section 65962.5 were identified on the project site in a regulatory database search conducted as part of the Phase I Study (provided as Subsequent MND Appendix D). A compilation of the Federal, State, Regional, County and Tribal databases searched are included in Appendix A of the Phase I Study. The property was not posted on any of the databases. None of the adjoining properties were in the databases. Therefore, there are no impacts. No risk related to listed hazardous materials sites would occur.
- A3-2 See response A3-1. As indicated in the Phase I, after inspecting the subject property; reviewing its past uses; observing surrounding properties; and searching through the Federal Environmental Protection Agency, State of California, Orange County and City of Lake Forest records, it can be concluded that there is no evidence of "recognized environmental conditions", as defined by the ASTM. The Phase I found that no further action is required. PPP HAZ-1 requires compliance with all federal and state regulations for handling of hazardous materials. As a result, mitigation measure HAZ MM-1 ensures that if remediation is required, it shall be accomplished in a manner that reduces risk to below applicable standards and shall be completed prior to issuance of any occupancy permits.
- A3-3 See Response to Comment A3-2.
- A3-4 Subsequent MND Section 5.1, *Air Quality*, included a localized significance thresholds (LSTs) analysis for emissions of NO_x, CO, PM₁₀, and PM_{2.5} generated at the project site. The Subsequent MND found that no significant localized impacts would occur from operation of the residential project because these types of land uses do not generate a substantial increase in stationary sources onsite (e.g., permitted sources, manufacturing). With implementation of mitigation measures AQ-1 and AQ-8, project-related construction emissions would not exceed the screening level criteria for PM₁₀ and PM_{2.5}. In addition, the Subsequent MND found that localized air quality impacts related to mobile-source emissions would therefore not exceed established thresholds. Therefore, there are no significant impacts to sensitive receptors from construction or operational emissions. A health risk assessment is based on risk accumulated over a 70-year lifetime. Given the relatively short-term construction schedule for activities (18 months compared to 70 years) and distance to the nearest sensitive land uses, the proposed project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. Therefore, project-related diesel particulate matter impacts during construction would not be significant and a health risk assessment is not necessary.
- A3-5 As stated in Section 3.9, *Hydrology and Water Quality*, the project is underlain by sandstone bedrock, and is not above a groundwater basin. Groundwater was not found in borings onsite at depths of up to 41.5 feet below ground surface. Depth of grading is estimated at 2 feet to 35 feet. See response A3-1. As indicated in the Phase I, after inspecting the subject property; reviewing its past uses; observing surrounding properties; searching through the Federal Environmental Protection Agency, State of California, Orange County and City of Lake Forest records, it can




2. Response to Comments

be concluded that there is no evidence of "recognized environmental conditions", as defined by the ASTM. The Phase I found that no further action is required. PPP HAZ-1 requires compliance with all federal and state regulations for handling of hazardous materials. As a result, mitigation measure HAZ MM-1 ensures that if remediation is required, it shall be accomplished in a manner that reduces risk to below applicable standards and shall be completed prior to issuance of any occupancy permits.

- A3-6 See Response to Comment A3-2.
- A3-7 The proposed project would not involve the generation of hazardous substances, as discussed in Subsequent MND Section 3.8, *Hazards and Hazardous Substances*. Therefore, the proposed project does not need to obtain a United State Environmental Protection Agency Identification Number. Similarly, because the project does not involve hazardous waste treatment processes or hazardous materials, handling, storage or uses, the project applicant does not need to request authorization from the local Certified Unified Program Agency (CUPA) for the proposed project.
- A3-8 There are no structures onsite, but demolition of paved surfaces would occur. PPP HAZ-1 requires compliance with all federal and state regulations for handling of hazardous materials. As a result, mitigation measure HAZ MM-1 ensures that if remediation is required, it shall be accomplished in a manner that reduces risk to below applicable standards.
- A3-9 Comment noted. The proposed project does not involve clean up and there is no need for oversight through an Environmental Oversight Agreement (EOA) or Voluntary Clean Up Agreement (VCA). Therefore, no further response is necessary.

2. Response to Comments

LETTER A4 – Christopher Herre, Branch Chief, Caltrans (2 pages)

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY		EDMUND G. BROWN Jr., Governor
DEPARTMENT OF TRANSPORTATION District 12 3347 Michelson Drive, Suite 100 Irvine, CA 92612-8894 Tel: (949) 724-2241 Fax: (949) 724-2592		 <i>Flex your power! Be energy efficient!</i>
April 19, 2012		
Ron Santos City of Lake Forest 25550 Commercentre Drive, Suite 100 Lake Forest, California 92630	File: IGR/CEQA SCH#: 2012031071 Log #: 2965 I-5, SR-241	
Subject: The Pinnacle at Serrano Highlands		
Dear Mr. Santos,		
<p>Thank you for the opportunity to review and comment on the Initial Study/Mitigated Negative Declaration (IS/MND) for the Pinnacle at Serrano Highlands. The proposed project would subdivide 24.6 gross acres of undeveloped land into 85 numbered lots for single-family residential use, one numbered lot for private park purposes, 22 lettered lots designated for open space or common access driveways, and 3 lettered lots for private streets and sidewalks. The project site is located in the central portion of the City of Lake Forest, bounded by open space and the Pacific Vista Business Center office park on the north, an undeveloped property owned by the Irvine Ranch Water District (IRWD) approved for residential development on the east, the Willow Glen Condominiums on the south, and Tamarisk City Park on the west. The nearest State routes to the project site are SR-241 and I-5.</p>		
Caltrans District 12 is a responsible agency on this project and has following comments:		
1. Please note that the Department previously commented on the Supplemental Environmental Impact Report for Shea/Baker Ranch on March 19, 2012. The comments for that project have not been replied to and are still standing.		A4-1
2. The Traffic Impact Analysis (TIS) located in Appendix G1 of the IS/MND does not include an analysis of Interstate 5 and 405. The Department's Traffic Operations Branch requests an analysis of I-5/I-405 on and off-ramps using the method outlined in the latest version of the Highway Capacity Manual (HCM) when analyzing traffic impacts on State Transportation Facilities. The use of HCM is preferred by the Department because it is an operational analysis as opposed to the Intersection Capacity Utilization (ICU) method, which is a planning analysis. In the case of projects that have direct impacts on State Facilities, the Department recommends that the traffic impact analysis be based on HCM method. Should the project require an encroachment permit, Traffic Operations may find the Traffic Impact Study based on ICU methodology inadequate resulting in possible delay or denial of a permit by the Department. All input sheets, assumptions and volumes on State Facilities including ramps and intersection analysis should be submitted to the Department for review and approval. The analysis should include appropriate mitigation measures to offset any potential impacts. The traffic impact on the state transportation system should be evaluated based on the Department's Guide for the Preparation of Traffic Impact Studies., which is available at:		A4-2
<i>"Caltrans improves mobility across California"</i>		



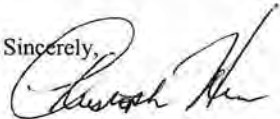
2. Response to Comments

<http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf>

- | | |
|---|-------------|
| 3. The TIS failed to analyze the ramp intersections of I-5 and I-405 at Bake Parkway, and I-5 at Lake Forest Drive. These intersections should be analyzed to properly determine the impact of the project on these intersections for present and future conditions. | A4-3 |
| 4. CEQA statute 21092.4(a) states, "For a project of statewide, regional, or area-wide significance, the lead agency shall consult with transportation planning agencies and public agencies which have transportation facilities within their jurisdiction which could be affected by the project." | A4-4 |
| 5. In addition, CEQA statute 21092.4(b) states, "As used in this section, "transportation facilities" includes major local arterials and public transit within five miles of the project site and freeways, highways and rail transit service within 10 miles of the project site." The failure to analyze the intersection of I-5 at Lake Forest Drive and Bake Parkway using HCM methodology would be considered a violation of this statute. | A4-5 |
| 6. CEQA statute 21081.2(e) states, "Nothing in this section relieves a city or county from the requirement to analyze the project's effects on traffic at intersections, or on streets, highways, or freeways, from making a determination that the project may have a significant effect on traffic." Again, failure to analyze the intersection of I-5 at Lake Forest Drive and Bake Parkway using HCM methodology would be considered a violation of this statute. | A4-6 |

Please continue to keep us informed of this project and any future developments, which could potentially impact the State Transportation Facilities. If you have any questions or need to contact us, please do not hesitate to call Marlon Regisford at (949) 724-2241.

Sincerely,



Christopher Herre, Branch Chief
Local Development/Intergovernmental Review

C: Scott Morgan, Office of Planning and Research

"Caltrans improves mobility across California"

2. Response to Comments

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2. Response to Comments

A4. Response to Comments from Christopher Herre, Branch Chief, Caltrans, dated April 19, 2012.

A4-1 This comment is not related to an environmental impact of the Pinnacle and Serrano Highlands project. This project is separate from the Shea Baker project. The Shea Baker Final EIR and Response to Comments were delivered to the commenter on May 5, 2012.

A4-2 The level of service methodology utilized in the Pinnacle at Serrano Highlands Project Traffic Study is consistent with the lead agency's accepted methods of determining significant impacts. It would be inappropriate for the City to utilize any methodology other than the ICU methodology for several reasons.

First, the Subsequent MND tiers from the OSA PEIR. OSA PEIR used the ICU methodology.¹ In order for the City to evaluate the site-specific impacts of the Pinnacle at Serrano Highlands project, it must use the same methodology that was used in the OSA PEIR so that a direct comparison can be made between what was evaluated in the Program EIR and what the potential impacts of the site-specific development would be. To use a different methodology at this time would result in an apples-to-oranges comparison and would not provide substantial evidence to support the conclusions in the Subsequent MND. Thus, it was necessary for the City to utilize the ICU methodology for this project.

Second, the City's local regulations require the use of the ICU methodology. As described in the traffic study, the City utilizes the ICU methodology to analyze traffic impacts. The City's General Plan, LFTM Ordinance, and the City's Local CEQA Thresholds of Significance all require that the City utilize the ICU methodology for purposes of evaluating traffic impacts of projects proposed within the City's jurisdiction. The City cannot ignore its existing regulations and require the use of a methodology that it has not adopted.

It should be noted the County of Orange Congestion Management Program (CMP) encourages lead agencies to coordinate with Caltrans to determine the appropriate traffic impact methodology; the CMP does not require lead agencies to utilize Caltrans' preferred method of analysis. Given that the City as lead agency has adopted the ICU methodology for all traffic impact analysis, the traffic studies for the OSA PEIR and the proposed project were prepared consistent with the City's adopted methodology.

A lead agency is responsible for determining whether an adverse environmental effect identified in an EIR should be classified as "significant" or "less than significant". (State CEQA Guidelines § 15064(b).) Moreover, the lead agency has discretion to formulate standards of significance for use in an EIR. (*Eureka Citizens for Responsible Gov't. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Mira Mar Mobile*

¹ The OSA PEIR was certified on June 3, 2008. In accordance with State CEQA Guidelines section 15094, on June 4, 2008, the City filed a Notice of Determination to inform the public of its decision to certify the OSA PEIR and to approve the OSA project. No action or proceeding to challenge the OSA PEIR was filed within the applicable statute of limitations, or approximately July 5, 2008. Thus, in accordance with Public Resources Code section 21167.2, the OSA PEIR is *presumed* to comply with CEQA. Thus, to the extent that the commenter has concerns about the scope of the OSA PEIR, those concerns are now moot.

2. Response to Comments

Comm'ty v. City of Oceanside (2004) 119 Cal.App.4th 477.) To that end, State CEQA Guidelines § 15064.7 encourages lead agencies to adopt and publish “thresholds of significance” for use in determining whether environmental impacts are significant. Once thresholds are established, an impact that complies with the applicable threshold will “normally” be found insignificant and an impact that does not comply with the applicable threshold will “normally” be found significant. (State CEQA Guidelines § 15064.7(a).) Therefore, it is against the City’s Local CEQA Thresholds of Significance that the City has evaluated the potential traffic impacts of the proposed project.

While the City understands that Caltrans’ preference for the use of the HCM methodology, it would not be appropriate to apply that methodology here. The City’s traffic impact analysis comports with the City’s existing standards for traffic studies and based on that analysis, the proposed project would not result in any new or more significant impacts than were previously disclosed in the OSA PEIR.

A4-3

The certified OSA PEIR analyzed the effects of the projects included within the OSA on the Interstate 5 and SR-241 and concluded that the OSA (inclusive of the proposed project) and cumulative development would cause five segments (I-5 north of El Toro Road [a.m. and p.m. peak hour], I-5 north of Alicia Parkway [a.m. and p.m. peak hour], and SR-241 north of Los Alisos Boulevard [a.m. peak hour]) to operate below standards. However, no freeway mainline segments were forecast to be significantly impacted by the OSA (inclusive of the proposed project) under the year 2030 conditions compared to the 2030 [then] General Plan Scenario. (Refer to page 3.14-53, Table 3.14-16, 2030 Proposed Project Freeway/Tollway Ramp LOS Summary, of the OSA PEIR.) The OSA PEIR also analyzed off-ramps and found that no freeway ramps would be negatively impacted as compared to the 2030 [then] General Plan Scenario.



The proposed project is not more intense than the development described and analyzed in the OSA PEIR for the Pinnacle at Serrano Highlands project site. The Subsequent MND/Traffic Analysis did not include an analysis of Interstate 5 (I-5) or Interstate 405 (I-405) because, given that there is no increase in ADTs and peak hour trips, the City determined that the project-level impacts would be the same as those analyzed in the OSA PEIR. The OSA PEIR concluded that a less than significant impact would result in this regard. Thus, because the proposed project is consistent with that analyzed under the OSA PEIR, impacts to freeway mainlines are therefore less than significant.

Based on the peak-hour ramp performance criteria and impact thresholds discussed within the OSA PEIR, no freeway ramps or queuing are forecast to be significantly impacted by the development envisioned under the OSA based on year 2030 conditions when compared to either existing conditions or to the General Plan Scenario. In fact, implementation of the OSA (of which the Pinnacle at Serrano Highlands project is a component) would eliminate impacts to five ramps which would occur under the 2030 General Plan Scenario.

2. Response to Comments

- A4-4 This project does not meet the criteria is CEQA Guidelines Section 15206(b) and is not deemed to be a project of statewide, regional, or areawide significance. A scoping meeting was not required or held. As a result, the City was not obligated to give notice pursuant with the provisions of 21092.4(a) that require consultation with affected agencies.

Nonetheless, the City has made every effort to consult with the Department of Transportation and has diligently responded to all concerns raised by the Department of Transportation throughout this Subsequent MND process.

- A4-5 The affected transportation facilities within the study area delineated for the OSA PEIR included the facilities described in the comment. As the current Pinnacle at Serrano Highlands project is not more intense than included in the adopted OSA, no new impacts were identified. Please refer to Response to Comment A4-2 above regarding the methodology used by the lead agency. As a point of clarification, Public Resources Code section 21092.4(b) does not require that the City use the HCM methodology to evaluate impacts at the intersection of I-5 and Bake Parkway, or any other intersection. Therefore, the fact that the City has not utilized the HCM methodology does not violate Public Resources Code section 21092.4(b). Furthermore, the City's adopted CEQA Significance Threshold Guide, together with the LFTM program and the City's General Plan direct the City to utilize the ICU methodology. Thus, in accordance with State CEQA Guidelines section 15064.7, the City has properly utilized and relied upon the ICU methodology.

- A4-6 As a point of clarification, Public Resources Code section 21081.2(e) does not require that the City use the HCM methodology to evaluate impacts at the intersection of I-5 and Bake Parkway, or any other intersection. Therefore, the fact that the City has not utilized the HCM methodology does not violate Public Resources Code section 21081.2(e). As explained above in Response to Comment A4-2, the City's existing procedures require that it evaluate traffic impacts according to the ICU methodology. Using that methodology, the City analyzed the project's effect on traffic in the OSA PEIR, and conducted a study as required by the LFTM ordinance for the Pinnacle at Serrano Highlands proposal which concluded that the traffic generated by the project would not exceed any of the traffic impacts in the OSA PEIR, and would remain less than significant.

With respect to the analysis of the intersections of I-5/Lake Forest Drive and I-5/Bake Parkway, see response to Comment A4-2. Both the OSA PEIR traffic study and the traffic analysis for the proposed project were prepared consistent with the City's requirement to use the ICU methodology. It would be inappropriate for the City to evaluate the significance of the project's traffic impacts to I-5/Bake Parkway and I-5/Lake Forest Drive using the HCM methodology for purposes of an analysis within the Subsequent MND.

Nevertheless, and for informational purposes only, the City prepared a level of service analysis of the I-5/Bake Parkway ramp locations and the I-5/Lake Forest Drive ramp locations using the Caltrans HCM methodology. The existing data was collected at Bake/I-5 ramps in April 2012 and at Lake Forest/I-5 ramps in November 2010. The project traffic volumes were manually added to the four ramp intersection locations based on data presented in the traffic study prepared for the project (at

2. Response to Comments

Bake/Trabuco and Lake Forest/Trabuco). The future 2030 data was referenced from the approved Shea Baker Ranch traffic study for the Lake Forest/I-5 ramp locations. Each future scenario includes buildout of the OSA study area (including the project site).

According to the HCM analysis, the four ramp intersections would operate at acceptable levels of service in the existing, existing plus project and future 2030 (plus project) conditions using the methodology required by Caltrans. A level of service summary table and level of service worksheets are attached as Appendix B. As revealed in the attached analysis, both intersections operate at acceptable levels of service in 2030 using the Caltrans methodology. Thus, even under the HCM methodology, the proposed project would not significantly impact the I-5/Bake Parkway or the I-5/Lake Forest Interchange.




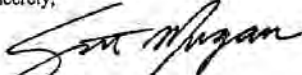


2. Response to Comments

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2. Response to Comments

LETTER A5 – Scott Morgan, Director, OPR (1 page)

	<p>STATE OF CALIFORNIA GOVERNOR'S OFFICE of PLANNING AND RESEARCH</p>	
<p>EDMUND G. BROWN JR. GOVERNOR</p>		<p>KEN ALEX DIRECTOR</p>
<p>April 20, 2012</p>		<p>RECEIVED</p>
		<p>APR 23 2012</p>
<p>Ron Santos City of Lake Forest 25550 Commercentre Drive Lake Forest, CA 92630</p>		<p>CITY OF LAKE FOREST DEVELOPMENT SERVICES DEPT</p>
<p>Subject: The Pinnacle at Serrano Highlands SCH#: 2012031071</p>		
<p>Dear Ron Santos:</p>		
<p>The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. The review period closed on April 19, 2012, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.</p>	<p>A5-1</p>	
<p>Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.</p>		
<p>Sincerely,</p>		
<p>Scott Morgan Director, State Clearinghouse</p>		
<p>1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044 (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov</p>		

2. Response to Comments

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2. Response to Comments

A5. Response to Comments from Scott Morgan, Director, OPR, dated April 20, 2012.

- A5-1 Comment noted. As the comment does not raise concerns related to the Project's environmental impacts, no response is necessary.




2. Response to Comments

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2. Response to Comments

LETTER A6 – Michael Balsamo, Manager, Orange County Public Works (2 pages)

 <p>ORANGE COUNTY OC Public Works <i>Our Community. Our Commitment.</i></p>	<p><i>Jess A. Carbajal, Director</i> 300 N. Flower Street Santa Ana, CA P.O. Box 4048 Santa Ana, CA 92702-4048 Telephone: (714) 834-2300 Fax: (714) 834-5188</p>
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RECEIVED	
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NCL 12-010	
CITY OF LAKE FOREST DEVELOPMENT SERVICES DEPT	
April 30, 2012	
Mr. Ron Santos, Senior Planner City of Lake Forest 25550 Commercecentre Drive, Suite 100 Lake Forest, California 92630	
SUBJECT: Notice of Intent to Adopt a Subsequent Negative Declaration for Tentative Tract Map No. 15594/Site Development Permit 2008-11 for The Pinnacle at Serrano Highlands located in the City of Lake Forest	
Dear Mr. Santos:	
The County of Orange has reviewed the Notice of Intent to Adopt a Subsequent Negative Declaration for Tentative Tract Map No. 15594/Site Development Permit 2008-11 for The Pinnacle at Serrano Highlands located in the City of Lake Forest and offers the following comment:	
<u>Environmental Resources:</u>	
In response to your request for input on the subject project, Environmental Resources has reviewed the document, and offers the following comments:	
Although the project drains to Serrano Creek, no mention is made on Initial Study Page 111 of that water body's impairments, and the impairments of other receiving waters are similarly understated. Serrano Creek is impaired for Indicator Bacteria, Ammonia Un-ionized, and pH; San Diego Creek Reach 2 is impaired for Nutrients, Indicator Bacteria, Sedimentation/Siltation, and Unknown Toxicity; San Diego Creek Reach 1 is impaired for Fecal Coliform, Nutrients, Sedimentation/Siltation, Pesticides, Selenium, and Toxaphene; and Upper Newport Bay is impaired for Nutrients, Sedimentation/Siltation, Pesticides, Indicator Bacteria, and Chlordane, Copper, DDT, Metals, PCBs, and Sediment Toxicity. See the EPA - approved 2010 303(d) list:	
A6-1	



2. Response to Comments

Ron Santos
City of Lake Forest
April 30, 2012

http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml

A6-1
cont'd.

If you require any additional information, please contact Grant Sharp at (714) 955-0674.

Sincerely,



Michael Balsamo
Manager, OC Community Development
OC Public Works/OC Planning
300 North Flower Street
Santa Ana, California 92702-4048
Michael.Balsamo@ocpw.ocgov.com

cc: Chris Crompton, Environmental Resources

2. Response to Comments

A6. Response to Comments from Michael Balsamo, Manager, Orange County Public Works, dated April 30, 2012.

A6-1 The project's Preliminary Water Quality Management Plan (WQMP) was approved by the City on August 9, 2011. As a condition of approval, the project would implement a Final WQMP that is consistent with the approved Preliminary WQMP prior to issuance of grading permits. The project-level environmental review for the Pinnacle at Serrano Highlands project commenced with the preparation of an Initial Study/Subsequent MND, which tiered off the Opportunities Study Area Program Environmental Impact Report (OSA PEIR). The Subsequent MND found that there would not be new significant impacts resulting from the project that previously were not analyzed by the OSA PEIR. The WQMP was incorporated by reference in the Subsequent MND.

According to pages 8 and 9 of the Preliminary WQMP (Subsequent MND Appendix E2), the project is approximately 3.5 miles east of the San Diego Creek Reach 2 (Cal Watershed 80111 000) via Serrano Creek Channel. San Diego Creek Reach 2 is currently USEPA 2006 303d-listed for Metals (Urban Runoff/Storm Sewers). Further down is San Diego Creek Reach 1, which is 303(d) listed for Fecal Coliform (Urban Runoff/Storm Sewers and Other Urban Runoff), Selenium (Source Unknown) and Toxaphene (Source Unknown). Reach 1 extends 7.8 miles from Jeffrey to Upper Newport Bay (Ecological Reserve). This waterbody is 303(d) listed for Chlordane (Source Unknown), Copper (Source Unknown), DDT (Source Unknown), Metals (Urban Runoff/Storm Sewers) PCBs (Source Unknown), and Sediment Toxicity (Source Unknown). Lower Newport Bay (Cal Watershed 80114000) is 303 (d) listed for Chlordane (Source Unknown), Copper (Source Unknown), DDT (Source Unknown), PCBs (Source Unknown), and Sediment Toxicity (Source Unknown).

The approved Preliminary WQMP includes Best Management Practices (BMPs) to reduce amounts of pollutants from the project that would reach receiving waters. As a condition of approval, the project would implement a Final WQMP that is consistent with the approved Preliminary WQMP. The approved Preliminary WQMP identifies specific BMPs to be implemented during project design and project operation to avoid or reduce stormwater pollution from project operation. Effective installation, implementation and maintenance of all project BMPs, which will occur prior to all of the project's discharge point(s), will ensure that the project will not result in the discharge of any project pollutants of concern, including 303(d) listed pollutants, which could impair the project's downstream receiving waters of Serrano Creek, San Diego Creek, Upper Newport Bay and Lower Newport Bay. Therefore, while Serrano Creek is an impaired water body, the project BMPs will ensure that no additional significant impacts occur as a result of the project.



2. Response to Comments

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2. Response to Comments

LETTER R1 – Patricia Farina (1 page)

From: Patricia Farina
Sent: Friday, April 20, 2012 11:32 AM
To: Santos, Ron
Subject: Pinnacle at Serrano Highlands Development

April 19, 2012

Ron Santos, Senior Planner

City of Lake Forest

Development Services

25550 Commercenter Drive

Lake Forest, CA 92630

Dear Mr. Santos:

Recently I read an article in the Lake Forest Patch reporting a possible new home development "Pinnacle at Serrano Highlands" and I became concerned about the impact of an additional 85 homes into our neighborhood. The article stated we should address our concerns to you.

My husband and I have lived on Champlain in Lake Forest since 1991 and withstood the ups and downs of property values. While we welcome changes to the city and our neighborhood that may increase property values we remain very concerned about this development. With the additional homes will come a significant increase in traffic, noise and pollution all of which will have nothing but a negative effect to our property value. We welcome hearing the plans the city and the developer have to address each of these concerns

I would appreciate receiving more information.

Sincerely,

Mrs. Patti Farina

21012 Champlain

Lake Forest, CA 92630

R1-1



2. Response to Comments

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2. Response to Comments

R1. Response to Comments from Patricia Farina, dated April 19, 2012.

R1-1 The Commenter's main concern is that the proposed project could negatively impact her property value. The commenter also expresses concern with regard to the potential negative noise, traffic and pollution impacts of the proposed project.

The Commenter's concerns regarding property value will be shared with the decision-makers. However, it should be noted that neither the Public Resources Code nor the State CEQA Guidelines requires that a MND evaluate social or economic impacts of a project unless those social or economic impacts would lead to physical environmental changes (CEQA Guidelines Section 15064(e) and Section 15131). Since property values are an economic consideration, they are not included within the Subsequent MND.

The Subsequent MND demonstrated that there are not significant and unavoidable impacts associated with the proposed 85-unit development, including Air Quality, Noise, and Traffic. As demonstrated in Subsequent MND Section 3.3, *Air Quality*, there are no project-related air quality impacts from short-term construction activities or long-term operation of the project. Section 3.12, *Noise*, demonstrates that changes in traffic noise due to the project would not result in significant long-term, traffic-related noise impacts to offsite uses and no mitigation is required. Likewise, the project would not result in any significant short-term or long-term impacts from project construction or operations. Section 3.16, *Transportation/Traffic* and the project-specific traffic study both demonstrate that in the project's opening year (2015) all intersections would operate at acceptable Level of Service (LOS) C or better in the "with-project" traffic condition. Project-generated traffic would not contribute to a significant cumulative traffic impact in either the AM or PM peak hours. The rest of the Subsequent MND demonstrates that there are no significant environmental impacts.



2. Response to Comments

LETTER R2 – Steve Hayden (1 page)

From: [Hayden, Steve](#)
To: [Santos, Ron](#);
cc: [tony kay](#);
Subject: the Pinnacle at Serrano Highlands
Date: Wednesday, March 28, 2012 1:59:49 PM

Good afternoon Ron,

I am a homeowner with a currently upside down mortgage in the city of Lake Forest. I personally don't feel this is a good time to take on a project of this scale. Adding 85 homes that by comparable listings will likely sell in the \$700,000 range, I believe would further depress our already suffering current home values. A much smaller scale project closer to our median prices and comparable home sizes makes more sense for this community right now. Lake Forest needs to make an appeal to a broader buying pool to help improve our small home market.

R2-1

Thank you for your consideration.

2. Response to Comments

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2. Response to Comments

R2. Response to Comments from Steve Hayden, dated March 28, 2012.

R2-1 The Commenter's concern is that the proposed project could negatively impact his property value. The commenter also expresses concern for the proposed project with regard to the number of homes, the size of the homes, and their cost

The Commenter's concerns regarding property value will be shared with the decision-makers. However, it should be noted that neither the Public Resources Code nor the State CEQA Guidelines requires that a MND evaluate social or economic impacts of a project unless those social or economic impacts would lead to physical environmental changes (CEQA Guidelines Section 15064(e) and Section 15131). Since property values are an economic consideration, they are not included within the Subsequent MND.

2. Response to Comments

LETTER R3 – Jeff Moller (1 page)

From: jeff.moller@cox.net [mailto:jeff.moller@cox.net]
Sent: Saturday, March 31, 2012 9:51 AM
To: Santos, Ron
Subject: Proposed Pinnacle at Serrano Highlands Development

Good morning. I am a local resident currently evaluating this proposal for comment. I am trying to read the site plan showing how the new homes would be laid out. When I “zoom” the diagram to focus on the areas I am interested in I am unable to see all the detail clearly. I was hoping you had either another version of the diagram that provided more clarity or perhaps you could rescan the areas that I am interested in and send them to me electronically. The area I am interested in is the intersection of Peachwood and Tamerisk streets, and the new landscaping areas that would be added by the new development bordering the intersection.

R3-1

Thank you for your help. Please let me know if you have any questions or concerns.

-Jeff



2. Response to Comments

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2. Response to Comments

R3. Response to Comments from Jeff Moller, dated March 31, 2012.

- R3-1 The requested “zoomed in” image of the site plan was emailed to the commenter on April 2, 2012. No further comments were received. Because the comment does not raise environmental concerns, no further response is necessary.



2. Response to Comments

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3. *Revisions to the Subsequent MND*

3.1 INTRODUCTION

This section contains revisions to the Subsequent MND based upon (1) additional or revised information required to prepare a response to a specific comment; (2) applicable updated information that was not available at the time of Subsequent MND publication; and/or (3) typographical errors. Changes made to the Subsequent MND are identified here in ~~strikeout text~~ to indicate deletions and in **bold underlined text** to signify additions. These changes do not result in new, different or more significant impacts than previously identified. These changes represent minor alterations that clarify and amplify information that was contained in the publicly circulated version of the Subsequent Mitigated Negative Declaration.

3.2 SUBSEQUENT MND REVISIONS IN RESPONSE TO WRITTEN COMMENTS

The following text has been revised in response to comments received on the Subsequent MND.

Page 76, Section 3.4 Biological Resources, Mitigation Measure BR MM-2 is revised as follows:

BR MM-2 (*OSA PEIR MMRP Mitigation Measure 3.4-2*). Loss of Coastal Sage Scrub Habitat and Plant and Animal Species Protected by the NCCP/HCP. Prior to recordation of a subdivision map or issuance of a grading permit, whichever comes first, the Applicant shall retain a qualified, permitted biologist to confirm the presence and quantity of coastal sage scrub habitat located on the project site. If coastal sage scrub habitat is found to be located on the project site, the Applicant shall submit proof to the Director of Development Services that in-lieu fees have been paid to the County of Orange Central/Coastal Natural Communities Conservation Plan (NCCP) Reserve. **The extent of coastal sage scrub habitat and precise area of impact shall also be verified immediately prior to the vegetation clearing in order to assess the appropriate mitigation fee.** (*Note: the presence and quantity of coastal sage scrub has been identified in this Initial Study/Supplemental Mitigated Negative Declaration and in the Serrano Highlands Biological Resources Analysis and the Sensitive Plant Survey Results for Serrano Highlands, LSA Associates, Inc., both dated July 2005. This information shall be verified immediately prior to grading or clearing activities.*)



Page 81, Section 3.4 Biological Resources, Mitigation Measure BR MM-9 is revised as follows:

BR MM-9 (*OSA PEIR MMRP Biological Resources Mitigation Measure MM 3.4-5*) Mitigation for Fragmentation of Habitat and Wildlife Movement Corridors. In order to minimize the fragmentation of habitat and wildlife movement corridors the City shall require the applicant to include, to the extent feasible, specific design features to maintain connectivity between remaining open spaces. (*Note that the project applicant has satisfied BR MM-8-9 through designation of several acres to be conserved by the project homeowner's association as natural open space.*)

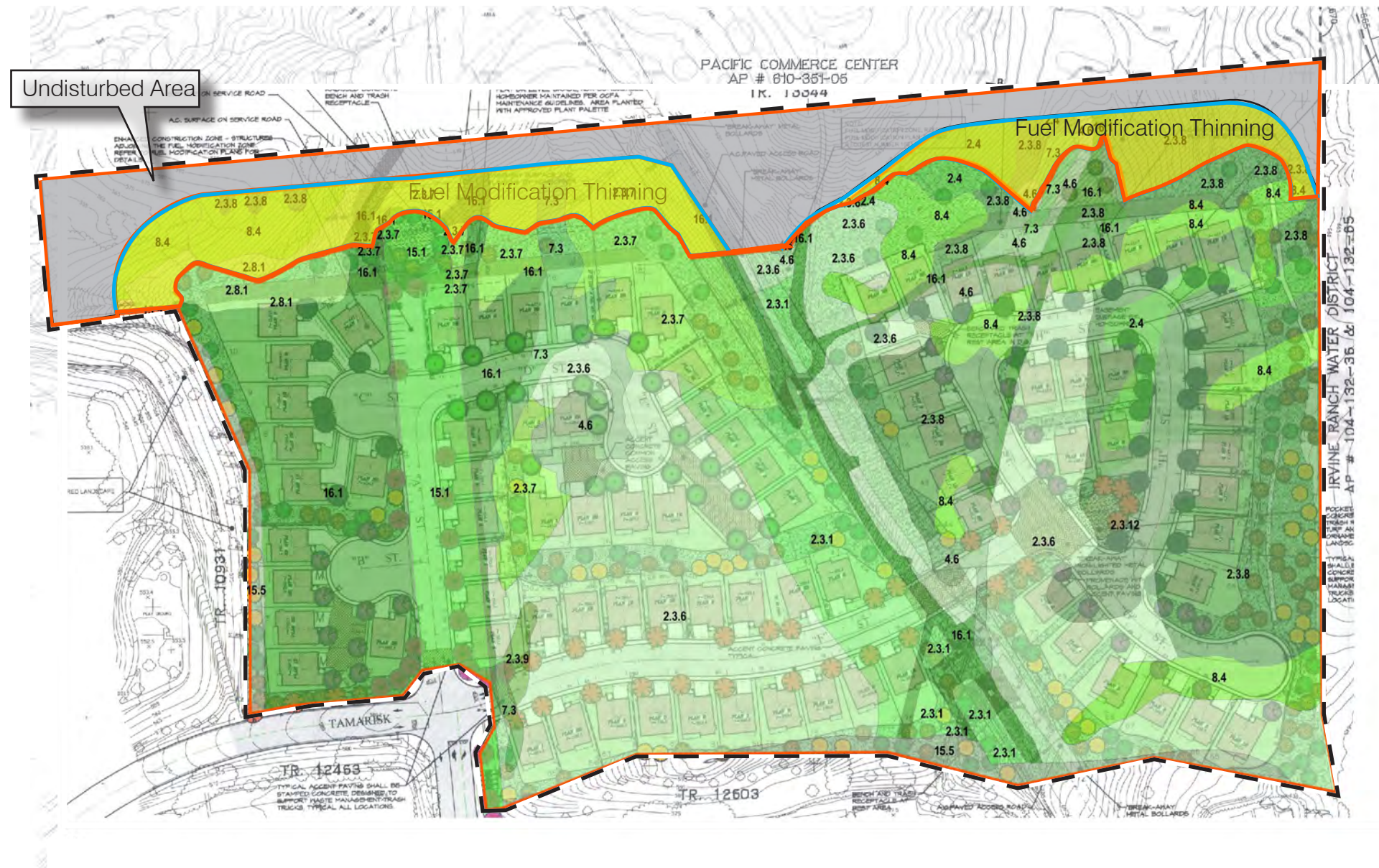
3. Revisions to the Subsequent MND




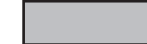
Page 147, Section 3.16 Transportation and Traffic, is revised as follows:

Instead of two lanes traveling in both directions, southbound Peachwood would transition from one travel lane to two (with a left turn lane onto Palmwood), and northbound Peachwood would consist of one travel lane and one left turn lane onto Tamarisk **through/left-turn lane and one right turn lane onto proposed "F" Street.**

Subsequent MND Figure 12 has been revised to show the project's boundary in relation to the grading footprint and the fuel modification zone limit.

Plant Communities



-  Site Boundary
-  Grading Footprint
-  Fuel Modification Zone Limit
-  Undisturbed Area

Project Site = 24.6 Acres
 Disturbed Area = 21.82 Acres
 Undisturbed Area = 2.78 Acres



3. Revisions to the Subsequent MND

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Appendix A. Traffic Study Revision Sheets



Appendices

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KUNZMAN ASSOCIATES, INC.

TTM 15594

TRAFFIC IMPACT ANALYSIS - REVISED

April 16, 2012



KUNZMAN ASSOCIATES, INC.

TTM 15594

TRAFFIC IMPACT ANALYSIS - REVISED

April 16, 2012

Prepared by:

Robert Kunzman,
Carl Ballard, and
William Kunzman, P.E.

William Kunzman



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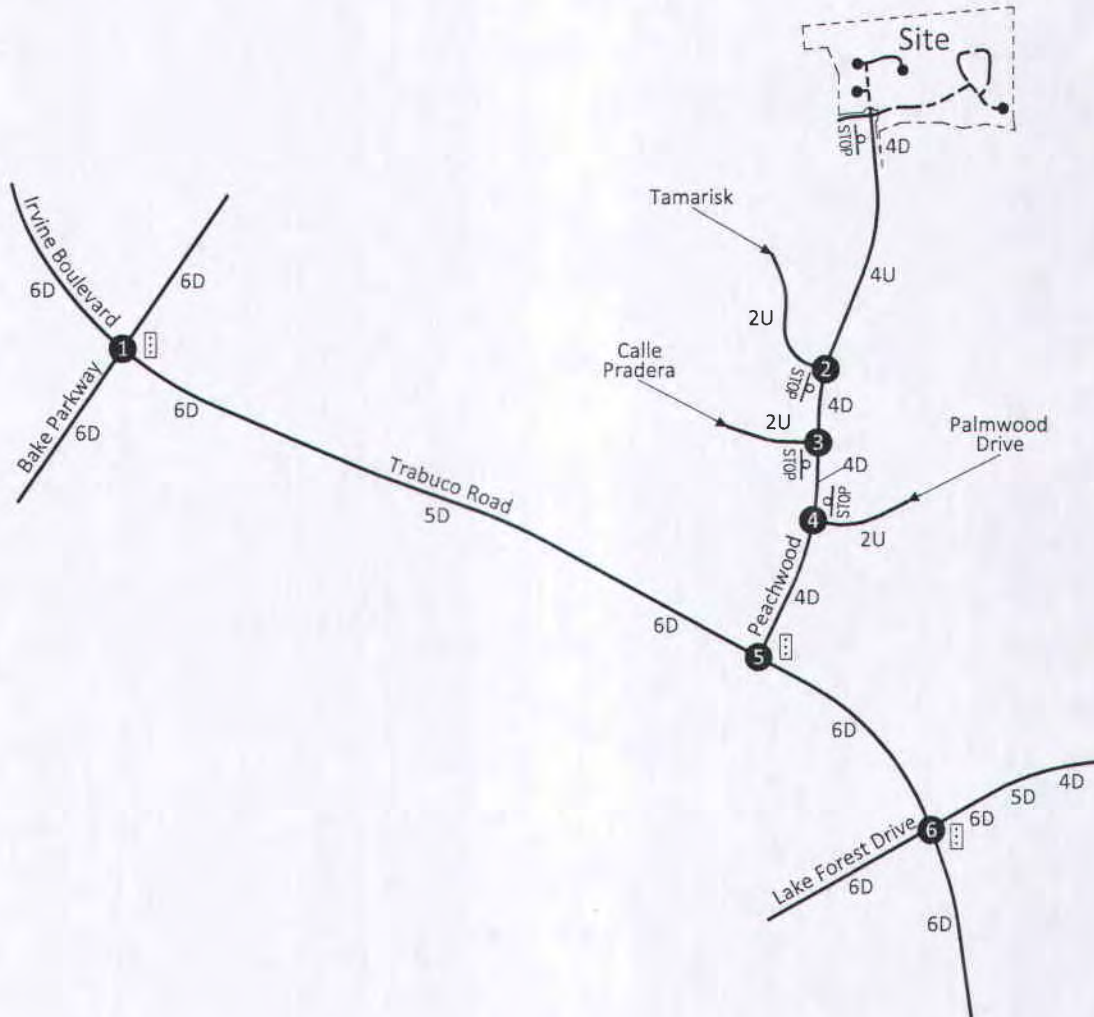
Table 1
Existing Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	1	2.5	0.5	2	3	1	2	3	1	2	3	1	0.767-C	0.688-B
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	8.9-A	8.5-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.7-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	13.6-B	13.3-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.442-A	0.376-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.551-A	0.581-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Figure 3
Existing Through Travel Lanes and Intersection Controls



<p>1</p>	<p>2</p>	<p>3</p>
<p>4</p>	<p>5</p>	<p>6</p>

Legend

- = Traffic Signal
- = Stop Sign
- 4 = Through Travel Lanes
- D = Divided
- U = Undivided
- d = Defacto Right Turn Lane



Table 3

Existing Plus Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	1	2.5	0.5	2	3	1	2	3	1	2	3	1	0.769-C	0.695-B
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.1-A	8.6-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.3-A	8.8-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	14.5-B	14.5-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.456-A	0.406-A
Lake Forest Drive (NS) at:															
Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.553-A	0.583-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Table 4

Opening Year (2015) Without Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	1	2.5	0.5	2	3	1	2	3	1	2	3	1	0.807-D	0.720-C
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.0-A	8.6-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.8-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	14.4-B	13.9-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.466-A	0.395-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.578-A	0.611-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Table 5

Opening Year (2015) With Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	1	2.5	0.5	2	3	1	2	3	1	2	3	1	0.810-D	0.727-C
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.7-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.4-A	8.9-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	15.4-C	15.2-C
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.480-A	0.426-A
Lake Forest Drive (NS) at:															
Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.581-A	0.613-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

TTM 15594
 Morning Peak Hour
 Existing

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.767
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: C

Street Name:	Bake Parkway					Irvine Boulevard/Trabuco Road									
Approach:	North Bound			South Bound		East Bound			West Bound						
Movement:	L	T	R	L	T	R	L	T	R	L	T	R			
Control:	Protected			Protected		Protected			Protected						
Rights:	Include			Include		Include			Include						
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0			
Lanes:	1	0	2	1	0	2	0	3	0	1	2	0	3	0	1

Volume Module:

Base Vol:	249	1736	130	45	1065	446	515	172	90	687	982	113
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	249	1736	130	45	1065	446	515	172	90	687	982	113
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	249	1736	130	45	1065	446	515	172	90	687	982	113
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	249	1736	98	45	1065	335	515	172	68	687	982	85
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	249	1736	98	45	1065	335	515	172	68	687	982	85
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
FinalVolume:	249	1736	98	45	1065	335	515	172	68	687	982	85

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.84	0.16	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	4829	271	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.15	0.36	0.36	0.01	0.21	0.20	0.15	0.03	0.04	0.20	0.19	0.05
Crit Moves:	****			****			****			****		

TTM 15594
Evening Peak Hour
Existing

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.688
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: B

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with North and South Bound approaches.

Volume Module table with columns for Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module table with columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module table with columns for Vol/Sat, Crit Moves, and other capacity metrics.

TTM 15594
 Morning Peak Hour
 Existing Plus Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.769
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: C

Street Name:	Bake Parkway			Irvine Boulevard/Trabuco Road								
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	1	0	2	0	3	0	1	2	0

Volume Module:

Base Vol:	249	1736	130	45	1065	446	515	172	90	687	982	113
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	249	1736	130	45	1065	446	515	172	90	687	982	113
Added Vol:	0	0	3	2	0	0	0	2	0	10	7	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	249	1736	133	47	1065	446	515	174	90	697	989	118
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	249	1736	100	47	1065	335	515	174	68	697	989	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	249	1736	100	47	1065	335	515	174	68	697	989	89
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
FinalVolume:	249	1736	100	47	1065	335	515	174	68	697	989	89

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.84	0.16	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	4823	277	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.15	0.36	0.36	0.01	0.21	0.20	0.15	0.03	0.04	0.21	0.19	0.05
Crit Moves:	****			****			****			****		

TTM 15594
 Evening Peak Hour
 Existing Plus Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.695
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: B

Street Name:	Bake Parkway						Irvine Boulevard/Trabuco Road					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	1	0	0	2	0	3	0	1	1

Volume Module:

Base Vol:	124	1244	586	217	1466	659	515	805	167	294	372	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	124	1244	586	217	1466	659	515	805	167	294	372	40
Added Vol:	0	0	11	5	0	0	0	8	0	6	5	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	124	1244	597	222	1466	659	515	813	167	300	377	43
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	124	1244	448	222	1466	494	515	813	125	300	377	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	124	1244	448	222	1466	494	515	813	125	300	377	32
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
FinalVolume:	124	1244	448	222	1466	494	515	813	125	300	377	32

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.21	0.79	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	3750	1350	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.07	0.33	0.33	0.07	0.29	0.29	0.15	0.16	0.07	0.09	0.07	0.02
Crit Moves:	****			****			****			****		

TTM 15594
Morning Peak Hour
Opening Year (2015) Without Project

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.807
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: D

Street Name: Bake Parkway Irvine Boulevard/Trabuco Road
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 2 1 0 2 0 3 0 1 2 0 3 0 1
Volume Module:
Base Vol: 249 1736 130 45 1065 446 515 172 90 687 982 113
Growth Adj: 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06
Initial Bse: 264 1840 138 48 1129 473 546 182 95 728 1041 120
Added Vol: 0 0 -3 -2 0 0 0 -2 0 -10 -7 -5
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 264 1840 135 46 1129 473 546 180 95 718 1034 115
User Adj: 1.00 1.00 0.75 1.00 1.00 0.75 1.00 1.00 0.75 1.00 1.00 0.75
PHF 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 Volume: 264 1840 101 46 1129 355 546 180 72 718 1034 86
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 264 1840 101 46 1129 355 546 180 72 718 1034 86
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
FinalVolume: 264 1840 101 46 1129 355 546 180 72 718 1034 86
Saturation Flow Module:
Sat/Lane: 1700 1700 1700 1700 1700 1700 1700 1700 1700 1700 1700 1700
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 2.84 0.16 2.00 3.00 1.00 2.00 3.00 1.00 2.00 3.00 1.00
Final Sat.: 1700 4834 266 3400 5100 1700 3400 5100 1700 3400 5100 1700
Capacity Analysis Module:
Vol/Sat: 0.16 0.38 0.38 0.01 0.22 0.21 0.16 0.04 0.04 0.21 0.20 0.05
Crit Moves: **** **** **** ****

TTM 15594
 Evening Peak Hour
 Opening Year (2015) Without Project

Level Of Service Computation Report
 ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.720
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: C

Street Name:	Bake Parkway						Irvine Boulevard/Trabuco Road					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	1	0	2	3	0	1	2	0	3

Volume Module:

Base Vol:	124	1244	586	217	1466	659	515	805	167	294	372	40
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	131	1319	621	230	1554	699	546	853	177	312	394	42
Added Vol:	0	0	-11	-5	0	0	0	-8	0	-6	-5	-3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	131	1319	610	225	1554	699	546	845	177	306	389	39
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	131	1319	458	225	1554	524	546	845	133	306	389	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	131	1319	458	225	1554	524	546	845	133	306	389	30
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
FinalVolume:	131	1319	458	225	1554	524	546	845	133	306	389	30

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.23	0.77	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	3786	1314	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.08	0.35	0.35	0.07	0.30	0.31	0.16	0.17	0.08	0.09	0.08	0.02
Crit Moves:	****			****			****			****		

TTM 15594
 Morning Peak Hour
 Opening Year (2015) With Project

Level Of Service Computation Report
 ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.810
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: D

Street Name:	Bake Parkway						Irvine Boulevard/Trabuco Road					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	1	0	0	2	0	3	0	1	2

Volume Module:

Base Vol:	249	1739	130	45	1065	446	515	172	90	687	982	113
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	264	1843	138	48	1129	473	546	182	95	728	1041	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	264	1843	138	48	1129	473	546	182	95	728	1041	120
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	264	1843	103	48	1129	355	546	182	72	728	1041	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	264	1843	103	48	1129	355	546	182	72	728	1041	90
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
FinalVolume:	264	1843	103	48	1129	355	546	182	72	728	1041	90

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.84	0.16	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	4829	271	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.16	0.38	0.38	0.01	0.22	0.21	0.16	0.04	0.04	0.21	0.20	0.05
Crit Moves:	****			****			****			****		

TTM 15594
 Evening Peak Hour
 Opening Year (2015) With Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.727
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: C

Street Name:	Bake Parkway				Irvine Boulevard/Trabuco Road										
Approach:	North Bound		South Bound		East Bound		West Bound								
Movement:	L	T	R	L	T	R	L	T	R	L	T	R			
Control:	Protected				Protected				Protected						
Rights:	Include				Include				Include						
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0			
Lanes:	1	0	2	1	0	2	0	3	0	1	2	0	3	0	1

Volume Module:

Base Vol:	124	1244	586	217	1466	659	515	805	167	294	372	40
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	131	1319	621	230	1554	699	546	853	177	312	394	42
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	131	1319	621	230	1554	699	546	853	177	312	394	42
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	131	1319	466	230	1554	524	546	853	133	312	394	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	131	1319	466	230	1554	524	546	853	133	312	394	32
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
FinalVolume:	131	1319	466	230	1554	524	546	853	133	312	394	32

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.22	0.78	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	1700	3769	1331	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.08	0.35	0.35	0.07	0.30	0.31	0.16	0.17	0.08	0.09	0.08	0.02
Crit Moves:	****			****			****			****		



KUNZMAN ASSOCIATES, INC.

TTM 15594

TRAFFIC IMPACT ANALYSIS - REVISED

February 28, 2012



KUNZMAN ASSOCIATES, INC.

TTM 15594

TRAFFIC IMPACT ANALYSIS - REVISED

February 28, 2012

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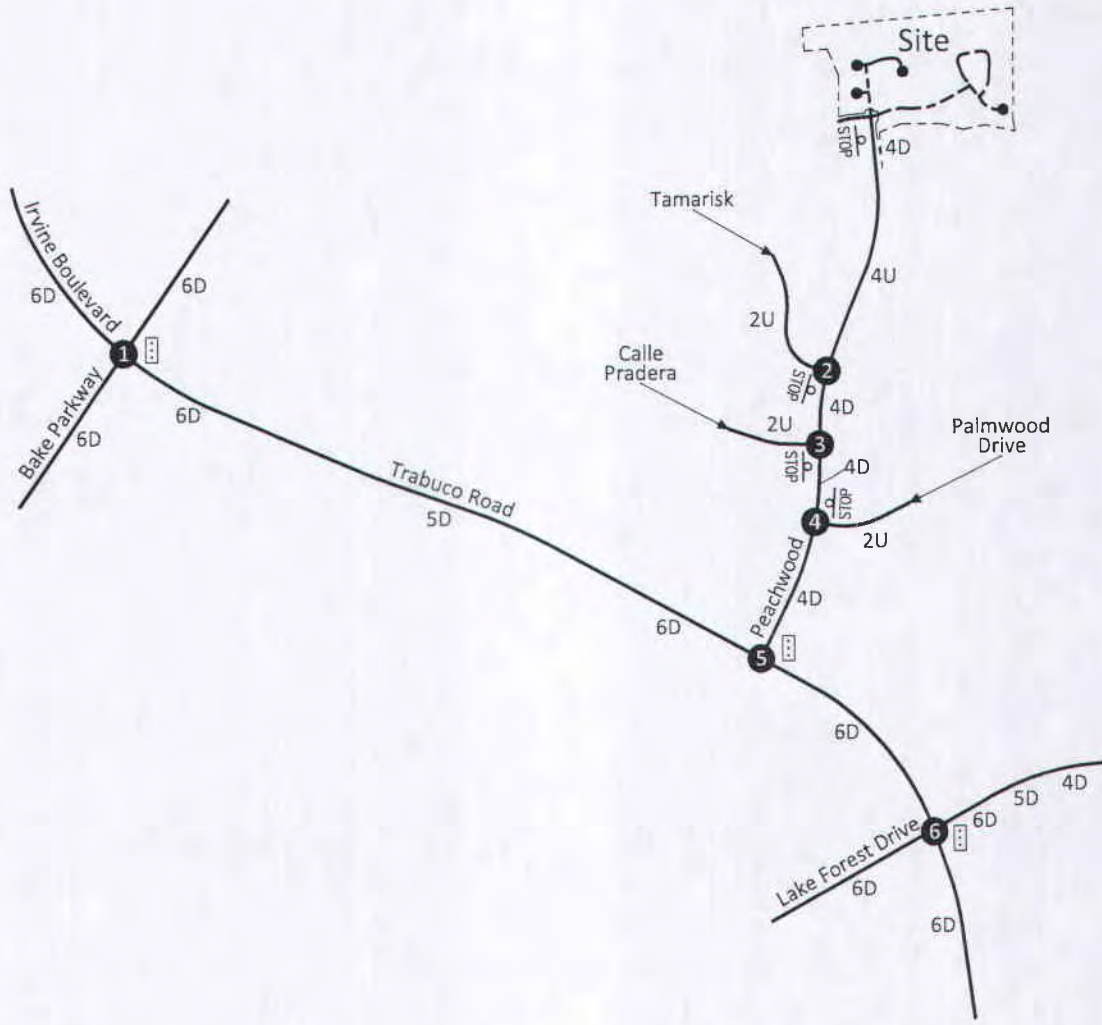
Table 1
Existing Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	2	2.5	0.5	2	3	1	2	3	1	2	3	1	0.767-C	0.688-B
Peachwood (NS) at: Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	8.9-A	8.5-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.7-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	13.6-B	13.3-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.442-A	0.376-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.551-A	0.581-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Figure 3
Existing Through Travel Lanes and Intersection Controls



1 	2 	3
4 	5 	6

Legend

- = Traffic Signal
- = Stop Sign
- 4 = Through Travel Lanes
- D = Divided
- U = Undivided
- d = Defacto Right Turn Lane



Table 3

Existing Plus Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	2	2.5	0.5	2	3	1	2	3	1	2	3	1	0.769-C	0.695-B
Peachwood (NS) at: Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.1-A	8.6-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.3-A	8.8-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	14.5-B	14.5-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.456-A	0.406-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.553-A	0.583-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Table 4

Opening Year (2015) Without Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	2	2.5	0.5	2	3	1	2	3	1	2	3	1	0.807-D	0.720-C
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.0-A	8.6-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.8-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	14.4-B	13.9-B
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.466-A	0.395-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.578-A	0.611-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

Table 5

Opening Year (2015) With Project Levels of Service

Intersection	Traffic Control ²	Intersection Approach Lanes ¹												Level of Service	
		Northbound			Southbound			Eastbound			Westbound			Morning	Evening
		L	T	R	L	T	R	L	T	R	L	T	R		
Bake Parkway (NS) at: Irvine Boulevard/Trabuco Road (EW) - #1	TS	2	2.5	0.5	2	3	1	2	3	1	2	3	1	0.810-D	0.727-C
Peachwood (NS) at:															
Tamarisk (EW) - #2	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.2-A	8.7-A
Calle Pradera (EW) - #3	CSS	1	2	0	0	1.5	0.5	1	0	d	0	0	0	9.4-A	8.9-A
Palmwood Drive (EW) - #4	CSS	0	1.5	0.5	1	2	0	0	0	0	1	0	d	15.4-C	15.2-C
Trabuco Road (EW) -#5	TS	0	0	0	2	0	1	1	3	0	0	3	d	0.480-A	0.426-A
Lake Forest Drive (NS) at: Trabuco Road (EW) -#6	TS	2	3	1	2	2.5	0.5	2	3	1	2	3	1	0.581-A	0.613-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (19 feet per the City of Lake Forest) for right turning vehicles to travel outside the through lanes. Defacto right turn lanes have been designated with a "d". L = Left; T = Through; R = Right

² TS = Traffic Signal; CSS = Cross Street Stop

TTM 15594
Morning Peak Hour
Existing

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.767
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: C

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with various movement and control details.

Volume Module table with columns for Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume. Rows list various traffic volume and adjustment factors.

Saturation Flow Module table with columns for Sat/Lane, Adjustment, Lanes, and Final Sat. Rows show saturation flow rates and adjustments for different movements.

Capacity Analysis Module table with columns for Vol/Sat and Crit Moves. Rows show volume-to-saturation ratios and critical movement counts.

TTM 15594
Evening Peak Hour
Existing

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.688
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: B

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with various movement details.

Volume Module table with columns for Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module table with columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module table with columns for Vol/Sat and Crit Moves.

TTM 15594
Morning Peak Hour
Existing Plus Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.769
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: C

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with various lane configurations.

Volume Module table showing Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume across different approaches.

Saturation Flow Module table showing Sat/Lane, Adjustment, Lanes, and Final Sat. values for each approach.

Capacity Analysis Module table showing Vol/Sat and Crit Moves for each approach.

TTM 15594
Evening Peak Hour
Existing Plus Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.695
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: B

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with various movement details.

Volume Module table with columns for Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module table with columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module table with columns for Vol/Sat and Crit Moves.

TTM 15594
 Morning Peak Hour
 Opening Year (2015) Without Project

Level Of Service Computation Report
 ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.807
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: D

Street Name:	Bake Parkway					Irvine Boulevard/Trabuco Road									
Approach:	North Bound			South Bound		East Bound			West Bound						
Movement:	L	T	R	L	T	R	L	T	R	L	T	R			
Control:	Protected			Protected		Protected			Protected						
Rights:	Include			Include		Include			Include						
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0			
Lanes:	2	0	2	1	0	2	0	3	0	1	2	0	3	0	1

Volume Module:

Base Vol:	249	1736	130	45	1065	446	515	172	90	687	982	113
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	264	1840	138	48	1129	473	546	182	95	728	1041	120
Added Vol:	0	0	-3	-2	0	0	0	-2	0	-10	-7	-5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	264	1840	135	46	1129	473	546	180	95	718	1034	115
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	264	1840	101	46	1129	355	546	180	72	718	1034	86
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	264	1840	101	46	1129	355	546	180	72	718	1034	86
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
FinalVolume:	264	1840	101	46	1129	355	546	180	72	718	1034	86

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.84	0.16	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3400	4834	266	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.08	0.38	0.38	0.01	0.22	0.21	0.16	0.04	0.04	0.21	0.20	0.05
Crit Moves:	****			****			****			****		

TTM 15594
 Evening Peak Hour
 Opening Year (2015) Without Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.720
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: C

Street Name:	Bake Parkway				Irvine Boulevard/Trabuco Road										
Approach:	North Bound		South Bound		East Bound		West Bound								
Movement:	L	T	R	L	T	R	L	T	R	L	T	R			
Control:	Protected				Protected				Protected						
Rights:	Include				Include				Include						
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0			
Lanes:	2	0	2	1	0	2	0	3	0	1	2	0	3	0	1

Volume Module:

Base Vol:	124	1244	586	217	1466	659	515	805	167	294	372	40
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	131	1319	621	230	1554	699	546	853	177	312	394	42
Added Vol:	0	0	-11	-5	0	0	0	-8	0	-6	-5	-3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	131	1319	610	225	1554	699	546	845	177	306	389	39
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	131	1319	458	225	1554	524	546	845	133	306	389	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	131	1319	458	225	1554	524	546	845	133	306	389	30
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 Volume:	131	1319	458	225	1554	524	546	845	133	306	389	30

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.23	0.77	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3400	3786	1314	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.04	0.35	0.35	0.07	0.30	0.31	0.16	0.17	0.08	0.09	0.08	0.02
Crit Moves:	****			****			****			****		

 TTM 15594
 Morning Peak Hour
 Opening Year (2015) With Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

 Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap. (X): 0.810
 Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 100 Level Of Service: D

Street Name:	Bake Parkway					Irvine Boulevard/Trabuco Road						
Approach:	North Bound			South Bound		East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected		Protected			Protected			
Rights:	Include			Include		Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2	0	2	1	0	0	2	0	3	0	1	0

Volume Module:

Base Vol:	249	1739	130	45	1065	446	515	172	90	687	982	113
Growth Adj:	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Initial Bse:	264	1843	138	48	1129	473	546	182	95	728	1041	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	264	1843	138	48	1129	473	546	182	95	728	1041	120
User Adj:	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	0.75
PHF 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 Volume:	264	1843	103	48	1129	355	546	182	72	728	1041	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	264	1843	103	48	1129	355	546	182	72	728	1041	90
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
FinalVolume:	264	1843	103	48	1129	355	546	182	72	728	1041	90

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.84	0.16	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3400	4829	271	3400	5100	1700	3400	5100	1700	3400	5100	1700

Capacity Analysis Module:

Vol/Sat:	0.08	0.38	0.38	0.01	0.22	0.21	0.16	0.04	0.04	0.21	0.20	0.05
Crit Moves:	****			****		****			****		****	

TTM 15594
Evening Peak Hour
Opening Year (2015) With Project

Level Of Service Computation Report

ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Bake Parkway (NS) at Irvine Boulevard/Trabuco Road (EW) - #1

Cycle (sec): 100 Critical Vol./Cap.(X): 0.727
Loss Time (sec): 5 (Y+R=0.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: C

Table with columns for Street Name, Approach, Movement, Control, Rights, Min. Green, and Lanes. Rows include Bake Parkway and Irvine Boulevard/Trabuco Road with various lane configurations and control types.

Volume Module table showing Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and Final Volume across different approaches.

Saturation Flow Module table showing Sat/Lane, Adjustment, Lanes, and Final Sat. values for each approach.

Capacity Analysis Module table showing Vol/Sat and Crit Moves for each approach.

Appendix B. HCM Analysis



Appendices

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Interstate 5 Level of Service Summary Table

Intersection	Existing				Existing Plus Project				2030 with OSA Alt 7			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Bake Parkway/I-5 NB Ramps	18.6	B	6.4	A	18.7	B	6.4	A	19.1	B	8.3	A
Bake Parkway/I-5 SB Ramps	12.3	B	20.1	C	12.3	B	20.1	C	21.8	C	23.8	C
Lake Forest Drive/I-5 NB Ramps	14.1	B	10.5	B	14.2	B	10.5	B	16.2	B	9.1	A
Lake Forest Drive/I-5 SB Ramps	25.6	C	28.6	C	25.6	C	28.6	C	29.8	C	39.1	D

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.850
Loss Time (sec): 5 Average Delay (sec/veh): 18.6
Optimal Cycle: 68 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.667
Loss Time (sec): 5 Average Delay (sec/veh): 12.3
Optimal Cycle: 36 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume components and 13 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow factors 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 13 rows of data including Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.448
Loss Time (sec): 0 Average Delay (sec/veh): 14.1
Optimal Cycle: 41 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.544
Loss Time (sec): 0 Average Delay (sec/veh): 25.6
Optimal Cycle: 50 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, Y+R, and Lanes.

Volume Module: Table with 13 columns representing different traffic flows and 13 rows for various volume adjustments like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 13 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 13 columns for capacity analysis and 13 rows for Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.552
Loss Time (sec): 5 Average Delay (sec/veh): 6.4
Optimal Cycle: 27 Level Of Service: A

Table with 4 columns: Approach (North Bound, South Bound, East Bound, West Bound) and Movement (L, T, R). Rows include Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 14 rows for Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.694
Loss Time (sec): 5 Average Delay (sec/veh): 20.1
Optimal Cycle: 38 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 13 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow factors 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 13 rows of data including Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.715
Loss Time (sec): 0 Average Delay (sec/veh): 10.5
Optimal Cycle: 80 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.729
Loss Time (sec): 0 Average Delay (sec/veh): 28.6
Optimal Cycle: 84 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, Y+R, and Lanes.

Volume Module: Table with 13 columns representing different traffic movements and 13 rows of volume-related metrics like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 13 columns and 4 rows showing saturation flow rates and adjustments for different movements.

Capacity Analysis Module: Table with 13 columns and 14 rows showing capacity analysis metrics such as Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.851
 Loss Time (sec): 5 Average Delay (sec/veh): 18.7
 Optimal Cycle: 68 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Ignore			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	3	0	1	0	0	3	0	1	0	0	0	0	0	1	0	1	0	1

Volume Module:

Base Vol:	0	2976	339	0	407	1906	0	0	0	146	0	705
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2976	339	0	407	1906	0	0	0	146	0	705
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	10	0	0	0	0	0	3
Initial Fut:	0	2976	339	0	407	1916	0	0	0	146	0	708
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	2976	0	0	407	0	0	0	0	146	0	708
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2976	0	0	407	0	0	0	0	146	0	708
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	2976	0	0	407	0	0	0	0	146	0	708

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.87	1.00	0.87
Lanes:	0.00	3.00	1.00	0.00	3.00	1.00	0.00	0.00	0.00	1.17	0.00	1.83
Final Sat.:	0	5187	1900	0	5187	1900	0	0	0	1933	0	3020

Capacity Analysis Module:

Vol/Sat:	0.00	0.57	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.08	0.00	0.23
Crit Moves:	****			****						****		
Green/Cycle:	0.00	0.67	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.28	0.00	0.28
Volume/Cap:	0.00	0.85	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.27	0.00	0.85
Uniform Del:	0.0	12.4	0.0	0.0	5.8	0.0	0.0	0.0	0.0	28.4	0.0	34.3
IncrcmntDel:	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	14.6	0.0	0.0	5.8	0.0	0.0	0.0	0.0	28.4	0.0	41.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	14.6	0.0	0.0	5.8	0.0	0.0	0.0	0.0	28.4	0.0	41.3
LOS by Move:	A	B	A	A	A	A	A	A	A	C	A	D
HCM2kAvgQ:	0	28	0	0	2	0	0	0	0	3	0	14

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.667
 Loss Time (sec): 5 Average Delay (sec/veh): 12.3
 Optimal Cycle: 36 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Include			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	2	1	0	0	0	3	0	1	3	0	0	0	1	0	0	0	0	0

Volume Module:

Base Vol:	0	505	22	0	368	197	2793	0	538	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	505	22	0	368	197	2793	0	538	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	505	22	0	368	197	2793	0	538	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	505	22	0	368	0	2793	0	538	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	505	22	0	368	0	2793	0	538	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	505	22	0	368	0	2793	0	538	0	0	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.90	0.90	1.00	0.91	1.00	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	0.00	2.87	0.13	0.00	3.00	1.00	3.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	0	4941	215	0	5187	1900	5253	0	1615	0	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.10	0.10	0.00	0.07	0.00	0.53	0.00	0.33	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green/Cycle:	0.00	0.15	0.15	0.00	0.15	0.00	0.80	0.00	0.80	0.00	0.00	0.00
Volume/Cap:	0.00	0.67	0.67	0.00	0.46	0.00	0.67	0.00	0.42	0.00	0.00	0.00
Uniform Del:	0.0	39.9	39.9	0.0	38.6	0.0	4.4	0.0	3.1	0.0	0.0	0.0
IncrcmntDel:	0.0	2.2	2.2	0.0	0.4	0.0	0.4	0.0	0.2	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	0.0	42.1	42.1	0.0	39.0	0.0	4.8	0.0	3.3	0.0	0.0	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	42.1	42.1	0.0	39.0	0.0	4.8	0.0	3.3	0.0	0.0	0.0
LOS by Move:	A	D	D	A	D	A	A	A	A	A	A	A
HCM2kAvgQ:	0	7	7	0	4	0	14	0	5	0	0	0

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.449
 Loss Time (sec): 0 Average Delay (sec/veh): 14.2
 Optimal Cycle: 41 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Include			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	2	0	0	0	0	3	0	1	0	0	0	0	0	2	0	0	0	2

Volume Module:

Base Vol:	0	994	0	0	1009	873	0	0	0	515	0	490
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	994	0	0	1009	873	0	0	0	515	0	490
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	10	0	0	0	0	0	3
Initial Fut:	0	994	0	0	1009	883	0	0	0	515	0	493
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	994	0	0	1009	0	0	0	0	515	0	493
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	994	0	0	1009	0	0	0	0	515	0	493
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	994	0	0	1009	0	0	0	0	515	0	493

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.92	1.00	0.75
Lanes:	0.00	2.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	2.00	0.00	2.00
Final Sat.:	0	3610	0	0	5187	1900	0	0	0	3502	0	2842

Capacity Analysis Module:

Vol/Sat:	0.00	0.28	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.15	0.00	0.17
Crit Moves:	****			****						****		
Green/Cycle:	0.00	0.61	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.39	0.00	0.39
Volume/Cap:	0.00	0.45	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.38	0.00	0.45
Uniform Del:	0.0	10.3	0.0	0.0	9.3	0.0	0.0	0.0	0.0	22.1	0.0	22.8
IncrcmntDel:	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.3
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	10.5	0.0	0.0	9.3	0.0	0.0	0.0	0.0	22.2	0.0	23.1
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:	0.0	10.5	0.0	0.0	9.3	0.0	0.0	0.0	0.0	22.2	0.0	23.1
LOS by Move:	A	B	A	A	A	A	A	A	A	C	A	C
HCM2kAvgQ:	0	9	0	0	5	0	0	0	0	6	0	7

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.544
 Loss Time (sec): 0 Average Delay (sec/veh): 25.6
 Optimal Cycle: 50 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Include			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	3	1	0	2	0	3	0	1	2	1	1	0	1	1	0	0	0	2

Volume Module:

Base Vol:	0	485	0	286	844	291	801	301	472	161	0	158
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	485	0	286	844	291	801	301	472	161	0	158
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	485	0	286	844	291	801	301	472	161	0	158
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	485	0	286	844	0	801	301	472	161	0	158
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	485	0	286	844	0	801	301	472	161	0	158
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	485	0	286	844	0	801	301	472	161	0	158

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	0.91	0.92	0.91	1.00	0.89	0.92	0.85	0.95	1.00	0.75
Lanes:	0.00	4.00	0.00	2.00	3.00	1.00	2.93	1.07	1.00	1.00	0.00	2.00
Final Sat.:	0	6916	0	3502	5187	1900	4953	1861	1615	1805	0	2842

Capacity Analysis Module:

Vol/Sat:	0.00	0.07	0.00	0.08	0.16	0.00	0.16	0.16	0.29	0.09	0.00	0.06
Crit Moves:	****			****			****			****		
Green/Cycle:	0.00	0.14	0.00	0.16	0.30	0.00	0.54	0.54	0.54	0.16	0.00	0.16
Volume/Cap:	0.00	0.51	0.00	0.51	0.54	0.00	0.30	0.30	0.54	0.54	0.00	0.34
Uniform Del:	0.0	39.9	0.0	38.3	29.3	0.0	12.8	12.8	15.1	38.4	0.0	37.0
IncrcmntDel:	0.0	0.5	0.0	0.8	0.4	0.0	0.0	0.0	0.7	2.1	0.0	0.4
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Delay/Veh:	0.0	40.4	0.0	39.1	29.7	0.0	12.8	12.8	15.9	40.5	0.0	37.4
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	40.4	0.0	39.1	29.7	0.0	12.8	12.8	15.9	40.5	0.0	37.4
LOS by Move:	A	D	A	D	C	A	B	B	B	D	A	D
HCM2kAvgQ:	0	4	0	5	8	0	5	5	10	5	0	3

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.554
 Loss Time (sec): 5 Average Delay (sec/veh): 6.4
 Optimal Cycle: 27 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound										
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Split Phase			Split Phase										
Rights:	Ignore			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	3	0	1	0	0	3	0	1	0	0	0	0	0	1	0	1	0	1

Volume Module:

Base Vol:	0	2301	1006	0	834	2688	0	0	0	51	0	242
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2301	1006	0	834	2688	0	0	0	51	0	242
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	11	0	0	6	0	0	0	0	0	0	0
Initial Fut:	0	2312	1006	0	840	2688	0	0	0	51	0	242
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	2312	0	0	840	0	0	0	0	51	0	242
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2312	0	0	840	0	0	0	0	51	0	242
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	2312	0	0	840	0	0	0	0	51	0	242

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.87	1.00	0.87
Lanes:	0.00	3.00	1.00	0.00	3.00	1.00	0.00	0.00	0.00	1.17	0.00	1.83
Final Sat.:	0	5187	1900	0	5187	1900	0	0	0	1937	0	3012

Capacity Analysis Module:

Vol/Sat:	0.00	0.45	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.03	0.00	0.08
Crit Moves:	****			****						****		
Green/Cycle:	0.00	0.80	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.15	0.00	0.15
Volume/Cap:	0.00	0.55	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.18	0.00	0.55
Uniform Del:	0.0	3.4	0.0	0.0	2.3	0.0	0.0	0.0	0.0	37.5	0.0	39.7
IncrcmntDel:	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.3
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	3.6	0.0	0.0	2.3	0.0	0.0	0.0	0.0	37.6	0.0	41.0
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	3.6	0.0	0.0	2.3	0.0	0.0	0.0	0.0	37.6	0.0	41.0
LOS by Move:	A	A	A	A	A	A	A	A	A	D	A	D
HCM2kAvgQ:	0	10	0	0	2	0	0	0	0	1	0	5

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.696
 Loss Time (sec): 5 Average Delay (sec/veh): 20.1
 Optimal Cycle: 38 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Include			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	2	1	0	0	0	3	0	1	3	0	0	0	1	0	0	0	0	0

Volume Module:

Base Vol:	0	1263	118	0	388	457	2046	0	198	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1263	118	0	388	457	2046	0	198	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	6	11	0	0	0	0	0
Initial Fut:	0	1263	118	0	388	463	2057	0	198	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1263	118	0	388	0	2057	0	198	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1263	118	0	388	0	2057	0	198	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1263	118	0	388	0	2057	0	198	0	0	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.90	0.90	1.00	0.91	1.00	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	0.00	2.74	0.26	0.00	3.00	1.00	3.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	0	4682	437	0	5187	1900	5253	0	1615	0	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.27	0.27	0.00	0.07	0.00	0.39	0.00	0.12	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green/Cycle:	0.00	0.39	0.39	0.00	0.39	0.00	0.56	0.00	0.56	0.00	0.00	0.00
Volume/Cap:	0.00	0.70	0.70	0.00	0.19	0.00	0.70	0.00	0.22	0.00	0.00	0.00
Uniform Del:	0.0	25.7	25.7	0.0	20.3	0.0	15.7	0.0	10.9	0.0	0.0	0.0
IncrcmntDel:	0.0	1.1	1.1	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	0.0	26.8	26.8	0.0	20.3	0.0	16.5	0.0	11.0	0.0	0.0	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	26.8	26.8	0.0	20.3	0.0	16.5	0.0	11.0	0.0	0.0	0.0
LOS by Move:	A	C	C	A	C	A	B	A	B	A	A	A
HCM2kAvgQ:	0	14	14	0	3	0	16	0	3	0	0	0

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.718
 Loss Time (sec): 0 Average Delay (sec/veh): 10.5
 Optimal Cycle: 81 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:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Ignore			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	0	3	0	0	0	2	0	0

Volume Module:

Base Vol:	0	2046	0	0	1071	718	0	0	0	216	0	421
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2046	0	0	1071	718	0	0	0	216	0	421
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	11	0	0	6	0	0	0	0	0	0	0
Initial Fut:	0	2057	0	0	1077	718	0	0	0	216	0	421
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	2057	0	0	1077	0	0	0	0	216	0	421
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2057	0	0	1077	0	0	0	0	216	0	421
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	2057	0	0	1077	0	0	0	0	216	0	421

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.92	1.00	0.75
Lanes:	0.00	2.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	2.00	0.00	2.00
Final Sat.:	0	3610	0	0	5187	1900	0	0	0	3502	0	2842

Capacity Analysis Module:

Vol/Sat:	0.00	0.57	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.06	0.00	0.15
Crit Moves:	****			****						****		
Green/Cycle:	0.00	0.79	0.00	0.00	0.79	0.00	0.00	0.00	0.00	0.21	0.00	0.21
Volume/Cap:	0.00	0.72	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.30	0.00	0.72
Uniform Del:	0.0	4.9	0.0	0.0	2.7	0.0	0.0	0.0	0.0	33.6	0.0	37.0
IncrcmntDel:	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	4.3
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	5.8	0.0	0.0	2.7	0.0	0.0	0.0	0.0	33.8	0.0	41.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	5.8	0.0	0.0	2.7	0.0	0.0	0.0	0.0	33.8	0.0	41.2
LOS by Move:	A	A	A	A	A	A	A	A	A	C	A	D
HCM2kAvgQ:	0	17	0	0	3	0	0	0	0	3	0	8

Level Of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.730
 Loss Time (sec): 0 Average Delay (sec/veh): 28.6
 Optimal Cycle: 85 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:	Protected			Protected			Split Phase			Split Phase										
Rights:	Include			Ignore			Include			Include										
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0								
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
Lanes:	0	0	3	1	0	2	0	3	0	1	2	1	1	0	1	1	0	0	0	2

Volume Module:

Base Vol:	0	1082	110	304	522	322	1480	952	240	160	0	322
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1082	110	304	522	322	1480	952	240	160	0	322
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Project:	0	0	0	0	0	6	11	0	0	0	0	0
Initial Fut:	0	1082	110	304	522	328	1491	952	240	160	0	322
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1082	110	304	522	0	1491	952	240	160	0	322
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1082	110	304	522	0	1491	952	240	160	0	322
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1082	110	304	522	0	1491	952	240	160	0	322

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.90	0.90	0.92	0.91	1.00	0.89	0.92	0.85	0.95	1.00	0.75
Lanes:	0.00	3.63	0.37	2.00	3.00	1.00	2.47	1.53	1.00	1.00	0.00	2.00
Final Sat.:	0	6190	629	3502	5187	1900	4195	2679	1615	1805	0	2842

Capacity Analysis Module:

Vol/Sat:	0.00	0.17	0.17	0.09	0.10	0.00	0.36	0.36	0.15	0.09	0.00	0.11
Crit Moves:	****			****			****			****		
Green/Cycle:	0.00	0.24	0.24	0.12	0.36	0.00	0.49	0.49	0.49	0.16	0.00	0.16
Volume/Cap:	0.00	0.73	0.73	0.73	0.28	0.00	0.73	0.73	0.31	0.57	0.00	0.73
Uniform Del:	0.0	35.1	35.1	42.5	22.9	0.0	20.4	20.4	15.5	39.2	0.0	40.3
IncrcmntDel:	0.0	1.7	1.7	6.5	0.1	0.0	0.8	0.8	0.2	2.8	0.0	6.1
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Delay/Veh:	0.0	36.8	36.8	49.0	23.0	0.0	21.3	21.3	15.7	42.0	0.0	46.4
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	36.8	36.8	49.0	23.0	0.0	21.3	21.3	15.7	42.0	0.0	46.4
LOS by Move:	A	D	D	D	C	A	C	C	B	D	A	D
HCM2kAvgQ:	0	11	11	6	4	0	17	17	4	5	0	7

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.839
Loss Time (sec): 5 Average Delay (sec/veh): 19.1
Optimal Cycle: 64 Level Of Service: B

Table with 4 columns: Approach (North Bound, South Bound, East Bound, West Bound) and Movement (L, T, R). Rows include Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 14 rows for Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.779
Loss Time (sec): 5 Average Delay (sec/veh): 21.8
Optimal Cycle: 50 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow factors 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 14 rows of data including Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.581
Loss Time (sec): 0 Average Delay (sec/veh): 16.2
Optimal Cycle: 54 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 14 rows for Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.767
Loss Time (sec): 0 Average Delay (sec/veh): 29.8
Optimal Cycle: 98 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, Y+R, and Lanes.

Volume Module: Table with 13 columns representing different traffic flows. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 13 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 13 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Bake Pkwy/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.568
Loss Time (sec): 5 Average Delay (sec/veh): 8.3
Optimal Cycle: 28 Level Of Service: A

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows of adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 14 rows including Vol/Sat, Crit Moves, Green/Cycle, etc.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Bake Pkwy/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.834
Loss Time (sec): 5 Average Delay (sec/veh): 23.8
Optimal Cycle: 63 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, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Lake Forest Dr/I-5 NB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.639
Loss Time (sec): 0 Average Delay (sec/veh): 9.1
Optimal Cycle: 63 Level Of Service: A

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, and FinalVolume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Uniform Del, IncremntDel, InitQueuDel, Delay Adj, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, and HCM2kAvgQ.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Lake Forest Dr/I-5 SB Ramps

Cycle (sec): 100 Critical Vol./Cap.(X): 0.933
Loss Time (sec): 0 Average Delay (sec/veh): 39.1
Optimal Cycle: 180 Level Of Service: D

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 13 columns representing different volume categories and 13 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 13 columns for saturation flow and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 13 columns for capacity analysis metrics and 13 rows for Vol/Sat, Crit Moves, Green/Cycle, etc.